EXPLORING AVOIDANCE AND REJECTION BY MALE CONSUMERS:
A SOCIAL IDENTITY PERSPECTIVE

Ross M. Cameron

A thesis submitted for the degree of

Doctor of Philosophy

University of East Anglia
Norwich Business School

2021

ABSTRACT

There is growing interest in consumer psychology to understand what motivates avoidance and rejection by consumers. This thesis explores the influence of male social identity on avoidance and rejection, using two distinct consumer contexts. The first context relates to preferences for an outgroup-associated product. Research has revealed that men avoid and negatively evaluate a steak option when labelled the *10oz Ladies Cut* (vs. *10oz Chef's Cut*). This effect is referred to as the *dissociation effect* within the reference group literature. Utilising a *Menu Selection Task*, the thesis set out to determine whether male gender-derived social identity is at play when dissociating from the *Ladies' Cut Steak*. This perspective was explored across four experiments that primed, affirmed, and threatened male-specific social identity. The findings indicate that social identity does not influence the MST-specific dissociation effect.

The second context views science itself as a consumable and thus explores the rejection of scientific publications by male consumers of science. The discrediting of identity-threatening science has historically been investigated using minimal group studies or niche ingroups (e.g. "video gamers"). This thesis investigates the discrediting of scientific publications perceived to be "threatening" to male social identity. Explored across four experiments, the findings reveal that male-specific science discrediting is moderated by Strength of Ingroup Identification, Ambivalent Sexism, Social Dominance Orientation, Precarious Manhood, and Collective Narcissism; as each moderator increases, so too does the individual's tendency to discredit the identity-threatening science.

Keywords: Ambivalent Sexism, Collective Narcissism, Collective Self-Esteem, Consumer Behaviour, Dissociation Effect, Ingroup Identification, Intergroup Bias, Motivated Rejection of Science, Precarious Manhood, Reference Groups, Science Discrediting, Self-Affirmation Theory, Self-Categorisation Theory, Social Dominance Orientation, Social Identity Theory, Social Identity Threat.

TABLE OF CONTENTS

LIST OF ACRONYMS

AS   Ambivalent Sexism

AST   Ambivalent Sexism Theory

BS   Benevolent Sexism

CN   Collective Narcissism

CSE   Collective Self-Esteem

CSES   Collective Self-Esteem Scale

HBI   Hostile Behavioural Intentions

HS   Hostile Sexism

ISE   Intergroup Sensitivity Effect

MMR   Moderated Multiple Regression

MRS   Motivated Rejection of Science

MST   Menu Selection Task

NRE   Negative Research Evaluations

NRER   Negative Research<u>er</u> Evaluations

NRET   Negative Research Evaluations Total

PM   Precarious Manhood

REF   Research Excellence Framework

RIIT   Referent Informational Influence Theory

SAT   Self-Affirmation Theory

SCT   Self-Categorisation Theory

SDO   Social Dominance Orientation

SEH   Self-Esteem Hypothesis

SISI   Single-Item of Social Identification

SIT   Social Identity Theory

TFM   Three-Factor Model of Social Identification

TABLE OF FIGURES

TABLE OF TABLES

CHAPTER 1
INTRODUCTION

1.1 Introduction

Interest in the influence of social identity on consumer behaviour continues to grow (e.g. McGowan and Hassan, 2021; McGowan, Shiu, Hassan, 2017; Perez and Steinhart, 2014; Chan, Berger, and van Boven, 2012; Reed, Cohen, and Bhattacharjee, 2009; Reed, 2002). Brands associated with social identities are perceived by consumers to be of greater emotional value, increasing purchase intentions (McGowan *et al.*, 2017). Likewise, advertisements that prime and contain social identity-related imagery are perceived more positively by consumers, and the products they advertise are more positively evaluated, also (Perez and Steinhart, 2014; Whittler and Spira, 2002; Forehand, Deshpande, and Reed, 2002). There is evidence also to suggest that brands associated with social identities are incorporated into the consumers self-concept to a greater extent than non-identity related brands, as those brands associated with a social identity represent who the consumer is and which groups they belong to (White and Dahl, 2007; Escalas and Bettman, 2005).

But this interest in social identity has tended to favour its "positive" effects – what an understanding of social identity might do to improve product, brand, and advertising success. But how might an understanding of social identity explain the "negatives" often seen in marketing, such as product avoidance and rejection? Understanding what influences these negative effects may help improve marketing actions, as understanding them will better equip marketers to overcome them. In the present thesis these negative effects of avoidance and rejection are explored from two distinct consumer behaviour perspectives, referred to throughout as Streams I and II. This chapter begins by first introducing these two Streams, providing a brief background to each, before posing the Research Questions (RQ) that guide the thesis. An overview of each chapter is then provided.

1.2 Background

There is growing interest in consumer psychology to understand what influences the avoidance and rejection of products and services. One view is that consumers are influenced by their social identities. Defined as "*that part of an individual's self-concept which derives from his* [or her]

knowledge of his [or her] *membership of a social group (or groups) together with the value and emotional significance attached to that membership*" (Tajfel, 1978, p63), a social identity is that part of the individual that includes reference to others. These others or "ingroups" vary in size, function, and longevity, and are cognitively represented in the mind as prototypes – fuzzy sets of attributes (e.g. attitudes and behaviours) that "*simultaneously capture similarities within the group and differences between the group and other groups*" (Hogg, 2006, p118). They maximise entitativity by prescribing ingroup norms (Turner, 1991). Thus, to possess a social identity is to belong to an ingroup – to identify with it to the extent that what defines the ingroup defines the self, also. This includes the products and brands that help define a specific social identity. But what of those products that are associated with an *out*group? How might the Social Identity Approach help explain the avoidance of an outgroup-associated product by ingroup members? This brings us to Stream I of the thesis.

1.2.1   Stream I: Dissociation as Outgroup Derogation

Stream I, titled *Dissociation as Outgroup Derogation*, is an investigation into the dissociation of consumers from an outgroup-associated product. White and Dahl (2006) reveal that men (relative to women) avoid and negatively evaluate a steak option when it is labelled the *10oz Ladies Cut* (vs. *10oz Chef's Cut*). This effect is referred to as the *dissociation effect*, as male participants dissociate from (avoid) the outgroup-labelled product. Utilising this same paradigm (the *Menu Selection Task*), Stream I sets out to determine whether male gender-derived social identity (male social identity) is at play when dissociating from the *Ladies' Cut Steak*, and whether affirming male social identity reduces this dissociation effect.

The clearest contribution of Stream I lies in its application of the Social Identity Approach to the dissociation effect. Historically, this effect has been investigated from a reference group perspective (e.g. Berger and Heath, 2007; 2008; White and Dahl, 2006; Escalas and Bettman, 2005; Englis and Solomon, 1995; Tepper, 1994). However, as a review of the literature revealed, the reference group construct suffers from several conceptual limitations (e.g. ill-defined ingroups and outgroups) that may be overcome by employing the Social Identity Approach. Furthermore, with improved definition of the "ingroup" comes the ability to more accurately measure *strength* of ingroup identification, allowing for its analysis as a potential moderator in the dissociation effect. Thus, Stream I's contribution is the application of the Social Identity Approach to the dissociation effect.

1.2.1.1 Stream I: Research Questions

Following a review of the literature, several Research Questions (RQ) were formulated:

RQ1. To what extent is the dissociation effect as reported in the consumer reference group literature, the consequence of social identity?

RQ2. To what extent does strength of ingroup identification moderate preferences for an outgroup-associated product?

RQ3. What effect does group-affirmation have on consumer preferences for an outgroup-associated product?

To answer these questions, several hypotheses were posed. These hypotheses are developed in Chapter 5: Hypotheses Development, and tested in Studies I – 4 (Chapter 7: Stream I Results). However, it is important to note here that Stream I was unsuccessful. Studies 2 – 4 failed to provide evidence that social identity was at play within the MST, suggesting the dissociation effect was not motivated by male-specific social identity. The possible causes for this lack of effect are discussed in Chapter 8: Stream I General Discussion and Conclusions.

The decision to include Stream I, despite its failure, was influenced by Velazquez (2019). He notes that a root cause of the Replicability Crisis faced by academia today, is the underreporting of nonsignificant or "negative" effects. Thus, while the studies reported in Stream I may struggle for publication at a later date, their reporting here may help future researchers in their attempts to explore the dissociation effect from a social identity perspective. Furthermore, as a PhD candidate is examined on their ability to conduct original investigations and to test new ideas, it is hoped that Stream I will help meet this criteria despite the reporting of non-significant effects.

Fortunately, Stream II was more successful.

1.2.2 Stream II: Science Discrediting

Stream II, titled *Science Discrediting*, is an investigation into the discrediting of scientific publications that threaten social identities. Employing the same theoretical framework as Stream I, and focusing again on male gender-derived social identity, Stream II takes the view that science

itself is a consumable (Michael, 1998), and as such its consumption depends on its alignment with the consumers social identity. Thus, where the content of a scientific publication fails to align with the consumers social identity, it will be discredited (rejected)[1].

Stream II approaches the topic of science discrediting from the Motivated Rejection of Science (MRS; Hornsey and Fielding, 2017, p459) perspective. The MRS perspective views social identities as "attitude roots" – "*underlying fears, ideologies, worldviews, and identity needs that sustain and motivate specific "surface" attitudes*" related to science rejection. However, whereas the MRS perspective views science discrediting as an ingroup norm (i.e. science discrediting is a behaviour endorsed by the ingroup, e.g. anti-vaxxers), Stream II of this thesis views it as a response to threat caused by the content of science itself. Thus, in much the same way that a consumer will negatively evaluate products and brands associated with an outgroup (White and Dahl, 2007), so too will they negatively evaluate or discredit a scientific publication that appears to favour the outgroup relative to the ingroup.

Stream II contributes to the literature in three significant ways. First, it appears that no publication to date has investigated the MRS from a male social identity perspective. Nauroth *et al*. (2014; 2015) focus exclusively on "gamers" as the ingroup of interest, while Nauroth *et al*. (2017) employ a minimal group study. To date, no investigation has explored the possibility that male readers will discredit research they perceive to be threatening to their male social identity. Stream II therefore investigates a much larger group than has previously been studied. Second, as noted above, the MRS perspective holds that social identities motivate science discrediting where science discrediting is ingroup normative. Stream II adds to this by suggesting science discrediting may be in response to social identity threat. Third, Stream II advances the MRS perspective by testing alternative "attitude roots" to science discrediting, including Social Dominance Orientation (SDO; Pratto *et al*., 1994), Ambivalent Sexism (AS; Glick and Fiske, 1996), Precarious Manhood (PM; Vandello *et al.,* 2008), and Collective Narcissism (CN; Golec de Zavala *et al*., 2009).

---

[1] The transition to Stream II was influenced by White and Argo (2009). White and Argo (2009) investigated the influence that social identity threat had on the selection of identity-related products. To manipulate threat, the authors provided their participants with false-feedback relating to the workplace performance of the participants gender group. The authors explain, "*participants in the gender threat condition read that their own gender demonstrates weak analytical reasoning skills, low levels of motivation in the workplace, and a poorly developed sense of social intelligence*" (ibid, p316). The manipulation was effective. Participants in the threat condition selected a non-gender-related product so as to put distance between themselves and their threatened gender identity. Stream II of the present thesis asks: '*what if the manipulation of gender threat used by White and Argo was itself a product?*' This question led the author to repurpose the thesis to explore science discrediting in Stream II. That is, to investigate consumer responses to social identity-threatening scientific publications.

1.2.2.1 Stream II: Research Questions

Following a review of the relevant literature, several RQ were formulated for Stream II:

RQ4.   To what degree are evaluations of identity-threatening scientific publications influenced by male gender-derived social identity?

RQ5.   To what extent can the act of science discrediting by male's be attributed to alternative explanations, including Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Collective Narcissism (CN), and Precarious Manhood (PM)?

RQ6.   What impact does group-affirmation have on the consumers evaluations of identity-threatening scientific publications?

To answer RQ4 – RQ6, hypotheses are developed in Chapter 5: Hypotheses Development, and tested in Studies 4 – 8 (Chapter 9: Stream II Results). Stream II is summarised in Chapter 10: Stream II General Discussion and Conclusions.

1.3 Thesis Structure

This thesis is divided into eleven chapters. Chapter 2 introduces and discusses the terminology employed within the thesis and the broader social psychology literature. With the thesis being an application of social psychology to the consumer context, it was deemed necessary to define and discuss the terms used throughout the thesis. This is owed in no small part to the conflicting use of the terms *self*, *self-concept*, and *identity* within consumer research. Chapter 2 is intended to ensure the research reported herein complements the existing literature.

Chapter 3 introduces the Theoretical Framework. The framework employed is the Social Identity Approach. This approach includes Social Identity Theory (SIT; Tajfel and Turner, 1979) and Self-Categorisation Theory (SCT; Turner *et al*., 1987). Each theory is discussed in detail, including the circumstances that lead to the depersonalisation of an individual as an ingroup member, such that the individuals' attitudes and behaviours become ingroup normative. The discussion also

includes the requirements for social identity to become threatened, leading to outgroup derogation or derogation more generally. Chapter 3 also introduces Self-Affirmation Theory (SAT; Steele, 1988) as a possible solution to reduce the dissociation effect within Stream I and the Motivated Rejection of Science (MRS) within Stream II.

Chapter 4 reviews the literature of Streams I and II. For Stream I, Chapter 4 begins by highlighting the symbolic value of products, noting that products, through their association with social groups, come to represent members of those groups. The reference group construct is then defined and discussed in terms of the dissociation effect. The limitations of the construct are discussed with reference to the Social Identity Approach. Finally, the Menu Selection Task (MST) is introduced as the paradigm within which Studies I – 4 are conducted. For Stream II, Chapter 4 reviews the science discrediting literature, including discussion of alternative approaches to its investigation, and its use as a form of social identity protection. Here, the case for studying male gender-derived social identity is made. The final section introduces alternative explanations for science discrediting, including Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Collective Narcissism (CN), and Precarious Manhood (PM). Building on Chapters 2 – 4, Chapter 5 then develops hypotheses for Streams I and II.

Chapter 6 reviews the methodology. The chapter addresses the ontological, epistemological, and methodological questions, for which answers are needed to arrive at the researchers research paradigm. The paradigm employed throughout is *scientific realism*. Chapter 6 also discusses and provides justification for the use of experimental surveys and crowdsourcing for online convenience samples. The topic of rigor is also discussed in terms of validity, reliability, and replicability. Importantly, Chapter 6 (Methodology) does not include discussion of the specific methods employed within Studies I – 8. Instead, discussion of methods is reserved for the studies themselves[2].

Chapter 7 presents and discusses the results of Studies I – 4 (Stream I). Here, answers to RQ_1 – RQ_3 are provided by testing H_1 – H_3. The aim of this chapter was to apply the Social Identity Approach to the Menu Selection Task (MST) to observe the influence of social identity on the dissociation effect. Four studies were conducted. Study I trialled the researchers MST with an online panel of British participants. Study 2 introduced measures of male social identity to assess

---

[2] With the thesis containing two streams and eight studies, it was decided that each study would include discussion of its own methods. Each study follows the same format. The studies begin first with an introduction that relates the study to the relevant literature and the hypotheses being tested. Next, the Methods section includes the sample, study design, materials used, and procedures employed. The Results section then identifies the choice of statistical analysis, and the results of that analysis. Each study is concluded with a Discussion section, providing an overview of the results as they relate to the hypotheses. Thus, each study includes a Methods, Results, and Discussion section.

strength of ingroup identification as a moderator of the dissociation effect. Study 3 introduced an identity prime to assess its effects on the moderation of strength of ingroup identification on the dissociation effect. Study 4 employed an *ease-of-retrieval* technique based on the availability heuristic, to prime gender affirmation (vs. gender threat) before engagement in the MST. Chapter 8 provides a General Discussion of Studies I – 4 (Stream I), including the Theoretical Implications, Limitations, Future Directions, and Conclusions.

Chapter 9 presents and discusses the results of Studies 5 – 8 (Stream II). Here, answers to RQ_4 – RQ_6 are provided by testing H_4 – H_{10}. The aim of this chapter was to investigate science discrediting from a male gender-derived social identity perspective. Four studies were conducted. Study 5 trialled the researchers manipulations of social identity threat, designed to resemble scientific publications. The study included both a treatment (threat) and control publication, as well as male and female participants. Strength of Ingroup Identification, Social Dominance Orientation (SDO), and Ambivalent Sexism (AS) were tested as potential moderators of science discrediting. Study 6 introduced a gender prime to assess its effects on the discrediting of the treatment publication. Study 7 introduced a new (gender-neutral) control publication and additional moderators of science discrediting: Collective Narcissism (CN) and Precarious Manhood (PM). Study 8 analysed the effects of group-affirmation on science discrediting. Chapter 10 then provides a General Discussion of Stream II, including the Limitations, Future Directions, and Conclusions. Finally, Chapter 11 provides a summary of the thesis and the authors reflections on the project.

Supporting appendices and references are included. The appendices are supplementary material and are not required reading for understanding the content of the thesis. They include all questionnaires used in the survey experiments, an example Participant Information Sheet, and all Debriefs that were used where deception was employed. Each is included for transparency.

CHAPTER 2
BASIC CONCEPTS AND DEFINITIONS

2.1 Introduction

"*The amount of worthwhile knowledge that comes out of any field of inquiry… tends to be in inverse proportion to the amount of discussion about the meaning of words that goes into it. Such discussion, far from being necessary to clear thinking and precise knowledge, obscures both, and is bound to lead to endless argument about words instead of matters of substance.*"

(Magee, 1985, p49)

Despite Magee's (1985) warning, the nature of a thesis in the social sciences requires the researcher to first make clear their interpretation of the core concepts within the literature. This is particularly important for a thesis based in consumer behaviour, where the terms *self*, *self-concept*, and *identity* are often used interchangeably. Additionally, Mullins and Kiley (2002, p379) report that examiners of social science theses consider a thesis to be poor where there are "*mixed or confused theoretical and methodological perspectives*". Therefore, to ensure interpretations are clear from the outset, and to ensure the research complements not complicates the existing literature, the basic operationalisations of the Psychological Self and its product, the Self-Concept are provided, before interpretation is provided of Identity, Social Identity, Personal Self-Esteem, Collective Self-Esteem, and Intergroup Bias and Outgroup Derogation.

Following the Basic Concepts and Definitions, the Theoretical Framework provided by the Social Identity Approach is introduced. This is then followed by a review of the literature as it relates to Streams I and II.

2.2 The Psychological Self

The idea of a *self* that is independent of the human body has been written of for nearly 3000 years. First appearing in the Sanskrit texts of *Upanishads* (600 BCE), *Ātman* or the "true self" was considered the eternal, innermost spiritual essence of the individual. It was likened to salt in water – present though not visible. Later, Plato's *Phaedrus* (370 BCE) considered the soul-as-self. His protagonist, Socrates argued that self-knowledge came from understanding the soul; to know

oneself through self-examination, to know that which rules the body, is to better oneself (Moore, 2014; Sorabji, 2006). For centuries after, discussion was reserved for the religious and the theological. Until the Enlightenment, when came debates of its existence or not by philosophers such as Descartes, Locke, Hume, and Kant (Sorabji, 2006; Leary and Tangney, 2012).

The notion of a *psychological self* was first introduced by William James (1890). His chapter "The Consciousness of Self", published in his seminal work *The Principles of Psychology*, was the first to consider the self as a legitimate topic of psychological investigation. According to James (1890), the self is a process of reflexivity that results from the dialectic between the "I" and "me". It is comprised of the self as subject (*I am thinking)* and the self as object of thought (*about me*) (James, 1890). It is also considered capable of thinking while being conscious of the fact that it is thinking (Grecas, 1982; Oyserman, Elmore, and Smith, 2012). *Cogito, ergo sum* – I think, therefore I am (Descartes [1637] *et al.*, 1996).

Historically, this view of *I* as subject and *me* as object has caused issue for psychologists and philosophers, alike. Kihlstrom and Klein (1994) describe Gordon Allport as having spent his career struggling to define the self and the human capacity for reflexive consciousness, before throwing up his hands and writing:

> "*This puzzling problem arises when we ask, "Who is the I that knows the bodily me, who has an image of myself and a sense of identity over time, who knows that I have propriate strivings?" I know all these things, and what is more, I know that I know them. But who is it who has this perspectival grasp? ...It is much easier to feel the self than to define the self*"

> (Allport, 1961, p128).

To answer this, Kihlstrom, Beer, and Klein (2003) suggest a simple definition. Referring back to James (1890), they write: "*the self is a mental representation of oneself, including all that one knows about oneself. The I who knows the me is the same I who knows everything else, and the mental representation of this knowledge is no different, except perhaps in intimacy and richness, than is the mental representation of anything else I know*" (Kihlstrom *et al.*, 2003, p68). But this simplistic view is not subscribed to by all. As Baumeister (1998, p681) argues, the "*self is not really a single topic at all, but rather an aggregate of loosely related subtopics*". As Leary and Tangney (2012) note, since the 1970s, hundreds of thousands of articles, chapters, and books have been written on self-related experience, with the term *self* often referring to distinctly different phenomena. They identify five such ways in which social and behavioural scientists use the term *self* and its compounds (e.g. *self-esteem*; *self-verification*, etc.):

I.   self as the total person (*the person 'is' a self, instead of possessing a self*)

II. self as personality (*the self is that which makes them unique*)

III. self as experiencing subject (*the I-self or self as subject; the inner psychological entity responsible for self-awareness and self-knowledge*)

IV. self as beliefs about oneself (*the me-self or self as object; incl. self-perception, beliefs about oneself, answering 'who am I?'*)

V.   self as executive agent (*the decision-maker and doer*)

Leary and Tangney (2021) conclude the underlying capacity for reflexive thinking found in III – V, suggests the self is "*a mental capacity that allows an animal to take itself as the object of its own attention and to think consciously about itself*" (Leary and Tangney, 2012, p6). Their definition aligns closely with that of James (1890) and of Kihlstrom *et al.* (2003). Sedikides and Gregg (2003, p110) offer yet another definition, describing the self as "*the totality of interrelated yet distinct psychological phenomena that either underlie, causally interact with, or depend upon reflexive consciousness.*" Their definition describes the products of the self's reflexivity.

In the present thesis, *self* is defined as a combination of definitions provided by Leary and Tangney's (2012) and Sedikides and Gregg (2003). Thus, what is referred to as the *self* is *both the mental capacity that allows a person to take themselves as the object of their own attention and to think consciously about themselves,* as well as the *totality of interrelated yet distinct psychological phenomena linked to the capacity for reflexive consciousness*. The self is both thinker and knower, and the product of this reflexive process.

2.3 The Self-Concept

The *self-concept* is "*the individual's belief about himself or herself, including the person's attributes and who and what the self is*" (Baumeister, 1999, p247). It's the subjective perception of who one believes themselves to be (i.e. *who I am to me, based on everything I know about myself*), that emerges as the product of the reflexive process of *self* (Grecas, 1982). The "attributes" noted in Baumeister's (1999) definition, include the individual's understanding of who they are physically, socially, morally, emotionally, and spiritually, as well as who they are in terms of attitudes held and of self-evaluation (personal abilities, appearance, relationships, etc.) (McConnell and Strain, 2007; Oyserman *et al.*, 2012). This also includes their personality traits and self-schemas

(generalisations about who they are, based on personal experience), as well as an understanding of their social roles and relationships (Baumeister, 1997). Invoking James's (1890) early distinctions of *I* and *me* in self, Oyserman *et al.* (2012, p72) explain that "*if the self is an "I" that thinks and a "me" that is the content of those thoughts, one important part of this "me" content involves mental concepts or ideas of who one is, was, and will become.*" Thus, the self-concept is James' (1890) *me*.

How this *me* is structured, is hotly debated. Kihlstrom and Cantor (1984) view the self-concept as a hierarchical structure – the elements of which are traits, values, and memories of behaviours. Markus's (1977) *self-schema* model suggests the self-concept is comprised of multiple self-schemas, i.e. "*cognitive generalizations about the self, derived from past experience, that organize and guide the processing of self-related information contained in the individual's social experiences*" (Markus, 1977, p64). Alternatively, McConnell's (2011) *Multiple Self-Aspects Framework (MSF)* conceives of the self-concept as being comprised of associative networks; collections of multiple, context-dependent self-aspects that determine experiences and behaviours (*see also* McConnell and Strain, 2007).

However it is structured, theorists typically agree that its structure is *active*. That the self-concept is a dynamic, malleable, multifaceted, and multidimensional structure, with significant regulatory control on behaviour (Markus and Wurf, 1987). The self-concept is therefore interpreted as a product of knowing and experiencing the self, that, irrespective of its structure, is everchanging and ever influencing behaviour. As Markus and Wurf (1987, p306) explain, it is a "*continually active, shifting array of accessible self-knowledge*" (Markus and Wurf, 1987, p306), the content of which is activated by context. Importantly, there is an inherent motivation to maintain, enhance, and protect the positivity of the self-concept (Taylor and Brown, 1988; Tesser, 1988; Greenwald, 1980; Rosenberg, 1979), which is linked to the pursuit of Personal Self-Esteem (PSE), Collective Self-Esteem (CSE), and to a positively differentiated Social Identity.

2.4 Identity

"*Identity refers to the definitions that are created for and superimposed on the self. These definitions refer to concepts about who the person is and what the person is like. Identity can be analyzed as consisting of an interpersonal aspect (a set of roles and relationships), a potentiality aspect (a concept of who the person might become), and a values aspect (a set of values and priorities)*"

(Baumeister, 1997, p682).

To expand on Baumeister's (1997) definition, identity refers to an individuals' understanding and interpretation of their physical, psychological, and interpersonal characteristics, which are not entirely shared by another person. Likewise, identity refers to an individual's 'sense of self' in terms of their affiliations with social groups (gender, ethnicity) and their social roles (parent, professor). Identities provide aggregate definitions of self (Baumeister, 1997). These differ to the previously discussed self-concept, as the self-concept is wholly contained within the individual's mind, while identities are in part, socially defined.

Identity also involves a sense of continuity and differentiation; a sense of being the same person across time, while being different from others (e.g. *I am the same person today as I was yesterday, and I am different from other people*) (Baumeister, 2011). Identity may also exist independent of the individual for whom it describes. Newlyweds may discuss the name of a child before it has been conceived. And once it has, they might decorate its room, buy it clothes and soft toys, create a home for it before it is born. They might even ascribe qualities to the unborn child based on those relating to each parent, distinguishing it from other children the parents are familiar with. The baby's identity therefore exists before birth, as it socially defined by its parents. The same is also true of those who have lived and since passed. An individual may be identified through the memories of others, by the possessions they left behind, the papers they published, and their names on headstones, urns, and other burial markers.

Thus, identities are dynamic, changing and developing over the course of a person's life. Identities are both *personal* – in the sense that they may be defined by the characteristics unique to the individual – and *shared* – in the sense that they are socially constructed. This definition of identity is isomorphic with the definition of the self-concept. But this is due to identities being nested *within* the self-concept, made salient by the prevailing circumstances that the individual finds themselves in at any given time. The self-concept is therefore home to multiple identities, both personal and social.

Here, *personal identity* refers to the personal features or specific character attributes of the individual. It includes their goals, values, beliefs, and individual narrative, that when combined, provide them with a sense of uniqueness, separate from others (Schwartz, Zamboanga, and Weisskirch, 2008). It is the "*social classification of an individual into a category of one*" (Owens *et al.*, 2010, p479). This form of identity provides the basis for social identities, as an individual unable to be recognised from one occasion to another as the same person, is unable to develop social relationships (McCall and Simmons, 1966). What is meant by *social identity* is discussed in the next section.

2.5 Social Identity

Tajfel (1978, p63) defines social identity as "*that part of an individual's self-concept which derives from his* [or her] *knowledge of his* [or her] *membership of a social group (or groups) together with the value and emotional significance attached to that membership.*" That is to say, social identities are formed when a social group or category into which an individual falls, and to which the individual feels they belong, provides them with a sense of who they are based on the defining characteristics of that group (Hogg, Terry, and White, 1995). For instance, if an individual identifies with their gender group, then the defining characteristics of that group (as understood by the individual) will come to represent the characteristics of the individual. However, they need not be so enduring as gender. A teacher dividing her class into two groups (Groups A and B), may cause temporary social identities within her students, defined by their belonging to either Groups A or B. These groups and their associated identities no longer exist once the class has been dismissed and the students no longer categorise themselves as belonging to Group A or B.

Tajfel's (1978) conceptualisation of social identity thus differs from the previously discussed personal identity, which is understood to be specific to the individual; to the category of one. It is also a definition that is specific to Social Identity Theory (SIT; Tajfel and Turner, 1979), and so it differs from alternative forms of social identity, including *role identity (*Stryker, 1968). According to Owens *et al*. (2010, p479), a role identity as it relates to Identity Theory is "*as a social position a person holds in a larger social structure, considers self-descriptive, and enacts in a role relationship with at least one other person.*" Thus role identities reflect a role membership (e.g. parent, professor) that is in relation to another person or persons that occupy a complementary role (e.g. child, student). Identities in this respect are based on taking the role of the other (Oyserman *et al*., 2012). To explain how role identities differ to Tajfel's definition of social identities, Hogg *et al*. (1995, p255) explain that "*identity theory* [role identity] *is principally a microsociological theory that sets out to explain individuals' role-related behaviors, while social identity theory is a social psychological theory that sets out to explain group processes and intergroup relations*." Thus role identities refer to interactions of people in society, governed by their roles within it, while social identities form the basis for understanding the psychology of intergroup relations. They also differ in their source of identification. For role identities, identities are prescribed by the culture of the time, relying on others to provide a suitable 'other' (e.g. a teacher requiring a student to

fulfil their identity as a teacher), while social identities may be temporary manifestations, that only the individual is aware of[3].

Throughout the thesis, where the term "identity" is used, it refers specifically to social identities as defined by Tajfel (1978) and as it relates to Social Identity Theory (Tajfel and Turner, 1979).

2.6 Personal Self-Esteem (PSE)

The topic of *self-esteem* is argued to be one of the most researched subjects in psychology (Eromo and Levy, 2017; Mruk, 2006; Rhodewalt and Tragakis, 2003; Crocker and Wolfe, 2001; Fein and Spencer, 1997; Abrams and Hogg, 1988; Tesser, 1988). By 2001 approximately 18,000 studies had been published on the subject (Baumeister, 2001). This increased to 24,000 by 2017 (Eromo and Levy, 2017). Self-esteem is said to be one of the top 3 covariates in personality and social psychology, the other two being gender and negative affectivity (Rhodewalt and Tragakis, 2003. As to why, Markus (1980, p127) explains "*the notion that we will go to great lengths to protect our ego or preserve our self-esteem is an old, respected, and when all is said and done, probably one of the great psychological truths.*" It is inherent to us all.

This "psychological truth" is owed in part to the effect that self-esteem has on everyday life. Those with high self-esteem typically experience greater life satisfaction (Martínez-Martí and Ruch, 2017; Diener and Diener, 2009), greater positive affect (Wood, Heimpel, and Michela, 2003; Cheng and Furnham, 2003; Martínez-Martí and Ruch, 2017), and less anxiety (Greenberg et al., 1992). While those with low self-esteem are at greater risk of depression (Dori and Overholser, 1999), with it being linked to self-harm and suicidal ideation (McGee, Williams, and Nada-Raja, 2001). Ultimately, people are motivated to achieve positivity within their self-concepts, and so

---

[3] To provide an example. Student A transfers to UEA halfway through the semester. Late into their first seminar, Students B and C enter the room. Students B and C apologise for their tardiness, explaining that today is their first day. To the extent that Student A perceives himself to be similar to Students B and C, owing simply to the shared characteristic of "recently transferred students", and to the extent that Student A feels this commonality defines some aspect of who he is, he may develop a temporary social identity that includes Students B and C, without B and Cs awareness. Thus the source of identity is categorisation as a group member. It is not society, as per role identities. (This example initially included only Students A and B. Turner (1982, p15) defines a social group "*as two or more individuals who share a common social identification of themselves or, which is nearly the same thing, perceive themselves to be members of the same social category*", which means Students A and B would constitute a social group. However, Hogg (2006, p116-117) argues against dyads constituting a group, noting that at least three members are required for group norms to be inferred, and that group processes such as majority social pressure cannot exist where a majority cannot be formed.)

there is motivation to achieve positive self-esteem (Taylor and Brown, 1988; Tesser, 1988; Greenwald, 1980; Rosenberg, 1979).

The term self-esteem was first introduced to the field of psychology by William James (1890)[4]. He defined self-esteem in terms of action-based competencies. James (1890 / 1983, p296) writes:

> "*With no attempt there can be no failure; with no failure, no humiliation. So our self-feeling in this world depends entirely on what we back ourselves to be and do. It is determined by the ratio of our actualities to our supposed potentialities; a fraction of which our pretensions are the denominator and the numerator our success: thus,*
>
> $$Self\text{-}Esteem = \frac{Success}{Pretentions}$$
>
> *Such a fraction may be increased as well by diminishing the denominator as by increasing the numerator.*"

From this early definition, self-esteem was viewed as the product of a person's ability to actualise their pretensions. However, this extended only so far as their pretensions were self-defining:

> "*I, who for the time have staked my all on being a psychologist, am mortified if others know much more psychology than I. But I am contented to wallow in the grossest ignorance of Greek. My deficiencies there give me no sense of personal humiliation at all. Had I 'pretensions' to be a linguist, it would have been just the reverse.*"
>
> (James, 1890/1983, p. 296)

Therefore self-esteem was viewed not only as the product of actualising one's pretensions (or their ratio of successes to failures), but of doing so in domains of self-importance or self-

---

[4] John Milton (1642 / 1950) is credited with its introduction to the English-speaking world. He used it to describe something associated with good moral character. In his *Apology for Smectymnuus*, Milton (1642 / 1950) defends his own moral character by arguing that men should be chaste, as he was (adhering to his own convictions). He writes of its own character: "*a certaine nicenesse of nature, an honest haughtinesse, and self-esteem either of what I was, or what I might be, (which let envie call pride)* (Milton, 1642 / 1950, p565). To Milton, self-esteem is a positive term, that he links to his past and future selves. It describes "*a disposition that might prevent one from falling into a sinful kind of profane love*" (Konrath and Anderson, 2011, p158). Later, Milton used the term again in Book VIII of *Paradise Lost*, where, upon Adam confessing to Raphael his *weakness* for Eve, Raphael urges Adam to control his passion. Raphael appeals to Adam's "*self-esteem, grounded on just and right*" (Milton, 1667 / 2008, p255), suggesting that it will help Adam to avoid 'profane love'. To Milton then, self-esteem is concerned with morality, while to James (1890) it is a trait based on one's action-based competencies.

definition. This definition is closely related to Bandura's (1977) Self-Efficacy Theory (*see* Gecas, 1989, *for a review*).

Today, self-esteem is broadly defined as "*a person's evaluation of self*" (Baumeister and Twenge, 2003, p332). When an individual evaluates their own performance as either good or bad, their self-evaluation is either positive or negative, depending on their performance. Thus, self-esteem is both an evaluation of oneself (an evaluation of one's self-concept) and reference to how one feels about oneself (informing the self-concept). It is also an *affective* evaluation of oneself; representing the extent to which the individual *likes* or *dislikes* themselves (Neiss, Sedikides, and Stevenson, 2002). However, this is a broad overgeneralisation that fails to take into account the many different forms of personal self-esteem. For example, self-esteem may be *global*, representing an overall attitude toward oneself; a level of self-acceptance and self-respect that is described as 'content-free' (Rosenberg, Schooler, and Schoenbach, 1989). But self-esteem may also be *domain-specific*, relating to one's affect-laden evaluation of specific domains or areas of function, e.g. athleticism, physicality, interpersonal competence, etc. These two forms of self-esteem (*global* and *domain-specific*) are to some extent predetermined by genetics (Neiss, Sedikides, and Stevenson, 2002), with the former (*global*) related to psychological wellbeing, and the latter (*specific*) to behaviour (Rosenberg *et al.*, 1995). There is also a third form that is related to behaviour, *state self-esteem*, which is situation or context dependent (Brown and Marshall, 2006).

Though an individual's evaluation of their own abilities, competencies, and achievements are important to their self-esteem, so too are their beliefs about how others perceive them (Leary and Baumeister, 2000). Leary *et al.* (1995; Leary and Baumeister, 2000) suggest that self-esteem operates as a 'sociometer', alerting the individual to the possibility of social exclusion, and thus helping to maintain inclusion. This perspective is supported in part by the fact that self-esteem is often derived from traits that lead to social acceptance, such as likeability, attractiveness, and competence (Baumeister and Twenge, 2003; Leary and Baumeister, 2000). Baumeister (1997), citing Kagan's (1981) book *The Second Year: The Emergence of Self-Awareness*, explains that, as the words "good" and "bad" are among the most frequent to be spoken by young children, and as the notion of one's *goodness* or *badness* by comparison to others develops during our second year of life, the habit of self-evaluation by comparison to others takes root during infancy and remains pervasive throughout life.

In the present thesis then, personal self-esteem is defined as an affectively laden evaluation of self, that is derived from both personal and social sources. Yet despite being socially derived, existing measures of global, domain, and state self-esteem are unsuitable for measuring the self-

esteem derived from group memberships or social identities (Rubin and Hewstone, 1998). Instead, one must measure social identity-related self-esteem as Collective Self-Esteem.

2.7 Collective Self-Esteem (CSE)

Collective Self-Esteem (CSE) is self-esteem as it relates to an individual's social identities or group memberships (Crocker and Luhtanen, 1990). It is broadly defined as "*the value placed on one's social groups*" (Luhtanen and Crocker, 1992, p303). The benefits of High CSE are similar to those of High Personal Self-Esteem, e.g. psychological wellbeing. For example, among school councillors, those with High CSE relating to their profession are less likely to report professional burnout (emotional exhaustion, negative feelings toward others, negative feelings of self-competence) (Butler and Constantine, 2005). Likewise, the development of CSE within students relating to their campus groups, predicts greater academic and social adjustment, indicating a link between academic CSE and academic success. In terms of race-related CSE, High Asian-ingroup CSE is associated with greater psychological wellbeing (Cho *et al*., 2018; Crocker *et al*., 1994), while Low Asian-ingroup CSE is related to greater alcohol intake and signs of depression (Pedersen *et al*., 2013). Therefore, as with personal self-esteem, High CSE is related to positive affect, while the inverse is true of Low CSE.

CSE is typically measured using Luhtanen and Crocker's (1992) Collective Self-Esteem Scale (CSES), which is a multicomponent measure comprised of four subdimensions: I. Membership CSE (one's worthiness as an ingroup member), II. Private CSE (one's judgement of the ingroup), III. Public CSE (one's judgement of how *others* evaluate the ingroup), and IV. Importance to Identity CSE (importance of the group to one's self-concept). These four dimensions are based on Breckler and Greenwald's (1986) Ego-Task Analysis Framework, which provides "*a general framework for analyzing the interaction of situation and personality in determining behavior*" (Breckler and Greenwald, 1986, p146). This framework posits four motivational facets of self, each of which are associated with self-evaluation and to some degree the collective self. The four motivational facets include: I. the *diffuse self* (i.e. the personal self without relation to others, motivated solely by hedonic satisfaction), II. the *public self* (i.e. the self in relation to significant others, associated with self-presentation and impression management), III. the *private self* (i.e. personal identity, as it is now referred to, focused on individual achievement), and IV. the *collective self* (i.e. the self as it relates to reference groups, focused on collective achievement) (Breckler and Greenwald, 1986). However, as Luhtanen and Crocker (1992) note in their

development of the CSES, the Ego-Task Analysis Framework is concerned more with the personal aspect of the self in relation to others, rather than the collective aspect in relation to the self. The CSES was therefore developed based on the Breckler and Greenwald's (1986) motivational facets of self, but with greater emphasis on the collective *within* the self.

To sum, CSE is the *value* placed on one's social groups. It represents self-esteem as it relates to social identities. The benefits of High CSE are akin to those reported for High Personal Self-Esteem, such as greater life satisfaction and wellbeing, and greater adjustment and resilience. In contrast, Low CSE has detrimental effects, causing greater negative affect.

2.8 Intergroup Bias and Outgroup Derogation

Intergroup bias is a part of human nature. It benefited our evolution, and as such, is a part of our genetic makeup (Neuberg, Kenrick, and Schaller, 2010; Lewis and Bates, 2010; Neuberg and Cottrell, 2006; Cottrell and Neuberg, 2005; Mahajan *et al.*, 2011). Neuberg and Cottrell (2006, p164) suggest that "*contemporary prejudices may be products of adaptations engineered by natural selection to manage the threats posed to ancestral humans by their social environments*". To survive, humans adapted to become 'ultrasocial', forming coalitions and living in small groups to acquire and protect critical resources, and to succeed in fundamental functions such as self-protection and childbirth. But with group living came greater risks (e.g. physical harm, the spreading of diseases), and so adaptation to ultrasociality attuned our ancestors to recognise threats in others. Thus, according to Neuberg and Cottrell (2006), intergroup bias is the result of the evolutionary functions of emotions as they relate to the threats posed by outgroups.

In contemporary social psychology, intergroup bias is broadly defined as "*bias in favor of in-groups at the expense of out-groups*" (Hewstone, Rubin, and Willis, 2002, p575). To be more specific, it refers to "*the systematic tendency to evaluate one's own membership group (the in-group) or its members more favorably than a nonmembership group (the out-group) or its members*" (Hewstone *et al.*, 2002, p576). Intergroup bias includes both favouritism for the ingroup (ingroup bias) and negativity toward the outgroup (outgroup derogation). These two-sides of the same intergroup bias coin may be expressed as pride, loyalty, and perceived superiority of the ingroup (ingroup bias), and stereotyping, discrimination, and prejudice toward the outgroup (outgroup derogation) (McDoom, 2012; Hewstone *et al.*, 2002). But ingroup favouritism does not necessarily predict outgroup derogation.

The apparent reciprocity of ingroup bias – outgroup derogation began with Sumner (1906). In describing *Ethnocentrism* (the positive evaluation of the ingroup relative to an outgroup) Sumner (1906, p12) writes: "*a differentiation arises between ourselves, the we-group, or in-group, and everybody else, or the others-group, out-groups*". He goes on to note that:

> "*The relations of comradeship and peace in the we-group and that of hostility and war towards others-groups are correlative to each other… Loyalty to the group, sacrifice for it, hatred and contempt for outsiders, brotherhood within, warlikeness without – all grow together, common products of the same situation.*"

> (Sumner, 1906, p12)

But as Brewer (2017) explains, intergroup bias is a difference in evaluation, affect, or treatment of the ingroup relative to the outgroup, providing three types of intergroup bias. Type I refers to bias *for* the ingroup, while remaining indifferent to the outgroup; Type II is bias *against* the outgroup, while indifferent to the ingroup; and Type III refers to bias in favour of the ingroup *and* against the outgroup (Brewer, 2017). What Sumner (1906) describes as being "*correlative to each other*" is certainly possible, as ingroup bias and outgroup derogation may occur simultaneously. But it reflects only one of three possible types of intergroup bias.

In the present thesis, outgroup derogation (or derogation more generally) is explored from two unique perspectives. First, in Stream I it is interpreted as a possible explanation for the dissociation effect as observed in the reference group literature, i.e. ingroup consumers dissociative from an outgroup-associated product as a means of outgroup-derogation. Second, in Stream II derogation is explored less in terms of *outgroup* derogation and more in terms of derogation toward the source of threat – the source being identity-threatening scientific publications. Therefore, derogation is explored here without the possibility for ingroup favouritism, and so the research adheres to Type II of Brewer's (2017) typology. It is also important to note that outgroup derogation is defined here as "*discrimination against the outgroup, wherein the outgroup is treated unfairly… driven by greater activation of negative evaluative processes for the outgroup*" (Brewer, 2017, p92). Where Stream II is concerned, this definition holds true, though substituting "outgroup" for "source of threat".

2.9 Summary

The purpose of the chapter was to put forth an understanding and interpretation of the core concepts employed within the thesis. To summarise these concepts, the self, self-concept, and identity (both personal and social) are nested within one another. Identities are nested within the broader self-concept, and the self-concept is then within the self (Oyserman, Elmore, and Smith, 2012).

The psychological *self* is therefore the broadest of the three. It refers to the agentic individual capable of understanding itself as *object* distinct from others, and *subject* in answer to the question "*who am I?*" This reflexivity develops the *self-concept*. If the self is composed of *I* as object and *me* as subject, then the self-concept is the content of *me*. It refers to the individuals beliefs about who they are based on everything they know about themselves; everything in answer to the question "*who am I?*" The self-concept is a dynamic, malleable, multifaceted, and multidimensional structure, the content of which is determined by the situational context.

Identities are nested within this concept of self. The individual's personal identity refers to their personal character attributes such as goals, values, and beliefs, that when combined set them apart from others, providing them with a sense of individuality. Likewise, the individual's social identities contribute to their individuality, also. Developed from their knowledge of self as ingroup member, their social identity is based on their identification with an ingroup or category, which provides them with a self-image that is informed by the characteristics that define the ingroup relative to an outgroup. These ingroups or social identities are an important source of group-based self-esteem referred to as Collective Self-Esteem or CSE. With social identities being nested within the self-concept, and with there being an inherent motivation to achieve positivity for the self-concept, there is likewise motivation to achieve positive CSE. Finally, outgroup derogation, defined as discrimination against the outgroup or source of threat, is one possible outcome of possessing a social identity, representing the individual's bias against the outgroup relative to their own ingroup. These definitions and interpretations are carried throughout the thesis.

CHAPTER 3
THEORETICAL FRAMEWORK

3.1 Introduction

This chapter provides an overview of the Social Identity Approach, which operates as the theoretical framework for the thesis. The Social Identity Approach refers to a family of social psychological theories on the relationship between the self-concept and intergroup behaviour, most notably *Social Identity Theory* (SIT; Tajfel and Turner, 1979) and *Self-Categorisation Theory* (SCT; Turner *et al.*, 1987). The objective is to provide a clear interpretation of the approach and thus the framework within which the forthcoming studies were conducted.

The chapter begins by discussing Social Identity Theory (SIT) and the individual's motivation to maintain, protect, and enhance the positivity of their social identities. This is followed by discussion of Self-Categorisation Theory (SCT), which provides an explanation of the cognitive processes underlying SIT. The review also includes discussion of Social Identity Threat, the three most common strategies for responding to threat, and a taxonomy of threat types. The aim here is to provide an understanding of when the individual will feel their social identity is under threat, and how feelings of threat result in their depersonalisation from individual to ingroup member. This includes the depersonalisation of their attitudes and behaviours for the protection of their threatened social identity. The chapter concludes with discussion of Self-Affirmation Theory (SAT), which, though not directly related to the Social Identity Approach, does provide some insight into how best to mitigate the effects of social identity threat.

The chapter is followed by a review of the consumer behaviour literature as it relates to Identity-Threatening Consumption, covering Streams I and II.

3.2 Social Identity Theory (SIT)

> *"In our judgements of other people, in forming stereotypes, in learning a second language, in our work relations, in our concern with justice, we do not act as isolated individuals but as social beings who derive an important part of our identity from the human groups and social categories we belong to; and we act in accordance with this awareness."*
>
> (Tajfel, Jaspars, and Fraser, 1984, p5)

It was explained in the previous chapter that social identities are formed when a social group or category into which an individual falls, and to which that individual feels they belong, provides them with a sense of who they are based on the defining characteristics of the group (Hogg, Terry, and White, 1995). It is when the group comes to define the individual. These groups or categories may be permanent (e.g. gender, race), semi-permanent (e.g. profession-related), or temporary (e.g. splitting a class of students). Whatever their permanence, if the individual identifies with the group, then that group will come to influence the way the individuals thinks, feels, and behaves.

The term "social identity theory" was first coined by Turner and Brown (1978) to describe the ideas and descriptions proposed by Henri Tajfel, later detailed in his and John Turner's classic publication: *An Integrative Theory of Intergroup Conflict* (Tajfel and Turner, 1979; 1986). The development of SIT was inspired by early experiments employing the minimal group paradigm (e.g. Tajfel *et al.*, 1971; Billig and Tajfel, 1973). This paradigm refers to the formation of groups along arbitrary lines, so as to assess the minimal conditions for intergroup behaviour to emerge. Within this paradigm, a group is said to be minimal to the extent that it possess no prior history; that its members have not interacted face-to-face; that anonymity is preserved throughout; and that no responses can benefit an individual personally – all profits or losses are at the group level (Diehl, 1990). It was using this paradigm that Tajfel *et al.* (1971) engaged participants in resource-allocation tasks, and found that ingroup members (belonging to a group based on arbitrary criteria) maximised the profit of the ingroup relative to the outgroup. Participants engaged in intergroup bias as a result of categorisation alone (Tajfel *et al.*, 1971). To explain this behaviour, Tajfel (1972) suggested a causal sequence of processes:

social categorisation –> social identification –> social comparison –> positive distinctiveness

That is, categorisation as an ingroup member (*social categorisation*) leads the individual to define themselves in terms of the ingroup (*social identification*), and to evaluate the ingroup relative to the outgroup (*social comparison*). This incorporation of the ingroup into the self-concept, means

the ingroup must be positively differentiated relative to a relevant outgroup, i.e. it must be positively distinct; compare positively. As Turner (1982, p34) explains:

> *"Positively discrepant or favourable comparisons between the ingroup and an outgroup provide ingroup members with high subjective status or prestige and thus positive social identity, whereas negatively discrepant or unfavourable comparisons provide low prestige and negative social identity. Thus, the need for positive social identity motivates a search for, and the creation and enhancement of, positive distinctiveness for one's own group in comparison with other groups."*

(Turner, 1982, p34)

Being positively distinct in terms of status or prestige, provides the individual with a positive social identity, and in turn positive Collective Self-Esteem (CSE). Regarding the minimal group studies, the point of differentiation was the allocation of points to the ingroup rather than the outgroup. In reality, it may be any dimension of value or importance that is agreed upon by both groups (ingroup and outgroup). If the ingroup is comprised of more intelligent members, then intelligence will be the point of differentiation. If its members are more experienced, then experience will be. To explain the role of Collective Self-Esteem, discussion turns to the *Self-Esteem Hypothesis (SEH)*.

3.2.1   The Self-Esteem Hypothesis (SEH)

The following subchapter provides support for an assertion made in 2.7 Collective Self-Esteem (CSE), which argued against the use of personal self-esteem as a measure of self-esteem relating to social identities, and recommended instead Collective Self-Esteem or CSE. This subchapter also highlights how the present thesis, in particular Stream II, is related to Corollary II of the Self-Esteem Hypothesis.

The *Self-Esteem Hypothesis* (SEH) is based on the proposition that "*where some social category contributes to defining the self, the need for positive self-esteem should motivate a desire to evaluate that category positively*" (Turner, 1982, p33), and as such "*intergroup discrimination is motivated by* [the] *individuals desire to achieve and maintain positive self-esteem*" (Abrams and Hogg, 1988, p317-318). This line of thinking provides the foundations for SIT as it relates to self-esteem.

Table 1 displays the Assumptions and Principles of Social Identity Theory, as reported in Tajfel and Turner's (1979) formalisation of SIT. Assumption I is that people strive for self-esteem. Assumption I is the basis for Principle I, which states that people strive to achieve or maintain positive social identities. Principles 2 and 3 state that positive social identity is obtained through positive comparisons with the outgroup, and where unfavourable comparisons are made, the ingroup member is motivated to "make" the ingroup positively distinct (through intergroup bias). Therefore, self-esteem may be considered both the driving force behind social comparison (and intergroup bias) as well as its outcome. This forms the basis of the Self-Esteem Hypothesis.

Table 1 The Assumptions and Principles of Social Identity Theory

	Assumptions		Principles
1	*"Individuals strive to maintain or enhance their self-esteem: they strive for a positive self-concept.*	1	*Individuals strive to achieve or maintain positive social identity.*
2	*Social groups or categories and the membership of them are associated with positive or negative value connotations. Hence, social identity may be positive or negative according to the evaluations of those groups that contribute to an individual's social identity.*	2	*Positive social identity is based to a large extent on favorable comparisons that can be made between the in-group and some relevant out-groups; the in-group must be perceived as positively differentiated or distinct from the relevant out-groups.*
3	*The evaluation of one's own group is determined with reference to specific other groups through social comparisons in terms of value-laden attributes and characteristics. Positively discrepant comparisons between in-group and out-group produce high prestige; negatively discrepant comparisons between in-group and out-group result in low prestige.*	3	*When social identity is unsatisfactory, individuals will strive either to leave their existing group and join some more positively distinct group and/or to make their existing group more positively distinct."*

Adapted from Tajfel and Turner (1979, p40)

The Self-Esteem Hypothesis (Abrams and Hogg, 1988) views self-esteem (CSE) as both a dependent (the product of specific intergroup bias) and independent (as motivating factor) variable in terms of intergroup bias. Abrams and Hogg (1988) provide two corollaries to the SEH:

I. "Successful intergroup discrimination will enhance social identity, and hence self-esteem.

II. Low or threatened self-esteem will promote intergroup discrimination because of the 'need' for positive self-esteem."

(Abrams and Hogg, 1988, p320)

The majority of studies have investigated (and supported) Corollary I, with less evidence supporting Corollary II (Abrams and Hogg, 1988; Rubin and Hewstone, 1998; Houston and Andreopoulou, 2003). This has resulted in what Martiny and Rubin (2016) describe as an "explanatory vacuum". But the lack of support for Corollary II may be due to the lack of valid methods used to investigate the hypothesis. Specifically, the *type* of intergroup bias and self-esteem being manipulated and measured. For instance, the SEH hypothesises for a specific type of intergroup bias, namely social competition (Turner, 1975), a product of social comparison. Turner (1975, p10) notes:

> *"It could be said that there is a process of competition for positive identity, for each group's actions are attempts not at some absolute degree of value but at positively valued differentiation and thus are relative to the other group's actions. Mutual comparison compels continuous reciprocity in the standards each group sets itself and ensures consequently a spiralling rivalry until some final 'inequity.'"*

That is to say, the type of intergroup bias named by the SEH, refers to competition for social status or prestige between groups, arising from mutual, yet asymmetrical intergroup differentiation; each group vying for the positive-end of a valued dimension (e.g. each group competing on the dimension of *Competence*, believing their group to be *Highly Competent* compared to the other). In fact SIT makes no predictions regarding the motivation for self-esteem as it relates to any other form of intergroup bias (e.g. realistic competition, consensual discrimination) (Martiny and Rubin, 2016). Thus, a situation in which the ingroup is unfavourably compared to the outgroup, may lead to loss of self-esteem that is responded to with outgroup derogation (Principle 3, above).

The SEH also refers to a specific *type* of self-esteem. It was noted previously that neither global, state, nor domain-specific personal self-esteem are suitable for measuring self-esteem at the group level. Instead, Collective Self-Esteem (CSE) is preferable. However, Martiny and Rubin (2016) note that while failures in testing the self-esteem hypothesis have in large part been due to the wrong type of self-esteem being measured, they note the wrong type of CSE being employed is also to blame. They argue that failure to support Corollary II is owing to the use of *global* CSE, which captures self-esteem derived from *all* groups that the individual belongs to. Instead, they recommend *specific collective state self-esteem* or as it is referred to here, *specific CSE*. Specific CSE refers to the current self-esteem that is specific to the ingroup (e.g. gender-derived CSE). Therefore, in addition to specifying a type of intergroup bias that will promote intergroup discrimination (social competition), SIT also specifies a type of self-esteem that motivates discrimination (specific CSE).

Based on the above, the two corollaries of the SEH have been updated to represent self-esteem as both motive and effect:

I. <u>The Self-Esteem Motive</u>: Among people who identify with their in-group and who are sufficiently confident to engage in direct group enhancement, the need for specific collective state self-esteem motivates socially competitive behaviour for in-group status. Depending on specific social norms, this behaviour may take the form of intergroup discrimination, and it is likely to be most apparent among group members who had initially high collective self-esteem and have suffered an identity threat. (Martiny and Rubin, 2016, p25)

II. <u>The Self-Esteem Effect</u>: Intergroup behaviour that leads to an improvement in in-group status will elevate the specific collective state self-esteem of in-group members who identify with their group. (*ibid.*, p26)

While Martiny and Rubin (2016) concede their reformulation is perhaps not as neat as Abrams and Hogg's (1988), they argue the new hypothesis captures the complexities underlying the principles of SIT (Martiny and Rubin, 2016). Within Streams I and II of the thesis, it is expected that dissociation within Stream I and science discrediting within Stream II will be the result of social competition originating from social comparison, motivated by gender-specific CSE. Therefore, with reference to Abrams and Hogg's (1988) SEH, Streams I and II will fall within Corollary II. With reference to Martiny and Rubin's (2016) reformulation, the two Streams will fall within Corollary I.

3.3 Self-Categorisation Theory (SCT)

Self-Categorisation Theory (SCT; Turner *et al.*, 1987) was developed to explain the social cognitive processes underlying *Social Identity Theory* (SIT; Tajfel and Turner, 1979). While SIT may be described as the "*social identity theory of intergroup relations*", SCT may be thought of as the "*social identity theory of the **group***" [bold added] (Turner *et al.*, 1987, p42).

SCT explains how people categorise themselves and others in much the same way as they categorise objects, events, and abstract ideas, and then develop concepts of each. To provide an example, each person will have a concept of "dog", which includes their prototype for dog, their theory of the essence of dogness, and their understanding of the various examples of dog within that category, ranging from the large English Mastiff down to the pocket-sized Chihuahua.

Likewise, people develop conceptualisations of social objects, such as "gardener", "lecturer", or "grandmother". These social categorisations are used to partition people into discrete subsets, as doing so saves on cognitive processing. As Howard (2000, p368) explains, people "*process information as cognitive misers*" (Howard, 2000, p368). To provide an example of this miser-like processing, Hogg and Abrams (1988) refer to the processing of colours within a rainbow. They note that rainbows are perceived as seven discrete bands of colour, but that what exists in reality is a continuous spectrum of light. Through categorisation the perceiver accentuates the similarities in the different wavelengths, and groups them together into more manageable categories, simplifying perception.

In terms of the social environment, categorisation entails perceiving people in terms of specific social categories, rather than seeing them as individuals, i.e. depersonalising them as members of specific categories (Ellemers *et al*., 2003). The similarities of those in the same categories are accentuated (differences are reduced), and so too are the differences between those of different categories. To provide another example, three men entering a classroom, one after the other, may be perceived by the students who are already occupying the room as comprising a group. This assumption is arrived at because the differences between the students and the three men in suits are accentuated, while the similarities within the student group and within the group of three suited men, are accentuated, also. This is referred to as the meta-contrast principle[5] (Turner *et al*., 1987). The three men are not perceived as three individuals who by pure happenstance entered the wrong room one after the other. Instead, they are depersonalised to form a collective whole. Likewise, the class of students may be depersonalised by the three men, who perceive the class to be filled with students studying the same subject, rather than several unrelated groups occupying a free room. The situation itself gives rise to categorisation via perceptual accentuation. This is the driving force behind intergroup bias as explained by SIT as it forms the basis for perceiving ingroups relative to outgroups.

Crucially, social categorisation does not rely on a limited set of necessary attributes or dimensions to define a category, such that the category for "student" does not describe only those within a specific age bracket or of a specific appearance. Instead, a category is defined by a fuzzy set of attributes to which members of the category or ingroup have a 'family resemblance' (Hogg, 2001). That family resemblance is based on the ingroup members similarity to the category prototype – a prototype that no individual perfectly embodies given the *fuzzy* set of attributes defining it.

---

[5] The Meta-Contrast Principle (Turner *et al.*, 1987, p47) states that a collection of stimuli (e.g. people) will be perceived as representing an entity (e.g. social group) to the extent that the differences between those stimuli (*intra*group differences) are less than the differences between the collection and other stimuli (*inter*group difference). Thus a meta-contrast ratio is produced (mean *intra*group differences / mean *inter*group differences), providing the basis for ingroup and outgroup categorisation.

Instead, the prototype defines and prescribes the properties of group membership (e.g. norms and goals, attitudes, behaviours, traits, characteristics, etc.), rendering it distinct and high in entitativity. The categorisation of self (*self-categorisation*) or others (*social categorisation*) causes a depersonalisation effect, the topic of the following subsection.

3.3.1   Prototype-Based Depersonalisation and Referent Informational Influence

According to SCT, prototype-based depersonalisation (*depersonalisation* for short) is the cognitive-perceptual outcome of the categorisation process. Applied to the self, depersonalisation of self-perception is defined as "'*the tendency to perceive increased identity between self and ingroup members and difference from outgroup members*" (Turner and Oakes, 1989, p245). That is, depersonalisation refers to the assimilation of one's self-concept with the ingroup prototype (Hogg and Smith, 2007). This temporary redefinition of *self-as-ingroup-member* causes the individual to operate at the exclusion of their personal identity and perceive themselves prototypically; as an interchangeable member of the ingroup (Turner, 1991; Turner *et al.*, 1987). This includes redefining the self, such that the individual conforms to the attributes and dimensions that define the group or social identity (e.g. the groups norms and goals, attitudes, behaviours, traits, characteristics, etc.), so that as the individual becomes depersonalised, so too do their attitudes, behaviours, etc. This process of conformity through depersonalisation is said to be the key determinant of intergroup behaviour (Turner *et al.*, 1987; Turner and Oakes, 1989).

The conformity associated with SCT is described by *Referent Informational Influence Theory (RIIT)* (Hogg and Turner, 1987[a]; Hogg and Smith, 2007; Hogg and Reid, 2006; Smith, 2010). RIIT takes an alternative view to the *Dual-Processing Dependency Model* of social influence (Deutsch and Gerard, 1955) by eliminating the distinction between *normative influence* (i.e. conformity as it relates to social pressures and the need for acceptance) and *informational influence* (i.e. conformity as it relates to subjectively valid reasons to agree, e.g. evidence, justification, compelling arguments) (Abrams and Hogg, 1990). From the traditional dual-processing perspective, conformity is influenced by the surveillance by others causing pressure to comply, and uncertainty, causing certainty seeking. As Hogg and Turner (1987[a], p143) explain, the dual-processing model is based on people's dependence "*on each other for social acceptance and approval, and for validation of beliefs, perceptions and judgements which cannot be tested against physical reality*" (Hogg and Turner, 1987[a], p143). But RIIT suggests that conformity to group norms is a unitary process, that does not rely on social pressure (i.e. surveillance by others), but on a willingness and desire to conform to one's own ingroup prototype (Abrams and Hogg, 1990;

Turner, Wetherell, and Hogg, 1989; Hogg and Turner, 1987 [a]). This follows a three step process: I. self-categorisation, providing the foundations for social identity; II. discovery or establishment of group norms through observation of or interaction with other category members, or members of a relevant outgroup; and III. the assignment of norms to self (Abrams and Hogg, 1990; Smith, 2010). But as to whether or not this process takes place depends in-part on the *salience* of the ingroup.

3.3.2 Social Identity Salience

The category or group membership (social identity) that emerges in any given situation will depend on its salience (Oakes, 1987; Turner *et al.*, 1987). SCT argues that salience is a function of the perceivers cognitive *accessibility* x the *fit* between the stimulus input (person or persons) and the specifications that describe a category (the perceivers stereotype for a group).

The formula of *accessibility x fit* is derived from Bruner's (1957) perceptual readiness. Bruner (1957, p123) argues that "*perception involves an act of categorization*", such that a stimulus is processed based on the cues it elicits, which allows for that stimulus to be categorised and subsequently identified. But in order for a stimulus to be categorised, a) the stimulus must possess characteristics that allow for it to be categorised and identified, and b) a category must exist within the perceiver for the stimulus characteristics to cue. Hence, *accessibility* refers to the readiness with which a stimulus is identified in terms of a category, and *fit* refers to the degree to which the stimulus matches the specifications of that category (Blanz and Aufderheide, 1999). SCT argues the salience of a particular *social* category (a category of people) is a function of *accessibility x fit* (Oakes, 1987; Oakes, Turner, Haslam, 1991).

SCT states the accessibility of a category is informed by the individual's "*past experiences, present expectations and current motives, values, goals and needs*" (Turner, 1999, p12). These are each organised on an internal hierarchy of relevance, usefulness, and likelihood of being confirmed in reality. Thus accessibility is determined by the category's relative centrality (importance), and its immediate emotional or significant value. The greater the frequency that a category is employed, the greater the accessibility of that category. Indeed, certain categories such as gender are presumed to be *always on* (van Knippenberg, Twuyver, and Pepels, 1994; Fiske and Neuberg, 1990). This increases both their speed of recall and the influence they have on shaping perceptions, behaviours, attitudes, judgements, and memory (Higgins, 1989). However, where a category is less accessible, its salience will depend on its situational activation (DeMarree,

Wheeler, and Petty, 2005; Oakes, 1987; van Twuyver and van Knippenberg, 1995; van Knippenberg *et al.*, 1994).

To further explain *fit* within SCT, Oakes (1987) makes the distinction between comparative and normative fit. *Comparative fit* refers to the extent to which those being observed share more similarities than they do differences with other categories (*intra*group differences are less than *inter*group differences, and thus the collection of stimuli are perceived as one; the metacontrast principle). For example, as it relates to gender, Hogg and Turner (1987)[b] report that when participants were placed in *inter*sex groups (vs. *intra*sex groups), they were more likely to define themselves by their gender and to accentuate their similarities to others within their gender group. The similarities between the outgroup gender were accentuated, defining them as a collective. While the differences between the ingroup and outgroup were accentuated, also, defining the ingroup relative to the outgroup. This leads to the perception of *us vs. them* or *us by comparison to them*. On the other hand, *normative fit* refers the degree to which the features of those observed (attitudes, behaviours, appearance, etc.) match the perceivers stereotypic expectations of the category (Oakes, 1987; Blanz, 1999). In Hogg and Turner's (1987)[b] study, the gendered appearance of each individual will have matched the perceivers stereotypic expectations of what the ingroup gender (vs. outgroup gender) will look like. The stereotype-confirming appearance of each individual will have made salient both the category of outgroup and the category of ingroup, resulting in greater self-stereotyping and the stereotyping of outgroup members.

To summarise, within SCT the salience of a category is a function of the perceivers category *accessibility*, and the person or persons *fit* within that category. To make salient a specific identity is to temporarily increase its accessibility. This may be achieved by playing music or viewing pictures that are related to the identity (e.g. Seger, Smith, and Mackie, 2009). Or it may involve discussing the ingroup or answering questions about it (e.g. Wojcieszak and Garrett, 2018; McLeish and Oxoby, 2011; Shih, Pattinsky, and Ambady, 1999; Haslam *et al.*, 1999; Ford, O'Hare, and Henderson, 2012; Steele and Aronson, 1995). One relatively successful method is to complete Luhtanen and Crocker's (1992) Collective Self-Esteem Scale (CSES) (Kelley, 2020; Wang and Dovidio, 2017; Cheryan and Bodenhausen, 2000). What is important to recognise though, is that some identities or categories are more salient than others. Kettle (2019) notes that two identities dominate the literature: gender and nationality. This is owing to them having wide-ranging relevance. However, gender identity has an additional benefit, as it also considered to be "always on". Thus, gender-derived social identity (hereafter "gender identity") is the focus of the thesis.

The effects of gender identity salience are wide-ranging. It influences the language that people use (Hogg, 1985; Palomares, 2004; 2008), their preferences for gender-associated activities

(Kelley, 2020), their athletic performance (Howard and Borgella, 2018), their math ability (Shih *et al.*, 1999; Neuville and Croizet, 2007), and their preference for intergroup bias (Hilliard and Liben, 2010) and conflict (Randel, 2002). Thus, improving the salience of what is already a highly accessible category membership, affects people's attitudes, behaviours, emotional responses, and perceptions, that conform to their stereotypic perceptions of their own gender prototype. What also influences the accessibility of a specific social identity, is threat.

3.4 Social Identity Threat

"*When groups feel threatened, their identities become more salient. An important and well-established consequence is intergroup bias.*"

(McDoom, 2012, p131)

Here, 'social identity threat' refers to *the potential or actual loss of status or prestige by the ingroup, when unfavourably compared to a relevant outgroup on an ingroup defining dimension*. To refer back to the Principles of Social Identity Theory (SIT), individuals strive for positive social identity (Principle I), which they achieve through social comparison with a relevant outgroup (Principle II). Failure to positively differentiate the ingroup from a relevant outgroup, leads the individual to either a) abandon the ingroup for a more positive group, or b) "make" the ingroup positively distinct (Principle III) (Tajfel and Turner, 1979). Failure to achieve either a or b risks the individuals group-based self-esteem, as that which has come to define them (the ingroup) is negatively perceived.

Individuals faced with social identity threat will engage in one of three identity management strategies: I. individual mobility, II. social creativity, or III. social competition[6]. The availability of each strategy is dependent on several factors: the permeability of group boundaries (the

---

[6] Tajfel and Turner's (1979) strategies represent the most likely reactions to social identity threat. That is, operating as either an individual or as an ingroup member. They also continue to be studied in contemporary research, despite being hypothesised 40 years ago (e.g. Jetten *et al.*, 2017; Cha *et al.*, 2020). However, alternative strategies exist. For example, when faced with social identity threat the individual may opt to enhance the salience of an alternative social identity, temporarily shifting their identification to another group, while not abandoning the identity-threatening group. To cope, the individual may imagine fantasy comparisons or stop comparisons altogether. They may even simply remove themselves from the situation (Ellemers, 1993). To contend with Tajfel and Turner's (1979) three strategies, Mummendey *et al.* (1999) suggest six strategies, while Blanz *et al.* (1998) suggest twelve. However, the original three strategies detailed here complement the threat taxonomy employed within this thesis.

individual may not be able to leave or psychologically distance themselves from the ingroup), the stability and legitimacy of the intergroup comparison (is the status of the ingroup likely to change and is the status hierarchy legitimate?), and the individuals level of identification with the ingroup (high identifiers are less likely to abandon an important ingroup, as their membership is self-defining) (Ellemers, Spears, and Doosje, 1997; 2002; Tajfel and Turner, 1979). These three strategies are discussed below. Included also is a taxonomy of social identity threats, including I. categorisation threat (the threat of being miscategorised), II. acceptance threat (the threat of not being accepted by the ingroup), III. distinctiveness threat (the threat caused by the ingroup and outgroup being indistinguishable on a valued dimension), and IV. value threats (threats to the value of a social identity). The thesis is primarily concerned with value (status) threats. But it is important to differentiate this threat-type from I – III, as doing so helps situate the thesis within the literature.

3.4.1 Strategy I: Individual Mobility

Individual mobility is referred to in Principle III of SIT: "*When social identity is unsatisfactory, individuals will strive either to <u>leave their existing group and join some more positively distinct group </u>and/or to make their existing group more positively distinct*" [underline added] (Tajfel and Turner, 1979, p40). Individual mobility (or *upward mobility*) is an individualistic strategy that includes both the actual and psychological distancing of oneself from a negatively evaluated ingroup (Jackson *et al.*, 1996; Tajfel and Turner, 1979). This strategy aims to improve the individuals position while the groups position itself remains unchanged. It is likely to be the first strategy considered when faced with social identity threat (Taylor and McKirnan, 1984). Examples of individual mobility include the actual distancing of the individual from the ingroup by joining a higher status group (Ellemers, Spears, and Doosje, 1997); the psychological distancing of the individual by decreasing their physical and behavioural similarities to the ingroup prototype (Jackson *et al.*, 1996); and the assertation that the ingroup suffers from too much variability to provide an accurate representation of any individual member (Ellemers and van Rijswijk, 1997). As Jackson *et al.* (1996, p241) explain:

> "*An individual may decrease identification with the in-group, decrease perceived similarity to the in-group, increase identification with a higher status out-group, increase perceived similarity to a higher status out-group, or use some combination of these strategies. To bolster psychological distancing from the in-group, an individual may decrease the amount of time spent thinking about and interacting with in-group members, change aspects of self to decrease physical and behavioural similarity to the in-group, and so on.*"

But as to whether or not any of the above methods are engaged in, will depend on the extent to which the individual identifies with the threatened ingroup. For highly identified ingroup members, to abandon the ingroup in either actual or psychological terms, is to abandon that which is self-defining, and so it is unlikely to be considered. But for low identified ingroup members, distancing themselves from a group with which they do not identify is far easier, and it saves them from being associated with the self-esteem threatening group. Furthermore, low identifiers will be motivated to ensure their distancing is known by others, as "*members of stigmatized groups are likely to be chronically treated in terms of their devalued group membership, regardless of their group commitment*" (Ellemers *et al.*, 2002, p174). Thus, strength of ingroup identification moderates the use of individual mobility.

The permeability of group boundaries (i.e. the ability to move between groups) will also influence whether or not individual mobility is engaged. Where group boundaries are impermeable (i.e. where the individual is unable to transfer to a higher status group), low identifiers may consider collective strategies such as *social creativity* and *social competition* (Lalonde and Silverman, 1994; Wright, Taylor, and Moghaddam, 1990). But where there is even a 2% chance of transferring to a higher status / more prestigious group, individual mobility will be enacted (Wright, Taylor, and Moghaddam, 1990). Given the relative permanence of gender-derived social identity, individual mobility is an unlikely option for those faced with a threat to their gender identity, and so collective strategies such as social creativity or social competition are opted for.

3.4.2   Strategies II and III: Social Creativity and Social Competition

While individual mobility is an individualistic strategy aimed at improving the status of the individual, both *social creativity* and *social competition* are collectivist strategies aimed at improving the status or prestige of the ingroup (Tajfel and Turner, 1979). Here, *social creativity* refers to attempts made by the individual to perceive the ingroup more favourably. This includes the individual changing the dimension on which comparisons are made, so that that which is compared is that which the ingroup is superior in (e.g. "*we lost the match, but we played a better*

game") (Cadinu and Cerchioni, 2001). It also includes changing the *value* of a dimension on which comparisons are made, so that what was once viewed negatively is now viewed positively (e.g. "*big is beautiful*"). It also includes changing the comparison outgroup, such that downward social comparisons allow for the existing status or prestige of the ingroup to be perceived more positively ("*We're not as bad as them*"). These creative strategies are likely to be employed where the status or prestige of the ingroup is accepted and legitimate, but is nonetheless low (Jackson *et al.*, 1996). Essentially, they're designed to modify perceptions of the ingroups status, while in reality its status remains unchanged. However, where the status hierarchy is insecure and the low status of the ingroup is deemed illegitimate, strategies of *social competition* may be selected. That is, the individual will attempt to change the status or prestige of the ingroup through direct competition with the outgroup, and defend it against perceptions of inferiority. This includes engaging in intergroup bias as it relates to outgroup derogation or derogation more generally (Wright, 2003; Ouwerkerk, de Gilder, and de Vries, 2000).

To better understand the conditions required for an individual to experience social identity threat, a taxonomy of threats is discussed. The chapter then concludes with discussion of the attenuating effects of group-affirmation. The Theoretical Framework is then followed by a review of the Stream I and II literatures.

3.5 A Taxonomy of Threats

Branscombe *et al.* (1999)[7] provide a taxonomy of social identity threats. It includes: I. Categorisation Threats, II. Acceptance Threats, III. Distinctiveness Threats, and IV. Value Threats. The first two threat-types are at the individual level, while the latter two are group-level. Table 2 displays each threat-type and the predicted response by High and Low identifying ingroup members.

---

[7] Ellemers *et al.* (2002) provide an alternative taxonomy. However, the Branscombe *et al.* (1999) taxonomy was selected for its focus on group-level threats and its emphasis on outgroup derogation.

Table 2 Taxonomy of Social Identity Threats and the Predicted Responses by Low and High Identifiers

Threat Type	Level of Identification	Response Type (Strategy)
<u>Categorisation</u>	Low High	• Stress Ingroup Heterogeneity • Further Disidentification • Stress Unique Personal Qualities • None
<u>Acceptance</u>	Low High	• None • Display Outgroup Derogation • Sliming (To Attain Acceptance)
<u>Distinctiveness</u>	Low High	• Perceive Groups at Superordinate Level • Display Outgroup Derogation • Perceive Ingroup Homogeneity • Increase Self-Stereotyping
<u>Value</u>	Low High	• Further Disidentification • Display Outgroup Derogation • Perceive Ingroup Homogeneity • Increased Self-Stereotyping

Adapted from Branscombe et al. (1999, p37)

3.5.1   Categorisation Threat

To be categorised against one's will while a personally or situationally important category is neglected or ignored, is to be put at risk of *categorisation threat*. To provide an example, in 2019 the Green Party MEP Professor Molly Scott-Cato was questioned by the late Brexit Party MEP Robert Rowland as to her credentials regarding her prediction that at the end of the Brexit transition period, the UK would face a *cliff edge* scenario; noting that he was not aware of Professor Scott-Cato having a degree in economics (Independent, 2019). In this instance, Professor Scott-Cato MEP was at risk of experiencing categorisation threat as her decades long career in economics was overlooked, and instead she was categorised as a) a member of the opposition, b) someone with 'business experience' only, as Robert Rowland MEP put it, or potentially, c) as a woman. Had Professor Scott Cato MEP not been in a position to publicly affirm her situationally important category as an economics professor, she may have felt the threat of miscategorisation.

It was previously noted that identity salience relies on *accessibility x fit* (Oakes, 1987), so where an individual's physical appearance *fits* the perceivers repertoire of accessible categories, the individual is likely to be categorised based on the characteristics that make-up the most readily accessible category to the perceiver; i.e. to the extent that some defining characteristics of a

category relate to the physical appearance of its members (e.g. ethnicity, gender), it may be unavoidable that an individual is miscategorised. Therefore, miscategorisation alone may not be enough to cause categorisation threat. But in those instances where the individuals choice of category is not respected or the imposed-upon category does not coincide with the individuals internal categorisation or the situation at hand, the individual may experience categorisation threat[8]. The result of which includes the rejection of the imposed-upon category, even if the individual would otherwise strongly identify with it (Barreto and Ellemers, 2002; 2003; Lemay and Ashmore, 2004). In the example of Professor Scott-Cato MEP, had she not been able to affirm her chosen identity as economics professor, she might internally reject the imposed upon category of *businessperson* or *opposition member*, even if these categories would otherwise be identified with in an alternative scenario.

3.5.2   Acceptance Threat

To fail to have a self-defining category or group membership recognised, is to be at risk of *acceptance threat*. In this respect it is the antithesis of categorisation threat, as the individual *wants* to be categorised but fails to have their categorisation confirmed by others (Branscombe *et al.*, 1999). This threat-type is often felt by insecure, marginal group members who perceive themselves as peripheral or non-prototypical. For example, an early career researcher whose manuscript is rejected by a journal, may experience acceptance threat to the extent their professional identity as an academic is threatened by the rejection of that which defines the ingroup, i.e. publications (Day, 2011). Likewise, ethnic minorities unable to speak their ancestral tongue (e.g. non-Spanish-speaking-Latinos living in the United States), report feeling less connected to and rejected by their ethnic group, causing lowered Collective Self-Esteem (CSE) (Sanchez *et al.*, 2012).

To avoid threat, peripheral ingroup members may attempt to increase their prototypicality by depersonalising themselves (Branscombe *et al.*, 1999). This includes overt displays of ingroup norms and ingroup loyalty, exhibiting fundamentalist ingroup beliefs (Schaafsma and Williams,

---

[8] To extend this further, where a negative stereotype is associated with the imposed upon category, and that stereotype is made salient, the individual may experience *stereotype threat* (Steele and Aronson, 1995). This refers to "*a state of psychological discomfort that people experience when confronted by an unflattering group or individual reputation in situations where that reputation can be confirmed by one's behavior*" (Aronson and McGlone, 2009, p154). For instance, where a negative stereotype regarding women's math ability is made salient, female participants will perform worse on a math-based task (Spencer, Steele, and Quinn, 1999). This is because the salience of the negative stereotype diminishes the participants cognitive resources to the extent that it negatively impacts their working memory and executive attention, causing them to perform poorly (Beilock, Rydell, and McConnell, 2007).

2012; Jetten *et al.*, 2003), and exhibiting aggression and/or antisocial behaviour toward an outgroup (Goldman and Hogg, 2016), despite not personally holding negative attitudes toward them (Noel, Wann, and Branscombe, 1995). To strategically address intragroup self-presentational concerns (to achieve ingroup ingratiation), the peripheral group member behaves in a way that they believe is expected of them, rather than in a way that is authentic to them as an individual.[9]

Strength of identification with the ingroup plays a crucial role in determining responses to acceptance threat. For low-identifiers, the fear of rejection may cause them to disidentify before rejection takes place. Alternatively, it may help to confirm that their own self-categorisation with an alternative category is being accurately perceived by others (e.g. *rejection as a worthy football player, bolsters identity as a rugby player*) (Branscombe *et al.*, 1999). Whereas public displays of ingroup norms, the exhibiting of fundamentalist beliefs, displays of ingroup loyalty, and the engaging in outgroup derogation are all attempts to be accepted by high identifiers.

3.5.3   Distinctiveness Threat

> "*Positive social identity is based to a large extent on favorable comparisons that can be made between the in-group and some relevant out-groups: the in-group must be perceived as positively differentiated or distinct from the relevant out-group.*"

(Tajfel and Turner, 1979, p40)

To identify with a group that fails to be positively distinct from a relevant outgroup, is to be at risk of *distinctiveness threat*. As Tajfel and Turner (1979) note in the epigraph, the positivity of a specific social identity (i.e. its ability to provide positive group-based self-esteem) is owing to its ability to be positively differentiated. Therefore, threats to ingroup distinctiveness arise from increasing intergroup similarity (Tajfel *et al.*, 1971; Jetten, Spears, and Manstead, 1997; 1999; Jetten and Spears, 2003). For example, where the policies of two political parties begin to

---

[9] This alignment with extremism may be explained by the motivation for uncertainty reduction (e.g. Hogg, Meehan, and Farquharson, 2010; Hogg, 2014). Hogg's (2007) *Uncertainty-Identity Theory* (UIT) is a motivational theory rooted in *Social Identity Theory* (SIT; Tajfel and Turner, 1979). UIT suggests that when people feel uncertain about themselves – the sort of uncertainty that is "*highly anxiety provoking and stressful... [that] makes us feel impotent and unable to predict or control our world and what will happen to us in it*" (Hogg, 2007, p73) – that they will opt to self-categorise. Through ingroup identification the individual is depersonalised to the extent that their place within the ingroup reduces their self-related uncertainties. In this respect, UIT may be a motivation in Branscombe *et al.*'s (1999) Acceptance Threat, insofar as the peripheral group member may be motivated to achieve acceptance in order to reduce self-uncertainty.

converge to the extent that party lines become blurred, the members of each group may begin to experience distinctiveness threat to the extent that that which defines the outgroup, also defines the ingroup. This encroachment on the defining characteristics or dimensions of an ingroup is met with *reactive distinctiveness*, whereby ingroup members engage in intergroup bias so as to increase distinctiveness (Jetten, Spears, and Postmes, 2004).

To avoid threat and to increase distinctiveness, individuals will attempt to differentiate their ingroup from the relevant outgroup by either engaging in ingroup bias (Brewer, 1979; 2001; 2017; Wilson and Hugenberg, 2010; Jetten, Spears, and Manstead, 1997; 1999; Mlicki and Ellemers, 1996; Brown and Abrams, 1986), prejudice (Gabarrot and Falomir-Pichastor, 2017; Zárate and Garza, 2002), or outgroup derogation (Ellemers *et al.*, 2002; Branscombe *et al.*, 1999). Crucially, Jetten, Spears, and Postmes (2004) reveal that strength of ingroup identification is a reliable moderator in the distinctiveness–bias relationship, and indeed the *only* reliable moderator in their meta-analysis. Therefore, as ingroup identification increases, so too does reactive distinctiveness.

3.5.4   Value Threat

To be presented with a situation or information that diminishes the status or prestige of an important social identity, is to be put at risk of a *value threat* or a *threat to the value of social identity* (Branscombe *et al.*, 1999). Threats may result from "*some action or communication that directly or indirectly seems to undermine the value of being a group member…* [that] *takes the form of an attack on central, shared in-group attitudes, values, beliefs, norms, and group practices, rejecting and derogating their nature and importance*" (Grant and Brown, 1995, p198). But they may also result from negative comparison, alone. That is, value threats are <u>*the potential or actual loss of status or prestige by the ingroup, when unfavourably compared to a relevant outgroup on an ingroup defining dimension*</u>, which is the definition used in this thesis to represent social identity threat more generally. It is also the threat-type that is most closely related to the basic propositions of the Social Identity Approach (Tajfel and Turner, 1979; Turner *et al.*, 1987; Tajfel, 1975), and is outlined by the *Three Principles* of Social Identity Theory (SIT; Tajfel and Turner, 1979).

The most often cited publication on the effects of value threats on Collective Self-Esteem (CSE) and its consequences for outgroup derogation is by Branscombe and Wann (1994)[10]. In their

---

[10] Google Scholar: Cited 1,158 times as of 16th of December 2021.

experiment, students from the United States were presented with a clip from the 1985 film Rocky IV. The clip featured the protagonist Rocky Balboa, an American fighter lose to his soviet opponent, Ivan Drago. Branscombe and Wann's (1994) findings revealed that when presented with the clip, the American students suffered a loss of CSE. They also revealed that a greater loss of CSE led to greater derogation of the Russian outgroup. In this instance, the loss by the American fighter was a threat to the students national social identity, which they responded to by derogating those associated with the outgroup opponent.

How an individual responds to a value threat depends on the degree to which they identify with the threatened ingroup (Branscombe *et al.*, 1999). From the example above, high identifiers engaged in greater outgroup derogation when their ingroup fighter lost (Branscombe and Wann, 1994). But high identifiers may also engage in collective action and ethnocentrism (Grant and Brown, 1995; Grant, 1992). They may come to perceive the ingroup as being more homogenous than they did before (Doosje, Ellemers, and Spears, 1995) or see themselves as being more prototypical; self-stereotyping to align themselves with the ingroup prototype (i.e. their already high ingroup-identification manifests itself into their depersonalisation as an ingroup member) (Spears, Doosje, and Ellemers, 1997). High identifiers will also maintain their loyalty to and identification with the threatened group (Doosje, Spears, and Ellemers, 2002), and will often increase their identification too, all the while engaging in outgroup derogation (Voci, 2006). Low identifiers on the other hand show a greater preference for individual mobility (Ellemers, Spears, and Doosje, 1997), and are less likely to engage in any of the above.

The status of the ingroup will also moderate the individuals response (Scheepers and Ellemers, 2019; 2005; Ellemers and Bos, 1998; Doosje, Ellemers, and Spears, 1995; Ellemers, 1993; Sachdev and Bourhis, 1991; Tajfel, 1975). Members of high-status groups will seek to enhance or protect their social standing (Tajfel, 1975), as doing so protects the CSE afforded to them by the high-status ingroup. Scheepers and Ellemers (2019) note the defensive response to value threats felt by these members is to "*strike back*" at the low-status outgroup. For example, when faced with increasing numbers of immigrant entrepreneurs in Amsterdam, the native-Dutch felt their ingroup was unfairly deprived by comparison, and responded by discrediting the immigrants and negatively stereotyping them as selfish, lazy, and ignorant (Ellemers and Bos, 1998). That is to say, they engaged in outgroup derogation as a means of ingroup defence.

To explore this further, Scheepers and Ellemers (2015; 2019) investigated the physiological responses to status loss. Their findings revealed that changes perceived as threatening to the status hierarchy (changes to the status quo), elicited cardiovascular responses indicative of threat. These included high vascular resistance, low cardiac performance, and high blood pressure. Similar findings were also observed in primates (Scheepers and Ellemers, 2019;

Gesquiere *et al.*, 2011; Sapolsky, 1992), suggesting phylogenetic consistency. These physiological responses observed in both humans and primates may be what motivates the strike back response. Indeed, engaging in outgroup derogation (striking back) is found to have similar self-image maintaining effects to self-affirmation (Fein and Spencer, 1997), which itself reduces stress-related cortisol levels (Cresswell *et al.*, 2005). Thus striking back at a loss of ingroup value or status may help reduce the negative effects of a value threat (*cf.* Sampasivam *et al.*, 2016). From a gender perspective, there is evidence to suggest that striking back is more prevalent in men than women, termed the *Male Warrior Hypothesis* (McDonald, Navarrete, and van Vugt, 2021; Muñoz-Reyes *et al.*, 2020).

In summary, value threats refer to the potential or actual loss of status or prestige by the ingroup when unfavourably compared to a relevant outgroup. How the ingroup member responds to a value threat will depend largely on their strength of ingroup identification and the relative status of the group. High identifiers will exhibit greater loyalty to the ingroup and engage in outgroup derogation to protect the CSE afforded to them by their membership to the group. Whereas low identifiers will show greater preference for individual mobility. High status groups are also a source of greater CSE and are subsequently protected to a greater extent than low status groups.

To recap Branscombe *et al.*'s (1999) taxonomy of social identity threats, both categorisation and acceptance threats are individualistic threats felt by the individual themselves, while the group itself remains unaffected. Conversely, both distinctiveness and value threats are threats to the group directly, and are thus more in line with the basic propositions of SIT. Distinctiveness threats are incurred by a loss of distinctiveness between the ingroup and outgroup, blurring the boundaries between the two so that what defines the ingroup defines the outgroup, also. On the other hand, value threats are incurred by an unfavourable comparison or a direct attack on the ingroups' value or status, resulting in a strike back defence. The next chapter addresses the reasons for studying male gender-derived social identity within the thesis.

3.6 Gender-Derived Social Identity and Value Threat

Streams I and II explore the effects of value threats to male gender-derived social identity, referred to throughout as "gender identity". The decision to focus on gender is due to it being "*one of the most important, salient, and pervasive social categories*" (Maas *et al.*, 2003, p854). The decision to focus on male gender in particular is owing to its high status (e.g. Kahn *et al.*, 2016;

Ridgeway, 2014; Rudman *et al.*, 2012; 2001; Scheepers, Ellemers, Sintemaartensdijk, 2009; *see also* Ellemers, 2018). This highly salient category from which status can be lost, puts men at greater risk of social identity threat.

To illustrate, Scheepers, Ellemers, Sintemaartensdijk (2009) conducted a series of experiments that employed Hogg and Turner's (1987)[b] "debating paradigm". This involved participants debating several topics either within an intragroup setting (same sex) or an intergroup setting (mixed sex). The topics debated were gender neutral, gender conservative, and gender progressive. The latter topic (gender progressive) was on the subject of increasing subsidies for childcare so that women could continue working after having a child (i.e. changing the status quo to improve equality). The findings revealed that when discussing the progressive topic, male systolic blood pressure and pulse rates became elevated, and increased more so in the intergroup (mixed sex) than the intragroup (same sex) setting. That is, when discussing societal changes that would change the status quo by means of improving gender equality, men experience social identity threat, the physiological responses to which are akin to those of physical threat.

Similarly, in a study by Dover, Major, and Kaiser (2016, Study 3), male participants took part in a hiring simulation in which they interviewed for a technology firm. However, prior to the interview, each participant viewed a recruitment video that was either pro-diversity or neutral. In the pro-diversity video, the participants learned the "*company valued diversity without specific mention of race or gender (e.g., valuing a diversity of perspectives, values, and backgrounds) and had won a diversity-related award. Additionally, they saw stock photos of people of various ethnicities and genders throughout the presentation and were told that the workplace aimed to foster inclusion* (Dover *et al.*, 2016, p61). Participants in the neutral condition learned the company had won awards for being a *'leader-in-service'*, with no reference to inclusivity or diversity. The findings revealed that male participants presented with the pro-diversity recruitment video, presented a cardiovascular profile indicative of threat (cardiovascular reactivity and increased blood pressure), and reported greater concern for being personally discriminated against by the organisation, should they be hired. In other words, interviewing for a progressive organisation causes men to feel physically threatened, and potentially discriminated against. These two examples (Scheepers *et al.*, 2009; Dover *et al.*, 2016) reveal that changes to the status hierarchy threatens male gender-derived social identity.

In terms of the effects on outgroup derogation, Maass *et al.* (2003) and Siebler, Sabelus, and Bohner (2008) reveal that threats to male social identity result in greater sexual harassment of the female outgroup. Utilising a computer harassment paradigm, Maass *et al.* (2003, Study I) paired male participants with a female partner, with whom they interacted via a messenger (chat) program (Microsoft NetMeeting). The female partner (Martha) was either a feminist or highly-

traditional. Participants were advised they would take part in a visual memory task, and that they were to send images to each other that the other was required to remember for a later recognition task. Participants were also informed that women tend to do better than men at the task – this information provided a manipulation of social identity threat by providing an unfavourable comparison of the male ingroup relative to the female outgroup. Maass *et al*. (2003, Study I) revealed that when male social identity was devalued by comparison to the outgroup of women, men engaged in greater sexual harassment of the *feminist* than the highly-traditional female; sending a greater number of pornographic images for them to remember. As Maass *et al*. (2003, p863) explain, "*sexual harassment is an ideal form of out-group derogation because it offends the out-group while at the same reaffirming the male's gender identity*" (Maass *et al*., 2003, p863). By sending pornographic images to the feminist woman, the threatened male participants were *striking back* at the outgroup as a means of outgroup derogation and group-affirmation. Later, Siebler *et al*. (2008) further refined the computer harassment paradigm to allow male participants to send jokes to their (virtual) female partner. Again, the feminist woman received the greatest sexual harassment in the form of sexist jokes, a finding that was strongly correlated with both the participants identification with their male social identity and their views regarding hostile sexism (Siebler *et al*., 2008).

Therefore, male gender-derived social identity provides the thesis with an ideal social identity to manipulate in terms of value threats; threats that are induced by negatively comparing the ingroup of men to the outgroup of women. Further still, threats that include some form of change to the status quo (e.g. women in leadership positions; women being better suited to leadership positions) should increase the effectiveness of the manipulation as both the gender identity itself is threatened by means of negative comparison, and its status is put at jeopardy. While the thesis is an investigation into the influence of male social identity on avoidance and rejection within two consumer behaviour contexts, it is also an investigation into the avoidance- and rejection-mitigating effects of self-affirmation.

3.7 Self-Affirmation Theory

"*The logic is as follows: If dissonance stems from the threat to the self (ego) inherent in a given inconsistency, then after dissonance has been aroused, thoughts and actions that affirm an important aspect of the self-concept should reduce dissonance by casting the self in a positive light.*"

(Steele and Liu, 1983, p6)

As the epigraph notes, the concept of self-affirmation was initially conceived of as a means of reducing the dissonance that arises from self-threats caused by self-inconsistencies (Steele and Liu, 1983; 1981). That is to say, the dissonance caused by an individual behaving in a way that is inconsistent with their self-image, has less negative impact where that same individual is provided the opportunity to *affirm* a positive aspect of their self-image. For example, Steele and Liu (1981) revealed that when participants were asked to write counter-attitudinal essays (e.g. writing in opposition to additional funding for disabled facilities), those who were advised they would be required to help disabled students after the essay, reported less dissonance than those not expected to help. As the authors note, "*anticipating a value-affirming response can reduce the dissonance resulting from a counter-attitudinal behavior, presumably by allowing that behavior to be viewed as less indicative of a self-disposition*" (Steele and Liu, 1981, p397), i.e. '*arguing against additional funding is not reflective of me, but helping is*'.

Today, self-affirmation is employed in much the same way – as an intervention to attenuate the effects of self-threats. As Sherman and Cohen (2006) note, the number of ways in which an individual may experience a threat to their moral or adaptive adequacy (or self-integrity) on any given day, likely exceeds the number of ways in which it may be affirmed[11]. But as they explain, people have a sort of "psychological immune system" that helps them adapt to threatening situations, causing internal biases that help them cope by ameliorating the effects of threats to self-integrity. One such way is through self-affirmation.

According to *Self-Affirmation Theory* (SAT; Steele, 1988), "*the overall goal of the self-system is to protect an image of its self-integrity, of its moral and adaptive adequacy. When this image of self-*

---

[11] Sherman and Cohen (2006, p183) list multiple ways in which one's adequacy may be threatened on any given day, including "*substandard performance on the job or in class, frustrated goals or aspirations, information challenging the validity of long-held beliefs, illness, **the defeat of one's political party in an election or of one's favorite sports team in a playoff**, scientific evidence suggesting that one is engaging in risky health behavior, negative feedback at work or in school, rejection in a romantic relationship, real and perceived social slights, interpersonal and **intergroup conflict**, the misbehavior of one's child, the loss of a loved one, and so on*" [bold added]. This list, which includes the defeat of one's political party or sports team and intergroup conflict, reveals that one's adequacy is linked to the successes and failures of one's ingroup.

integrity is threatened, people respond in such a way as to restore self-worth" (Sherman and Cohen, 2006, p185). As highlighted by the dissonance example above, affirming an important aspect of the self is one such way of reducing the effects of threat, as these "self-affirmations" allow the individual to call upon an alternative source of self-integrity; they buffer against threat by broadening self-worth. In this sense, *Self-Affirmation Theory* (Steele, 1988) shares certain commonalities with *Social Identity Theory* (SIT; Tajfel and Turner, 1979). They both suggest the positivity of the self-concept must be maintained, protected, and enhanced, and that threats to it can be reduced by focusing on alternative sources of positivity (see 3.4.2 Social Creativity). Likewise, both theories are concerned with psychologically threatening social interactions, including intergroup conflict. The effects of self-affirmation are wide-ranging. Affirmations may reduce intergroup bias such that intergroup divides are bridged (Cohen, 2012; Binning *et al.*, 2010). They may also allow for ingroup members to acknowledge the wrongdoings of their own group toward an outgroup, an acknowledgement that would have otherwise devalued the positivity of the ingroup (Čehajić-Clancy *et al.*, 2011). Indeed, affirmations may even reduce the willingness to derogate an outgroup following social identity threat (Fein and Spencer, 1997). In a recent review, Sherman, Brookfield, and Ortosky's (2017) revealed that self-affirmations affect intergroup conflict in three crucial ways: I. by reducing prejudicial beliefs, such that self-affirmed individuals are more willing to meet and engage with outgroup members; II. by reducing the bias of information processing of conflict-relevant information, such that individuals are open to facts and evidence; and III. by reducing resistance to seeking common ground, such that affirmed individuals show greater willingness to consider the points put forth by their opposition.

Thus self-affirmations protect the individual against threat by broadening their self-worth; expanding the self beyond the threatened dimension to include alternative sources of self-integrity. In this way, threats to the self are less damaging and instances of intergroup bias are less likely to occur.

3.7.1   Self-Affirmation In Practice

To investigate self-affirmation, researchers have employed a number of methods to threaten participants. This includes providing negative feedback (e.g. Galinsky *et al.*, 2000; Koole *et al.*, 1999; Wood, Giordano-Beech, and Ducharme (1999, Experiment 3); Spencer, Fein, and Lomore (2001, Study 3), exposing the participant to sexism (Spencer-Rodgers *et al.*, 2016) and stereotype threat (Martens *et al.*, 2006; Franz *et al.*, 2004, Experiment 3), increasing the salience of their

mortality (Schmeichel and Martens, 2005) or making salient risks to their personal health (Harris and Napper, 2005; Fry and Prentice-Dunn, 2005; Sherman, Nelson, and Steele, 2000). They also include the use of upward social comparisons (Schwinghammer, Stapel, and Blanton, 2006), such that negative self-evaluations arising from comparison are mitigated by self-affirmation. Finally, as it relates to Stream II, value threats have been successfully manipulated and mitigated (Sherman *et al.*, 2007; Sherman and Kim, 2005; Dietz-Uhler and Murrell, 1998).

Ordinarily, to mitigate self-threats a values-based self-affirmation task is employed. These typically take one of two forms. The first involves selecting a value that one holds to be personally relevant and important to their self-definition, and then writing an essay on why and how that value is important (Crocker, Niya, and Mischkowski, 2008; Sherman *et al.*, 2007; Cohen *et al.*, 2006; Tesser, 2000). The second method is less demanding. Instead of writing an essay, the participant answers questions about their self-selected value (Steele and Liu, 1983). Either way, the objective remains the same. By selecting a value that is important to them, and expressing why and how it is important, the individual expands their understanding of their own self-integrity (Sherman, 2013), resulting in self-affirmation.

To date, the majority of research has typically focused on *self*-affirmations, i.e. affirmations relating to the self-as-individual. There is substantially less research into group-based affirmations, though they have proven successful (e.g. Sherman, Brookfield, Ortosky, 2017; Spencer-Rodgers *et al.*, 2016; Gunn and Wilson, 2011; Glasford, Dovidio, and Pratto, 2009; McGregor, Haji, and Kang, 2008; Sherman *et al.*, 2007; Dietz-Uhler and Murrell, 1998). Group-affirmations are revealed to buffer the ingroup against group-level threats (Sherman *et al.* (2007), and reduce the tendency to engage in outgroup derogation (McGregor *et al.*, 2008). Therefore, in the context of the present thesis, by affirming a value that is important to male gender-derived social identity, reactions to a gender-related threat should be counteracted by an affirmation task.

To summarise, Self-Affirmation Theory (SAT; Steele, 1988), in line with Social Identity Theory (SIT; Tajfel and Turner, 1979), asserts that positivity within the self must be maintained, enhanced, and protected. Where a self-threat puts that positivity at risk, the individual is motivated to respond defensively (e.g. by means of derogation). However, by affirming an unrelated dimension of value to the individual, the effects of threat may be mitigated. This applies to both the self-as-individual and the self-as-ingroup-member.

3.8 Summary

To summarise the Theoretical Framework, the Social Identity Approach encompasses two core theories, Social Identity Theory (SIT) and Self-Categorisation Theory (SCT). SIT reveals that intergroup competition and discrimination occur as a result of a causal sequence of processes: social categorisation –> social identification –> social comparison –> positive distinctiveness. That is, if an individual acknowledges their belonging to a social group, and they identify with that group, they will develop a social identity based on their membership to it. This social identity is then incorporated into the individuals self-concept, motivating them to compare the ingroup to a relevant outgroup in hopes of perceiving it as positively distinct. This in turn, provides the individual with a positive social identity, which provides them with positive Collective Self-Esteem (CSE).

Underlying this sequence of processes is I. the individuals level of identification with their social identity, II. the immediate salience of the identity and its depersonalising effect, III. the relevance or importance of the dimension being compared (e.g. a lack of sporting prowess may be irrelevant to the social identity of "academic"), IV. the degree to which the ingroup differs from the outgroup on the dimension being compared, and V. the relative status of the ingroup at the time of comparison. Furthermore, the Self-Esteem Hypothesis (SEH) predicts that intergroup discrimination in the form of social competition, is engaged by ingroup members to protect and enhance their group-level self-esteem. Importantly, researchers must be aware of the *type* of intergroup bias (social competition for prestige or status) and of the *type* of self-esteem that is affected (*specific* CSE). Finally, Self-Affirmation Theory (SAT) provides one method by which to mitigate the effects of social identity threat. By affirming an important ingroup-relevant value the groups worth is broadened beyond the dimension under threat, to include the value under consideration. This results in a reduced need to respond defensively. In the following chapter the literature as it relates to Streams I and II is discussed.

CHAPTER 4

IDENTITY-THREATENING CONSUMPTION

4.1 Introduction

The objective of the thesis is to explore the influence of social identity on consumer behaviour. To achieve this, two unique perspectives are taken. These are referred to as Streams I and II.

Stream I, titled Dissociation as Outgroup Derogation, is an investigation into the dissociation effect as reported in the reference group literature. The dissociation effect refers to the act of dissociating from an outgroup-associated product so as to avoid misidentification. The objective of Stream I is to determine whether this effect is influenced by male-specific social identity, such that consumption of an outgroup-associated product poses a threat to male social identity. If so, then dissociation may be more accurately conceptualised as a form of outgroup derogation. The reason for selecting male gender-derived social identity are discussed in the Theoretical Framework. The outgroup-associated product is the *Ladies' Cut Steak*, which is investigated using the Menu Selection Task (MST) paradigm (White and Dahl, 2006). In addition, Self-Affirmation Theory (Steele, 1988) is employed to reduce the dissociation effect.

Stream II, titled *Science Discrediting*, is an investigation into the discrediting of scientific publications that are viewed to be a threat to social identity. Stream II is inspired by the work of Nauroth *et al.* (2014; 2015; 2017), who report that "video gamers" discredit research that devalues their ingroup. Taking the perspective that social identity informs preferences for consumables (McGowan, Shiu, and Hassan, 2017), and that science itself is a consumable (Michael, 1998), Stream II advances the work of Nauroth *et al.* (2014; 2015; 2017) by investigating science discrediting from a male social identity perspective. Furthermore, alternative explanations are investigated also, including *Social Dominance Orientation* (SDO; Pratto *et al.*, 1994; Sidanius *et al.*, 2017), *Ambivalent Sexism* (AS; Glick and Fiske, 1996), *Collective Narcissism* (CN; Golec de Zavala *et al.*, 2009), and *Precarious Manhood* (PM; Vandello *et al.*, 2008). Finally, Stream II concludes with the application of Self-Affirmation Theory (SAT; Steele, 1988) in an effort to reduce science discrediting behaviour.

Streams I and II are linked by the Theoretical Framework and the common themes of male gender-derived social identity, and the dissociation or rejection of an identity-threatening consumable by male consumers (Stream I: *Ladies' Cut Steak*, Stream II: *Scientific Publications*).

4.2 Stream I: Dissociation as Outgroup Derogation, an Introduction

The Marketing Concept at its most fundamental level, states that firms must analyse their customer's needs, and satisfy them better than their competitors (Houston, 1986). Park, Jaworski, and MacInnis (1986) note the three most fundamental needs that are met by marketing activities, are: I. functional, II. experiential, and III. symbolic. The first need-type, *functional needs*, are what motivates the search for a product or service in the first place. These needs represent the "*state of felt deprivation*" that is commonly used to define the term "*need*" (Kotler and Armstrong, 2010). This need-type is most likely to be satisfied by product-related attributes (Keller, 1993). The second need-type, *experiential needs*, are sensory-oriented, requiring cognitive stimulation; what it *feels* like to use the product or service. These too may be satisfied by the product or service-related attributes. Finally, *symbolic needs*. This third need-type refers to the internally generated needs that consumers develop as part of the human condition. This includes the need for group membership, the need for social acceptance, personal expression, self-enhancement, self-esteem, and identity creation and projection (Park *et al.,* 1986; Keller, 1993). These needs are better satisfied by the symbolic meaning associated with a product.

It is this third need that is broadly considered in Stream I. Studies I – 4 take for granted that consumers attribute symbolic meaning to their consumption choices, causing certain products to represent individuals and groups. To that end, the Stream I review begins with an introduction to Symbolic Consumption, noting this human tendency to attribute meaning to possessions. This is followed by an introduction to the concept of Reference Groups, setting them apart from the ingroups and outgroups discussed within the social identity literature and within the Theoretical Framework. The Dissociation Effect is then reviewed, revealing how the reference group literature attributes the effect to "*dissociative groups*", which the Social Identity Approach may more appropriately refer to as "relevant" outgroups. Finally, the review concludes with discussion of the Menu Selection Task (MST), which is adopted in Studies I – 4 as a paradigm within which the dissociation effect may be explored from a social identity perspective. The Stream I review is then followed by a review of the Stream II literature.

4.2.1 Stream I: Symbolic Consumption

> "*Our fragile sense of self needs support, and this we can get by having and possessing things because, to a large degree, we are what we have and possess.*"
>
> (Tuan, 1980, p472)

That we are what we have and possess, has long been accepted. For tens of thousands of years, humans have buried their dead with 'grave goods' – items such as deer antlers, the mandible of a wild boar, beads, shells, and flint tools – items that are suspected to have both equipped the deceased, and carried with them symbolic value such as hunting prowess (Orschiedt, 2018; Lieberman, 1993). Anthropologist Joseph Tainter explains that mortuary rituals such as these are "*basically a communication system in which certain symbols are employed to convey information about the status of the deceased*" (Tainter, 1978, p113). He goes on to explain that such sites are found all over the world, with archaeological interpretations continuing to suggest that elaborate mortuary behaviour is symbolic of the status of the deceased (Tainter, 1978; *see also* Cannon *et al.*, 1989). For those living in the Upper Palaeolithic era (50,000 to 12,000 years ago), bones and shells are found to have been used as jewellery, with some suggesting for status enhancement and ingroup signalling (Leary and Buttermore, 2003; Pfeiffer, 1978).

Today, people consume products for their symbolic value, often for the same benefits sought by their early ancestors. With the introduction of the Marketing Concept Paradigm in the 1950s, marketers have been acutely aware of the symbolic needs of their consumers. This paradigm, as previously noted, holds "*the key to achieving organizational goals consists of the company being more effective than its competitors in creating, delivering, and communicating customer value to its chosen target markets*" (Kotler, 2000, p12). That is, through the analysis of their consumers, marketers can better understand the added value that consumers seek. In his aptly titled *Symbols for Sale*, Levy (1959) married together for the first time the concepts of consumer self-image and product image, noting that "*sellers of goods are engaged, whether wilfully or not, in selling symbols, as well as practical merchandise*" (Levy, 1959, p117), and that since the presence of the economic man was dwindling – the practical matters of food, clothing, and shelter were of less immediate concern – people had begun to "*buy things not only for what they can do, but for what they mean*" (Levy, 1959, p118).

McCracken's (1988; 1989) *Meaning Transfer Model* argues there is general acceptance among consumers as to what 'meaning' is being communicated. He notes that meaning itself is imbued by the culture of the time; transferred to products and brands by advertising, celebrity

endorsements, and reference group usage, to the consumer upon consumption (McCracken, 1988; 1989). That meaning is then perceived by those in the consumers social environment, and is understood to represent identity-consistent attitudes and preferences (Shavitt and Nelson, 2000; Belk, Bahn, and Mayer, 1982). It represents who the consumer is as much as who they are not. It distinguishes the "me" and "us" from "them".

Quoting Shakespeare's Jaques in *As You Like It* (Act II, Scene VII; Shakespeare [1599-1623], 2016), Ahuvia (2015) writes that if *"all the world's a stage"* then consumers are the leading characters, and their products and brands the props that tell the stories of the relationships between each character. Indeed, it is from this communication with other "characters" that consumers learn about themselves. It was noted at the start of the thesis, in defining the self-concept and identity, that these two constructs are in large-part informed by those the individual interacts with – the appraisal of others. Adopting Cooley's (1902) terminology, Solomon (1983, p323) explains "*the 'looking glass self' requires the proper constellation of products to deliver a satisfactory reflection*", which is why, as James (1890) famously proclaimed, "*a man's Self is the sum total of all that he can call his*", and that it is often difficult to distinguish between who a man is and what he possesses. Thus, products represent those who consume them, and differentiate the consumer from those who do not.

Pursuit of this "satisfactory reflection" and the resulting construction and expression of self alluded to by James (1890), is found to begin in early childhood. Rodgon and Rashman (1976)[12] reveal that children as young as 14 months begin to develop associations with the material objects owned by themselves and their parents. From 18 months on, children can develop 'ownership understanding' – the knowledge that an item specifically belongs to someone, including themselves (Fasig, 2000). This suggests that children use possessions to understand their extended selves, i.e. their awareness of self as existing outside of the present, as having existed in the past, and continuing to exist in the future. From ages 8-18, children and adolescents begin and continue to form sophisticated relationships with products and brands, particularly symbolically-laden products such as clothing that represent their self-concepts, as opposed to symbolically weak products such as cereal, candy, and soft-drinks that do not (Chaplin and John, 2005). This develops further into adulthood, with products associated with ingroups being sought for self-verification purposes, and those associated with aspirational groups for self-enhancement (Escalas and Bettman, 2003).

---

[12] Rodgon and Rashman (1976) acknowledge their study is not conclusive, and that the phenomenon observed was infrequent. However, one-third of children aged 14-36 months were able to recognise known items.

It is clear then that consumers seek and consume self-relevant products and brands, as doing so leads to the extension (Belk, 1988) and expansion of self (Aron *et al.*, 2001; 2004), and to the development of the consumers self-definition. Through symbolic consumption, consumers communicate as much about who they are as who they are not, including which groups they belong to and which ones they do not (Belk, Bahn, and Mayer, 1982). As Csikszentmihalyi and Rochberg-Halton (1981, p190-191) write, "*when an object is imbued with qualities of the self, it expresses the being of that person, whether in written words or a chair that was crafted or a photograph. It becomes an objectified form of consciousness no less than words spoken into someone's ear, all forming part of the social self. Through these objects a part of the self comes to be embodied in the consciousness of others and will continue to exist long after the consciousness that molded them has ceased to exist.*" Thus, the position taken in Stream I is that a product, specifically, an outgroup-associated product, signals *something* about those who consume it.

4.2.2   Stream I: Reference Groups

The literature as it relates to the dissociation effect (the avoidance of dissociative group products), has typically adopted the reference group approach. It is important to discuss this approach, as doing so will highlight the inadequacies associated with it – inadequacies that may be overcome by employing the Social Identity Approach. Further still, it is important to understand what a dissociative group is, as the reference group literature predicts that consumers will dissociate from products associated with this type of group. It is also important to understand how these relate to outgroups discussed within the Theoretical Framework and the Social Identity Approach more generally.

The reference group construct has a long history in consumer research (Bourne, 1957; Park and Lessig, 1977; Bearden and Etzel, 1982; Bearden, Netemeyer, and Teel, 1989; Leigh, 1989; Childers and Rao, 1992; Englis and Solomon, 1995). First coined by Hyman (1942) in a study of social status, the term 'reference group' refers to any social group that is significant to an individual's attitude and behaviour formation. Typically, they're said to serve two broad functions: normative and comparative reference (Kelley, 1952). *Normative reference groups* are those groups with which the individual has direct contact, and from whom they determine norms, attitudes, and values (e.g. family, educators, peers). By contrast, *comparative reference groups* are those groups the individual uses to evaluate their current standing; groups the individual admires or strives to be similar to (those referred to in Festinger's (1954) *Social Comparison Theory*). From these two

broad functions emerge four reference group *types* as outlined by Bourne (1957), that are still employed in consumer research today:

1. Membership groups (ingroups).
2. Categories (e.g. age, gender, marital status, etc. and role expectations – automatic groups).
3. Aspirational groups (referred to as anticipatory and linked to upward mobility).
4. Negative (dissociative) groups.

To this list are added 'outgroups', representing groups to which the individual does not belong, but does not necessarily feel the need to dissociate from (Escalas and Bettman, 2005). Each group *type* differentially exerts social influence. For instance, *positive reference groups*, which is used here as a catchall term for membership groups (*groups the individual belongs to or is associated with*) and aspiration groups (*groups the individual aspires to belong to or be associated with*), exert the greatest influence on consumer preferences (Reingen *et al.*, 1984). While *negative reference groups*, including outgroups (*groups the individual does not belong to*) and dissociative groups (*groups the individual wishes to avoid association with*), cause a strong, dissociative effect whereby consumers avoid associated products and brands (Simpson, Dunn, and White, 2019; White and Dahl, 2007; 2006).

Traditionally, consumer researchers have focused on positive reference groups (Stafford, 1966; Witt, 1969; Cocanougher and Bruce, 1971; Bearden and Etzel, 1982; Sirgy, 1986; Leigh, 1989; Childers and Rao, 1992; Escalas and Bettman, 2003; Hammerl *et al.*, 2016). Early studies investigated the effects that different membership and aspirational groups had on consumer behaviour. For instance, both Stafford (1966) and Witt (1969) investigated the influencing effects of informal social groups on brand preferences, while Childers and Rao (1992) investigated the differences between peer-based and familial group influence on necessities and luxury items. With time, researchers have begun to explore the social psychological moderators and mediators of the influencing effect, such as consumer motivations (e.g. self-enhancement and self-verification) (Escalas and Bettman, 2003) and self-construals (e.g. independent vs. interdependent) (Escalas and Bettman, 2005).

Yet despite its continued use in consumer research, the concept of *reference group* is hampered by conceptual limitations. Reingen *et al*. (1984) note that Stafford (1966) and Witt (1969) suffer from an issue of ill-defined groups, as each study included a nominator and several nominees. For that reason, the reference groups are likely to have been diverse in their basic structure. This

limitation applies to contemporary studies of reference groups, also, as several studies rely on participants providing their own interpretation of existing groups (Escalas and Bettman, 2003; 2005). For instance, Escalas and Bettman (2005, p381) instruct participants to provide an outgroup, by stating:

> "*Type in the name of a group on campus that you do not belong to and do not feel a part of. You should feel you are not this type of person and that you do not fit in with these people. This group should be a tightly knit group, consisting of individuals who are very similar to one another*."

The parameters of what constitutes a group are not made clear. Is the participant to name a group that exists to the extent that its members are aware of its existence (e.g. a sports team, student union, etc.) or only to the extent that the participant perceives it to exist? Indeed, what defines a reference group differs from researcher to researcher (Bearden and Etzel, 1982; Dussart, 1983; Cocanougher and Bruce, 1971). Bearden and Etzel (1982) describe it as an individual person or an aggregate of individuals, while Dussart (cited in Sempé, 2015) describes an interactive aggregate, and Darmon, Laroche, and Pétrof (1990) a "*a current or imaginary group, any group to which the person is linked*" (cited in Sempé, 2015, p360). At best, the definition of a reference group is vague.

In addition, Brown and Reingen (1987) note that the strength of "social ties" (identification with the ingroup) had not been considered in previous studies. Unfortunately, this still applies to contemporary studies of reference group influence (e.g. Hammerl *et al*., 2016; White and Dahl, 2006; Escalas and Bettman, 2003; 2005; Englis and Solomon, 1995), and is potentially due to the fact that there is no consistent, agreed upon definition of what a reference group is, making it difficult to create a scale measuring identification with one. Thus, the reference group construct suffers conceptual limitations that may be overcome by introducing the Social Identity Approach, as outlined in the Theoretical Framework. In this framework, an ingroup is one to which an individual belongs (self-categorisation) and with which one identifies (social identification). It also a group that exists in contrast to a relevant outgroup (social comparison).

4.2.3   Stream I: Dissociative Groups and The Dissociation Effect

With the objective of Stream I being to investigate the dissociation effect reported in the reference group literature, from a social identity perspective, it is prudent to explain exactly what the

reference group literature means by a *dissociative group*. From a review of the literature emerges several definitions. White and Dahl's (2006, p404) is perhaps the most succinct, as they define dissociation groups as "*those groups an individual wishes to avoid being associated with and "disidentifies" with*". Berger and Heath (2007) take an alternative approach, and define them in terms of 'disliked groups' from which consumers 'diverge' in their choice of brands. Similarly, Englis and Solomon (1995) refer to them as 'avoidance groups' from which consumers wish to dissociate. From these definitions one can reasonably conclude that a dissociative group is one with which the individual does not identify and wishes not to be associated with, much like the relevant outgroup of the Social Identity Approach (*relevant* is included as not all outgroups are relevant to the ingroups status or prestige). To add confusion, the reference group literature distinguishes between dissociative groups and outgroups. Berger and Heath (2007; 2008) describe outgroups as 'dissimilar others' – groups the individual does not necessarily *dislike* but nonetheless does not wish to be mistaken for. Escalas and Bettman (2005, p379) describe them simply as "*groups to which one does not belong*". From a social identity perspective, what are referred to as dissociative groups and outgroups may otherwise simply be referred to as relevant outgroups and non-relevant outgroups, respectively, as outgroups within the approach are those to which the individual does not belong nor identifies with, and with whom the individual would not wish to be identified as.

Having defined dissociative group, attention turns to the *dissociation effect*. The dissociation effect (also be referred to as the "*dissociation principle*", Simpson, Dunn, and White, 2019) refers to the distancing, disparaging, or avoidance of the individual consumer from a product or brand that is associated with a dissociative group (White and Dahl, 2006; 2007; Berger and Heath, 2007; 2008; Berger, 2008; Englis and Solomon, 1995; Tepper, 1994). For example, in the early-2000s the British fashion house Burberry formed an unintentional association with the youth subculture referred to by the media as '*Chavs*', a dissociative group. Through this association, the brands hallmark beige check became known as 'chav check', with counterfeit products worn by football hooligans and reality TV stars, alike. Consequently, Burberry's target market dissociated from the brand, so as not be associated with *Chavs*.

In terms of research, the dissociation effect has been hypothesised and reported on for over 30 years. Prior to the formalisation of *Self-Congruity Theory*[13] (Sirgy, 1986; 2018), Sirgy (1982)

---

[13] *Self-Congruity Theory* (Sirgy, 1986), referred to as the product-congruence effect before it was formalised (Levy, 1959; Birdwell, 1968; Grub and Hupp, 1968), states that as the level of congruence between the consumers self-image and product image increases, so too do positive attitudes toward the product and its likelihood of being purchased. This effect is said to be motivated by the consumers need for *self-consistency*, *social-consistency*, *social-approval*, and *self-esteem* (Sirgy, 2018). Aguirre-Rodriguez, Bosnjak, and Sirgy's (2012) meta-analysis revealed self-congruity explains approximately 10% of the variance in consumer attitudes, intentions, and behaviours.

predicted product avoidance based on *negative self-incongruity*. That is, where the consumers self-image is positive, but the product-image is negative (there is incongruence between the two), the consumer will be motivated to maintain and protect their self-esteem by avoiding the negatively-associated product. This to some extent is evidenced by Tepper's (1994) study of age segmentation cues, in which Tepper employs *Labelling Theory* (e.g. Lemert, 1951; Schur, 1971; Scheff, 1966) to discount offers. *Labelling Theory* states it is the labels attributed to a person that often defines them, such that labelling someone as *mentally ill* causes them to internalise that label and behave as such, as well as causing others to treat them so (Scheff, 1966). In the context of the dissociation effect and consumer behaviour, Tepper (1994) revealed that labelling a promotional offer (10% reduction) as a "senior citizen discount", caused elderly participants to reject the discount. This was particularly true for those in the younger category (aged 50-54 *vs.* 55-59, 60-64, 65 and over), who perceived the term *elderly* as constituting a dissociative group.

Further evidence of the dissociation effect is provided by Berger and Heath (2007, Studies 3 and 4), who found that consumers avoided products associated with "dissimilar others" (e.g. 40-year-old business executives, janitors, suburban teenagers *vs.* Stanford undergraduates; the ingroup) irrespective of the whether or not the product was identity-relevant. That is, even when the product was low in symbolic value (it represented neither the ingroup nor the outgroup), its association alone with the dissimilar others was enough to cause dissociation. Evidence was later provided of the same effect, but with regard to an ingroup product. Explored in terms of Optimal Distinctiveness Theory (Brewer, 1991)[14], Berger and Heath (2008) report that an ingroup product was abandoned by the ingroup following its adoption by the outgroup. The authors report the effect transcended physical symbols of ingroup identification (e.g. products), to catchphrases that were once used by the ingroup and were now used by the outgroup (Berger and Heath, 2008, Study 4). Banister and Hogg (2004) suggest that self-esteem is a motivating factor in the dissociation effect. Linking Berger and Heath's (2007) "avoidance groups" with Ogilvie's (1987) "undesired selves" – a theory similar to Markus and Nurius' (1986) '*Possible Selves'* – Banister and Hogg (2004) revealed that consumers possessed a need to be distinct from avoidance groups, so as not to become an undesired self. Indeed, the authors note that by "*meeting the expectations of significant others, and achieving the goals of important reference groups*" (ibid, p859), consumers affiliated themselves with positive groups, while simultaneously ensuring they were distinct from negative reference groups.

---

[14] Brewer's (1991) Optimal Distinctiveness Theory suggests that individuals have two fundamental, competing needs that govern the relationship between self-concept and social identification. They are the need for assimilation/inclusion and the need for differentiation from others. Each need works in opposition to the other, allowing the individual to achieve optimal balance of inclusion and distinctiveness. For a review, see Leonardelli, Pickett, and Brewer (2010).

Thus the dissociation effect refers to the avoidance of an individual consumer from a product or brand that has come to be associated with a group the individual does not wish to be associated with. This group is referred to as a dissociative group within the reference group literature and a relevant outgroup within the Social Identity Approach.

4.2.4   Stream I: Dissociation and Social Identity

Up to this point, it would appear there are certain similarities between dissociation as reported in the reference group literature, and individual mobility as reported in SIT, as each uses psychological and/or physical avoidance as a means of self-protection. To recap the SIT perspective, when faced with a threat to social identity, the individual has three strategies: I. engage in individual mobility by dissociating from the threatened social identity, thereby protecting the self, II. engage in social creativity by finding ways in which to view the ingroup positively, while not actually affecting the groups threatened status, and III. engage in social competition, thereby protecting the ingroup to protect the self. Strategy I (individual mobility) includes both the physical and psychological distancing of the individual from the threatened ingroup (Ellemers, 1993). But dissociation as reported in the reference group literature is dissociation from an *out*group, not a threatened ingroup.

However, dissociation vis-à-vis individual mobility has been explored within consumer research. White and Argo (2009, Studies 1, 2, and 4) threatened participant gender-derived social identity by having them read an article that described how "*their own gender demonstrates weak analytical reasoning skills, low levels of motivation in the workplace, and a poorly developed sense of social intelligence*" (White and Argo, 2009, p316). Following this threat, participants were told there were products left from a previous study, and that to say thanks for having taken part, they could take one with them. Using Collective Self-Esteem (CSE) as a moderator, the authors revealed that participants with Low CSE (i.e. those for whom gender was not a primary source of self-esteem) avoided products associated with their gender (*Cosmopolitan* magazine for females, *Sports Illustrated* for males), and chose instead a gender-neutral product (*US* magazine). While those with High CSE (i.e. those for whom gender *is* a primary source of self-esteem) continued to select a gender-related product, despite their gender group having been threatened (White and Argo, 2009, Study 1). This effect was repeated across a further three studies, with each revealing CSE to be a valid moderator of the effect (Low CSE resulted in dissociation from an ingroup product). But as can be seen, this effect relates to a threatened social identity and the dissociation of the

consumer from said identity by means of product-dissociation. What Stream I is intending to investigate, is whether the dissociation from a dissociative-group product is motivated by male gender-derived social identity; essentially bridging the gap between the two approaches.

White and Dahl (2007, Studies 2–4) provide one instance in which the gap is bridged. Employing the theory of *Self-Brand Connections* (SBC), wherein SBCs represent the incorporation of a brand into the consumers self-concept, White and Dahl (2007, Study 2) reveal that when a consumers social identity is primed (vs. not primed), their reported SBCs for a dissociative group brand are negatively affected. But the authors also report there to be no significant main effect of reference group label, suggesting that negative SBCs were only provided in those instances where social identity had been primed. The question therefore remains, why do consumers dissociate from a dissociative-group product in the absence of an ingroup prime? To determine whether social identity is at play in the dissociation of consumers from a dissociative-group product, Stream I employs the Menu Selection Task (MST) paradigm, as discussed in the following section.

4.2.5   Stream I: The Menu Selection Task (MST)

The Menu Selection Task (MST) is a simple and effective means of testing the dissociation effect. Developed by White and Dahl (2006)[15], the MST provides a paradigm within which the selection and evaluation of a dissociative group product can be assessed. Using the ingroup of "men", the MST presents participants with one of two restaurant menus. Participants in the *Control* condition are presented with a menu that includes a *10oz Chef's Cut* and a *12oz House Cut* steak, while participants in the *Treatment* condition are presented with a *10oz Ladies' Cut* and *12oz House Cut*. Thus, the size of the steaks remains constant across conditions (10oz vs. 12oz), and the label of the *12oz House Cut* remains constant also. The labelling of the 10oz changes from *Chef's Cut* (Neutral) to *Ladies' Cut* (Dissociative). Participants then select and evaluate several food items, allowing for comparisons to be made between conditions.

White and Dahl (2006) report the *10oz Ladies' Cut Steak* was selected by only 5.3% of male participants, while the *10oz Chef's Cut Steak* was selected by 47%. For female participants, no

---

[15] It is important to note that while White and Dahl (2006) discuss their research in terms of Reference Group Influence, they include multiple citations that relate to studies of Social Identity Theory. They also note in their General Discussion that their research "*complements and expands upon social identity research that has examined when out-group differentiation effects are likely to occur*" (ibid, p411). Thus, the MST is rooted in SIT, and so what White and Dahl refer to as a "dissociative group" (e.g. women) *is* a relevant outgroup to the participants male ingroup. That said, the original publication does not include measures of strength of ingroup identification as it instead explores Impression Management. And so there exists further opportunity to apply the Social Identity Approach to the MST.

significant difference was observed. Similarly, male participants negatively evaluated the *10oz Ladies' Cut* (*M* = 6.80) compared to the *10oz Chefs Cut* (*M* = 7.90) and *12oz House Cut* (*M* = 7.67). Again, no significant difference was reported for female participants. Thus, the MST provides a simple and effective method by which to analyse the dissociation effect. It also employs a 'dissociative group' that would otherwise be referred to as an outgroup in the Social Identity Approach. Furthermore, the paper (White and Dahl, 2006) explores self-presentation concerns and public self-consciousness as potential moderators (i.e. impression management), while the influence of the consumers strength of identification with their male ingroup remains unexplored.

There is further reason to apply the Social Identity Approach to the MST paradigm. The dissociation studies indicate that products associated with undesired selves (being elderly) are dissociated from fear of misidentification (Tepper, 1994). Likewise, products associated with groups to which an individual does not and will not belong, are also avoided for fear of misidentification (Berger and Heath, 2007; Banister and Hogg, 2004). This holds true even if said product was once something the individual identified with (Berger and Heath, 2008). Furthermore, as White and Dahl (2006) revealed, products containing the label of an outgroup are avoided and negatively evaluated, as if to put distance between the individual and the dissociative group. These behaviours are representative of intergroup behaviour.

Further still, it is the negative evaluations of the dissociative group product that is of interest. To reiterate Brewer's (2017, p92) definition of outgroup derogation, it involves "*discrimination against the outgroup, wherein the outgroup is treated unfairly... **driven by greater activation of negative evaluative processes for the outgroup**" (emphasis added). To this definition, might be added: *driven by greater activation of negative evaluative processes for the outgroup **and associated symbols***. It seems that derogation is the vehicle by which consumers dissociate from negative reference group products for protection against misidentification. But as the Theoretical Framework revealed, outgroup derogation occurs as a result of actual or perceived social identity threat. If social identity is at play within the MST, and the negative evaluations of the *Ladies' Cut Steak* are an act of outgroup derogation, then the *Ladies' Cut Steak* may in some way be perceived as threatening to male social identity. Alternatively, the *Ladies' Cut Steak* may activating male social identity, increasing its salience.

This is supported by recent developments in the social identity literature. Razpurker-Apfeld and Shamoa-Nir (2020; *see also* Shamoa-Nir and Razpurker-Apfeld, 2020; Randolph-Seng, Reich, and DeMarree, 2012) reveal that outgroup symbols (e.g. religious jewellery, clothing, concepts) make salient an ingroup identity in much the same way that ingroup symbols have been found to (Seger, Smith, and Mackie, 2009). The argument could therefore be made that presentation of the *Ladies' Cut Steak* makes salient male gender-derived social identity.

4.2.6   Stream I: Summary

It is part of the human condition to attribute symbolic meaning to our possessions, and to the possessions of others, also. This 'meaning' is intended to represent something about who the person is as much as who they are not, differentiating them from one type of person to another. Using the reference group construct, research to date has investigated the impact of 'dissociative' group association on product preferences, revealing that consumers will dissociate from said products to avoid misidentification or communicating something about themselves that they would rather not. But with the use of the reference group construct, come certain limitations. This includes ill-defined ingroups that prevent moderating variables such as strength of ingroup identification from being explored.

The objective of Stream I is to contribute to the literature by applying the Social Identity Approach to the MST. This approach, as highlighted in the Theoretical Framework, provides a clearer definition of what constitutes an ingroup relative to an outgroup. Indeed, what constitutes a dissociative group in the reference group literature, is perhaps better understood as a relevant outgroup – it is a group to which the individual does not belong, with whom they do not wish to be identified, and with whom they compete for positive distinctiveness. From this perspective, the dissociation effect may be explored in terms of strength of ingroup identification, answering the question: *is dissociation from an outgroup-associated product moderated by the consumers identification with their ingroup?* Further still, the dissociation effect may be better conceptualised as an act of outgroup derogation, if identification *is* a contributing factor. The Social Identity Approach reveals that threats to social identity may be caused a lack of acceptance by the ingroup, referred to as an *Acceptance Threat.* A further question answered by Stream I is: *does the consumption of an outgroup-associated product put at risk one's ingroup membership?* The Theoretical Framework reveals that ingroup members adopt ingroup norms as a means of communicating their ingroup status. The consumption of an outgroup-associated product may therefore be viewed as a transgression against ingroup norms if not membership threatening.

Finally, the Menu Selection Task (MST) will operate as the paradigm within which to explore the dissociation effect from the social identity perspective. The MST provides the researcher with a clear example of the dissociation effect, whereby male participants dissociate from a dissociative group (female) product. Utilising this paradigm, the influence of social identity may be explored, as well as the mitigating effects of self-affirmation. Stream I is explored in Studies I – 4.

Hypotheses relating to Stream I are detailed in .

4.3 Stream II: Science Discrediting, an Introduction

"*We're not just fighting an epidemic; we're fighting an infodemic. Fake news spreads faster and more easily than this virus, and is just as dangerous.*"

Dr Ghebreyesus, Director General of the World Health Organisation (WHO, 2020)

There is a disconnect between public opinion and scientific consensus. Today, the Coronavirus pandemic (COVID-19) has seen governments across the world prescribe behaviour to reduce the spread of the disease, including nation-wide lockdowns, social distancing, and the disinfecting of premises and people. Yet, despite the virus having claimed the lives of 2.4million people worldwide (BBC, 2021), there continues to be scepticism surrounding the dangers of the disease, and whether or not it even exists. Indeed, in the UK alone, 25% of people show some endorsement of conspiracy beliefs regarding the virus, while another 10% show a high level of endorsement (Freeman *et al.*, 2020). This endorsement is linked to a general mistrust in institutions and experts, a finding that inspired Stream II of this thesis.

In the UK today, 25% of the funding allocated to universities is based on the "impact" of its research output (REF, 2020). Figure 1 explains how the *REF Guidance on Submissions* defines impact:

Figure 1 Definition of "Impact" for the Research Excellence Framework (REF)

Definition of impact for the REF

4. For the purposes of the REF, impact is defined as an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia (as set out in paragraph 7).

5. Impact **includes**, but is not limited to, an effect on, change or benefit to:

- the activity, attitude, awareness, behaviour, capacity, opportunity, performance, policy, practice, process or understanding
- of an audience, beneficiary, community, constituency, organisation or individuals
- in any geographic location whether locally, regionally, nationally or internationally.

Source: (REF, 2020, p90 – ANNEX C)

Thus, academics in the UK are incentivised to produce research for non-academics. Essentially, broadening the market to include policymakers, practitioners, the media, and laypersons. But what if actors within this new market were to discredit, dismiss, or reject the research for non-scientific reasons? Aside from negatively impacting future funding, the ongoing pandemic has

revealed that rejecting scientific evidence puts the public at risk (Imhoff and Lamberty, 2020; Allington *et al.*, 2020), and so there is desperate need to understand what motivates this rejection.

Inspired by the above and by the rising popularity of terms such as 'Fake News' (Fuller, 2017; Clarke and Newman, 2017), Stream II investigates the Motivated Rejection of Science (MRS; Hornsey and Fielding, 2017) from a social identity perspective. With Stream I failing to produce "positive" effects for the thesis, the decision was made to apply the Theoretical Framework discussed in Chapter 3 to an alternative form of consumption – the consumption of scientific information itself. Stream II shares ties with social marketing[16] (Kotler and Zaltman, 1971). In recent years, researchers have begun to explore the role of social identification within social marketing and behaviour change contexts (e.g. McGowan and Hassan, 2021; Evans and French, 2021; Summers and Summers, 2017; Champniss *et al.*, 2016). Their aim is to establish the motivations that underlie the behaviour change needed to improve social welfare; to allow marketers to facilitate social change. For example, using marketing techniques to generate demand for the COVID-19 vaccine (Evans and French, 2021). Thus, Stream II provides insight into the rejection of science, with the view that understanding what underlies rejection better equips marketers of science to avoid rejection in the future by positioning it in such a way as to not be threatening to the consumer. Essentially, remedying some of the disconnect between public opinion and scientific consensus.

The remainder of this review discusses the concept of science discrediting, highlighting a need for greater understanding of its causes and consequences, and drawing on *Self-Affirmation Theory* (Steele, 1988) as a possible remedy. The review also considers several alternative theories to *Social Identity Theory* (SIT; Tajfel and Turner, 1979) that may help explain science discrediting from a male social identity perspective, including *Social Dominance Orientation* (SDO; Pratto *et al.*, 1994; Sidanius *et al.*, 2017), *Ambivalent Sexism* (AS; Glick and Fiske, 1996), *Collective Narcissism* (CN; Golec de Zavala *et al.*, 2009), and *Precarious Manhood* (PM; Vandello *et al.*, 2008).

---

[16] Kotler and Zaltman (1971, p5) define social marketing as "*the design, implementation, and control of programs calculated to influence the acceptability of social ideas and involving considerations of product planning, pricing, communication, distribution, and marketing research.*" It is the application of marketing principles and techniques to achieve socially desirable goals that benefit society as a whole.

4.3.1   Stream II: Alternative Approaches to Science Discrediting

"*Rather than behaving like cognitive scientists – examining evidence evenly with a goal to obtaining the most accurate approximation of objective reality – people sometimes behave like cognitive lawyers, appraising evidence in a biased way with a view to reaching a preferred outcome.*"

(Hornsey, 2020, p583).

It is first important to understand what is meant by 'science discrediting'. Here, the term is used as a catchall term for the biased discrediting, rejection, and derogation of scientific findings based on individual attitudes, beliefs, and opinions. It is not an act informed by better science, nor is it based on comparison with alternative findings. It is the discrediting and negative evaluation of scientific findings as a result of individual bias.

The topic of science discrediting has been explored in many forms. For instance, according to the *Scientific Impotence Excuse* (SIE; Munro, 2010), people will resist belief-disconfirming scientific evidence by suggesting that said belief cannot accurately be investigated by scientific means. That is, scientific methods are impotent to address the topic. Rooted in Festinger's (1957) *Cognitive Dissonance Theory*, SIE argues that belief-disconfirming scientific evidence causes inconsistency within the individuals cognitive system, that threatens their self-image and causes unpleasant emotions. By suggesting that scientific methods are impotent to address the strongly held attitude, the individual is thus attempting to reduce the dissonance (Munro, 2010).

The *Hostile Media Perceptions* (HMP; Vallone, Ross, and Lepper, 1985) perspective offers an alternative explanation to science discrediting as it relates to science reported in the media. HMP is a perceptual bias that occurs within highly identified ingroup members, who as a result of their identification, believe the media is biased *against* their ingroup relative to an outgroup. For instance, Vallone *et al*. (1985) report that in presenting both pro-Israeli and pro-Arab partisans the same media report concerning the Beirut Massacre, both groups described the report as being hostile and biased against their own group. Indeed, both groups recalled more negative references to their own group than they did the other, despite the report being identical. The HMP perspective has also been applied to climate change denial (Hart *et al*., 2015; Kim, 2010). HMP was revealed to affect people's trust in news media reporting on climate change (Kim, 2010) and their support for climate mitigation policies (Hart *et al*., 2015). In both instances climate change was linked to political ideology, causing an '*us vs. them'* mentality, similar to that reported by Vallone *et al*. (1985). From a social identity perspective, media that is perceived as social identity threatening increases HMP, leading to greater denouncement of the media (Cohen *et al*., 2020).

Hornsey and Fielding (2017; Hornsey, 2020) provide yet another alternative perspective: the *Motivated Rejection of Science* (MRS; Hornsey and Fielding, 2017; *see also* Lewandowsky and Oberauer, 2016). The MRS perspective argues that people may be motivated to reject science as a result of their worldviews, underlying fears, ideologies, and identity needs; individual differences that are collectively referred to as "attitude roots". According to the MRS, attitude roots are unobservable individual differences that underly the "surface attitude" of science discrediting (see Figure 2). Therefore, explication of scientific facts to counteract antiscientific beliefs (i.e. increasing the accessibility of the science) tackles only the surface-level attitudes and not their root cause. Indeed, if a person is motivated to reject the science, then explication will likely fall on deaf ears, as people are often motivated to arrive at the conclusion they *want*, rather than what is necessarily right (Kunda, 1990).

Figure 2 A Model of Attitude Roots Applied to Motivated Rejection of Science
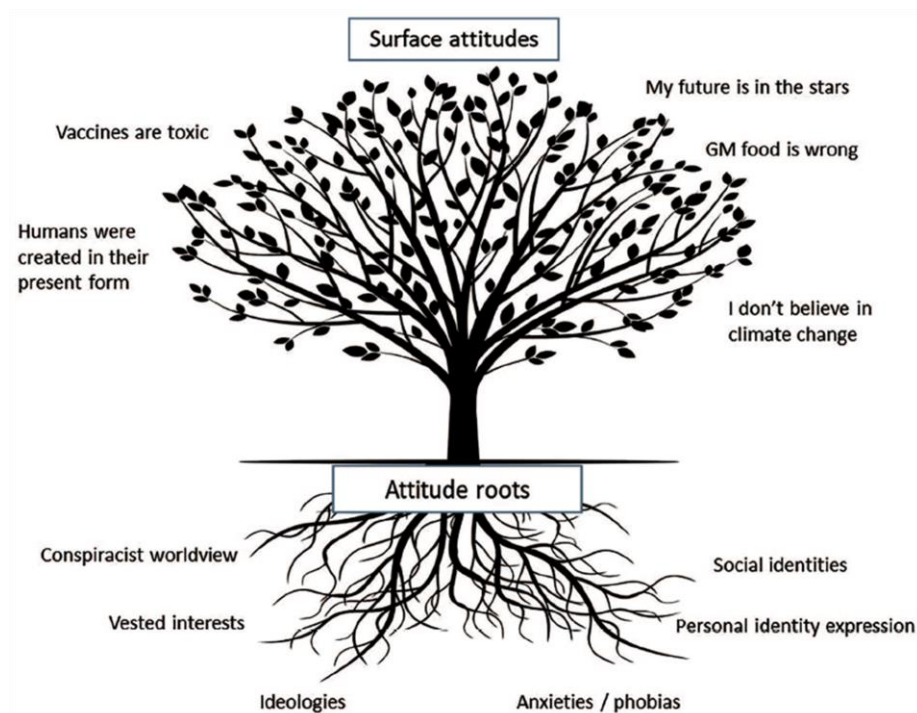
Source: Hornsey (2020, p585)

The MRS perspective proposes several attitude roots that underly this behaviour, including conspiracist worldviews, vested interests, and ideologies (including Social Dominance Orientation). Hornsey and Fielding (2017) note that certain ingroups may prescribe antiscientific beliefs, such as COVID-deniers, antivaxxers, and 5G conspiracy theorists, and so science discrediting is itself a group-defining characteristic. These would fall under "Conspiracist

Worldview" of Figure 2. But they also note that science discrediting may be motivated by "social identity needs". That is, where a particular belief is ingroup normative (e.g. in the United States, anthropogenic climate change is disbelieved to a greater extent by Republicans than Democrats, and so climate change skepticism is a Republican norm; Fielding and Hornsey, 2016; McCright and Dunlap, 2011) science that contradicts that ingroup norm (science in favour of anthropogenic climate change) is rejected and discredited. Thus the MRS perspective views science discrediting or the Motivated Rejection of Science (MRS) as a form of ingroup conformity, as discussed in the Theoretical Framework.

But anthropogenic climate change itself is not threatening to the Republican party. It does not attribute global warming to the GOP. It is politically neutral (or at least it should be). But what if the science did attribute blame to Republicans? To discredit climate science would then be less an act of ingroup conformity and more an act of ingroup defence. The MRS perspective stops at conformity. It does not consider ingroup threat to motivate science discrediting. The MRS perspective is adopted in Stream II. It is believed that science discrediting is motivated by "social identity needs" that operate as "attitude roots". But Stream II attempts to advance this perspective. In Studies 5 – 8, scientific publications are used to manipulate social identity threat, such that reading the publication and accepting its content as true is directly threatening to one's male gender-derived social identity. Stream II advances the MRS perspective by revealing that social identity threat results in a "social identity need" to protect group-level self-esteem, motivating the rejection of science[17]. Stream II also advances Hornsey and Fielding's (2017) "ideologies" attitude root, by exploring alternative causes for science discrediting, including Ambivalent Sexism, Collective Narcissism, and Precarious Manhood. But before these ideologies are discussed, attention turns to social identity defence.

---

[17] The term "social identity needs" requires further explanation. "Need" is defined as "*a psychological drive that prompts an individual to achieve a particular goal or state of being*" (Greenaway *et al.*, 2015, p295). To meet one's needs is to achieve psychological fulfilment and closure, while failing to do so results in negative psychological effects. Multiple "needs" underly one's ingroup memberships. These include the need to belong, the need for self-esteem, the need for control, and the need for meaningful existence (Greenaway *et al.*, 2015). Hornsey and Fielding's (2017) MRS perspective focuses on the need to belong (termed "affiliation" and "self-definition" in their paper). Thus, the MRS perspective views science rejection as a means of ingroup conformity. To be antiscientific is to be ingroup normative. They explain, "*to the extent that people identify with a certain group – and to the extent that this group prescribes antiscientific beliefs – internalization of antiscientific beliefs is likely*" (Hornsey and Fielding, 2017). The view of Stream II is that science rejection may also protect group-level self-esteem, an alternative "need" to that referred to by Hornsey and Fielding (2017).

4.3.2   Stream II: Motivated Rejection as Social Identity Defence

The position taken in this thesis is that science discrediting is a means of protecting the ingroup. The act itself is predicted by the core principles of Social Identity Theory (SIT; Tajfel and Turner, 1979). Principle I suggests that individuals are motivated to achieve or maintain the positivity of important social identities, while Principle 3 states that where said social identity becomes 'unsatisfactory', the individual is motivated to make the group more positively distinct (Tajfel and Turner, 1979). From these two principles emerge a scenario in which scientific findings that devalue a social identity, are reacted to in such a way as to protect and maintain the positivity of the ingroup, such as discrediting the threatening science.

The SIT literature has a long history of using negative ingroup-relevant feedback and criticism to elicit threat, causing ingroup members to respond defensively (Adelman and Dasgupta, 2019; Thürmer, McCrea, and McIntyre, 2019; Rabinovich and Morton, 2015; de Hoog, 2013; White, Argo, and Sengupta, 2012; White and Argo, 2009; Hornsey *et al.*, 2007; Voci, 2006; Dietz-Uhler, 1999; Ellemers, Kortekaas, and Ouwerkerk, 1999; Dietz-Uhler and Murrell, 1998; Spears, Doosje, and Ellemers, 1997; Bourhis *et al.*, 1979). For example, Dietz-Uhler (1999) presented students with an article that cast their university in a bad light. Those students who strongly identified with the university subsequently provided more negative evaluations of the article. Adelman and Dasgupta (2019) report a similar result. When presented with a report that indicated the US economy was stagnating, and that wages were falling, the report was more negatively evaluated and less likely to be shared with others when the reason for stagnation was attributed to the poor work ethic of the American people (the ingroup). The author of the report was also viewed with greater suspicion.

SIT alone can explain this behaviour. But recently, theories of information processing have been employed, also. De Hoog (2013) draws upon the *Defence Motivation Perspective* (DMP; Chaiken, Giner-Sorolla, and Chen, 1996; Chaiken and Ledgerwood, 2012). The DMP is a motive rooted in the *Heuristic-Systematic Model*[18] of information processing (Chaiken, 1980) that leads to a directional bias that is consistent with existing self-beliefs (i.e. holding attitudes and beliefs that are congruent with one's self-definitional attitudes and beliefs). Applied to negative ingroup-relevant feedback and criticism, de Hoog (2013, p2) argues that "*defense motivation shows itself in biased information processing and in turn affects evaluation of the information. High identifiers*

---

[18] The *Heuristic-Systematic Model* is a dual-process model of information processing. The first, less effortful mode is 'heuristic processing' wherein the individual uses heuristics to arrive at judgmental shortcuts. The second more effortful 'systematic processing' refers to the use of careful attention, deep thinking, and reasoning to arrive at a more accurate conclusion (Chaiken and Ledgerwood, 2012).

will devote more attention to negative group information, have higher threat perceptions, more defensive thoughts (criticism, minimizing), and more negative evaluations of negative (inconsistent) group information than positive or neutral (consistent) group information." Thus, the negative evaluation (Dietz-Uhler, 1999) or unwillingness to disseminate ingroup threatening information (Adelman and Dasgupta, 2019) is motivated by a desire to maintain self-consistency; a motivation that may manifest itself consciously or unconsciously. De Hoog (2013) goes on to provide evidence of DMP in the processing of negative group-relevant information. Her findings reveal that high identifiers took longer to read (process) and had greater defensive cognitive responses to group-threatening information, than did low identifiers. High identifiers also provided more negative evaluations of the negative information.

Thürmer *et al*. (2019) extend this point on processing. Investigating the *Intergroup Sensitivity Effect*[19] (Hornsey, 2005), Thürmer *et al*. (2019) argue that striving for a positive social identity is a goal, and that threats to social identity are obstacles to that goal. Thus threats to social identity will result in greater resource allocation to defending it. Indeed, when the ingroup was criticised by an outgroup member, defensive behaviour was found to take precedence over the participants other work commitments, even when that work was intrinsically rewarding or incentivised. This effect was reduced and, in some cases, eliminated altogether when participants were able to affirm the ingroup (Thürmer *et al*., 2019).

Taken together, the social identity literature reveals that negative ingroup-relevant feedback and criticism is responded to defensively, such that that which is threatening (including its source) is negatively evaluated. Furthermore, as de Hoog (2013) and Thürmer *et al*. (2019) reveal, part of the reason for this defensive behaviour is that the negative ingroup-relevant feedback and criticism is biasedly processed, resulting in greater resource allocation to understanding and defending it. Thus the act of science discrediting is motivated by an ingroup defensive bias.

4.3.3   Stream II: Social Identity and Science Discrediting

Limited attention has been given to the discrediting of science from a social identity perspective, though Nauroth *et al*. (2014; 2015; 2017) provide initial insight. In the first of a series of publications, Nauroth *et al*. (2014) investigated how the ingroup of "gamers" evaluated research

---

[19] Ingroup criticism provided by an outgroup is perceived as more threatening than the same criticism provided by the ingroup. This outgroup-originating ingroup criticism is therefore evaluated more negatively. This differential effect is referred to as the *Intergroup Sensitivity Effect* (ISE; Hornsey, 2005; Hornsey and Imani, 2004).

that linked violent video games to violent gamers. In line with SIT, highly identified gamers discredited the publication and reported feeling greater anger and stigmatisation. This effect held true even when gamers themselves believed violent video games increased aggression.

Later, Nauroth *et al.* (2015) advanced their investigation using an online blog-type scenario. Participants again read the summaries of two academic publications – one which concluded violent video games increased aggression in gamers, and another that refuted this claim. Again, Nauroth *et al.* (2015, Study 2) found that strongly identified "gamers" reacted most defensively against the identity-threatening science – they posted more negative comments about the threatening publication, and "disliked" it when offered the opportunity to "Like" or "Dislike". High identifiers (vs. Low) also focused their negative comments on discrediting the methodology used within the threatening article, despite little information being provided regarding its methodology. Finally, these defensive responses were eliminated when high identifiers were given the opportunity to either self-affirm or group-affirm (Nauroth *et al.*, 2015, Study 3). Recently, Nauroth *et al.* (2017) investigated the effects of identity-threatening vs. identity-affirming science. In line with expectations, the identity-threatening science was discredited to a greater extent. This extended to its author too, who was evaluated to be less competent, less prototypical of the scientific community, and less reputable, despite author-related information not being provided. Unfortunately, this later publication did not investigate strength of ingroup identification as a possible moderator of these effects.

Taken together, Nauroth *et al.* (2014; 2015; 2017) reveal a tendency by ingroup members to respond defensively to social identity-threatening scientific findings. This behaviour is moderated by strength of ingroup identification, with highly identified ingroup members discrediting the research more so than low identifiers (Nauroth *et al.*, 2014; 2015). Further still, the author of the publication was derogated when their publication was perceived to be ingroup-threatening (Nauroth *et al.*, 2017). Finally, in what appears to be the only publication to focus on science discrediting from a gender perspective, Morton *et al.* (2006) reveal that science that is "pro-male" is more positively evaluated by men, while "pro-female" science is more positively evaluated by women. Each gender also showed preference for continued research when it was pro-ingroup gender, but not anti-ingroup gender. Unfortunately, strength of gender identification was not explored as a possible moderator for preferences.

Following the above, Stream II adopts the methods employed by Nauroth *et al.* (2014; 2015) to explore science discrediting as it relates to gender-related social identity. The following subchapter explores why male gender-derived social identity is perhaps best suited for this investigation.

4.3.4   Stream II: The Case of Male Social Identity and Women in Leadership

McKinsey & Company (2015) report that if complete gender parity were achieved in the global economy, such that women were able to participate identically to men, then by 2025 global GDP would be increased by 26% compared to a business-as-usual scenario. This equates to an additional $28 trillion to the global economy. Yet, despite these predictions, and despite the mounting evidence in support of gender diverse executive teams (e.g. Brahma, Nwafor, and Boateng, 2020; Agyemang-Mintah and Schadewitz, 2019; Ali, Ng, and Kulik, 2014; Hoogendoorn, Oosterbeek, and van Praag, 2013; Joecks, Pull, and Vetter, 2013), women in the UK account for only 26.7% of board members and 37.9% of managers (GOV UK, 2019). And for those who do succeed, they are perceived to be less likeable and derogated against (Heilman *et al.*, 2004). In fact, leadership itself is viewed to be a male trait (Isaac, Kaatz, and Carnes, 2012).

It is beyond the scope of this thesis or any other to definitively answer the question of why women continue to be underrepresented in leadership positions. But it is the intention of Stream II to shed some light on the matter. The Theoretical Framework has already revealed that male gender-derived social identity is perceived to be 'high status' (Kahn *et al.*, 2016; Ridgeway, 2014; Rudman *et al.*, 2012), and as such is prone to threat caused by changes to the status hierarchy (Dover, Major, and Kaiser, 2016; Scheepers, Ellemers, and Sintemaartensdijk, 2009; *see also* Scheepers and Ellemers, 2019; 2005). These changes include improvements to workplace gender equality; a topic that itself is so threatening to male social identity that it elicits within men physiological responses indicative of physical threat (Scheepers, Ellemers, and Sintemaartensdijk, 2009). Indeed, as Spoor and Schmitt (2011) reveal, simply considering the historical progress that women have made in achieving greater equality, can cause some men to feel agitated.

Taken together – the Principles of SIT (Tajfel and Turner, 1979), the precarious nature of male status (Dover, Major, Kaiser, 2016; Scheepers, Ellemers, and Sintemaartensdijk, 2009), the Motivated Rejection of Science (Hornsey and Fielding, 2017; Hornsey, 2020), the motivated processing and responding to group-threatening information (de Hoog, 2013), and the tendency for highly identified ingroup members to discredit scientific findings that devalue their ingroup (Nauroth *et al.*, 2014; 2015; 2017), there is an argument to be made that scientific publications that provide an unfavourable comparison of the male ingroup relative to the female outgroup, will be rejected (discredited) by those men who perceive such findings as threatening to their male ingroup. And thus the consumption (and subsequent dissemination) of that information will suffer as a consequence.

4.3.5   Stream II: Alternative Explanations

The act of science discrediting is hypothesised to be influenced by male social identity. But as Stream II focuses specifically on male gender-derived social identity, alternative explanations warrant consideration. Hornsey and Fielding (2017) note that ideologies such as *Social Dominance Orientation* (SDO) can motivate the rejection of science. SDO, as the following subsection reveals, will also be investigated in Stream II. To SDO and the MRS perspective, the following alternative explanations are added, also, that might better suit the "ideologies" attitude root of the MRS: *Ambivalent Sexism* (AS), *Collective Narcissism* (CN), and *Precarious Manhood* (PM). Each alternative explanation for science discrediting is briefly discussed.

4.3.5.1 Social Dominance Orientation (SDO)

According to *Social Dominance Theory* (SDT; Pratto *et al.*, 1994; Sidanius *et al.*, 2017; Sidanius and Pratto, 1999, p31), "*all human societies tend to be structured as systems of group-based social hierarchies.*" These hierarchies are structured using three stratification systems: I. an age system, in which adults have more power and status than juveniles, II. a gender system, in which men have more power and status than women (the patriarchy), and III. an arbitrary-set system, which refers to culturally distinct hierarchies that may not be universal. SDT argues the purpose of these hierarchies is to reduce intergroup conflict by providing a consensus on ideologies that ensure one group remains dominant over another. SDT argues that societies must accept these ideologies as self-apparent truths, also referred to as 'hierarchy-legitimizing myths' (Pratto *et al.*, 1994). These myths coupled with the normalisation of inequality within society, determine resource allocation. Thus, group-based oppression (e.g. racism, nationalism, sexism, etc.) are the outcomes of a process in which dominant high-status groups ensure and maintain both social and economic domination over subordinate low-status groups (Sidanius *et al.*, 2017).

SDT is operationalised as *Social Dominance Orientation* (SDO; Pratto *et al.*, 1994). SDO is defined as "*the degree to which individuals desire and support group-based hierarchy and the domination of inferior groups by superior groups*" (Sidanius and Pratto, 1999, p48). SDO is linked to attitudes and behaviours regarding the maintenance of intergroup status boundaries, preferences for political parties, participation in labor unions, support for capital punishment, the use of torture, and the dehumanisation of low-status outgroups (Sidanius *et al.*, 2017).

From a gender perspective, SDT posits the *Invariance Hypothesis* (Sidanius and Pratto, 1999), which states that men will favour gender inequality more so than women and so will report

higher SDO scores. Lee, Pratto, and Johnson (2011) provide evidence in support of this hypothesis in a meta-analysis. Their findings reveal that gender differences in SDO were larger, more stable, and less variable across samples than differences between ethnic and racial groups. Their findings also revealed that gender differences in SDO were more pronounced in countries with greater national wealth and greater gender equality. That is, gender differences in SDO were higher in countries with greater rates of female professionals and lower rates of gender income inequality (Lee *et al.*, 2011).

SDT predicts that when faced with status loss (e.g. income equality, women in professional positions), men will show greater preference for status hierarchies in which they occupy the dominant group, i.e. as gender equality increases, men's support for inequality increases, also. This effect, while moderated by the presence of threat, is also moderated by men's identification with their gender-derived social identity (Wilson and Liu, 2003; Dambrun, Duarte, and Guimond, 2004). The stronger they identify with their male social identity, the higher their SDO scores. Thus, when faced with societal change that would decrease gender inequality, highly identified men will react by increasing their SDO. It is hypothesised in Stream II that SDO will moderate the act of science discrediting where science information concludes that women are better suited to leadership positions than men.

4.3.5.2 Ambivalent Sexism Theory (AST)

Broadly speaking, sexism is defined as "*attitudes, beliefs, or behaviors that support the unequal status of women and men*" (Swim and Campbell, 2003, p219). In line with Social Identity Theory (SIT; Tajfel and Turner, 1979) and Social Dominance Theory (SDT; Pratto *et al.*, 1994; Sidanius *et al.*, 2017), Ambivalent Sexism Theory (AST; Glick and Fiske, 1996) argues the dominant, high-status group relies on the status hierarchy, and will derogate those who threaten it. However, unlike SIT and SDT, AST is informed by the individuals attitudes towards women and men, and as such there exists only one outgroup.

AST suggests that modern-day sexism is comprised of antipathy and subjective benevolence (Connor, Glick, and Fiske, 2017). It is subsequently conceptualised in terms of Hostile Sexism, which "*corresponds to classic definitions of prejudice as antipathy and reflects the hostile derogation of women who pose a threat to the gender hierarchy*", and Benevolent Sexism, which describes "*a set of interrelated attitudes toward women that are sexist in terms of viewing women stereotypically and in restricted roles but that are subjectively positive in feeling (for the perceiver)*" (Connor *et al.*, 2017, p295). These two ideologies resolve the gender relationship paradox by

subtly controlling the subordinate group of women – emphasising their lower status by holding patronising attitudes toward them (e.g. women are meek and mild, they "complement" men, they rely on men for protection), and punishing those women who resist control and seek to change or challenge the status hierarchy.

In terms of science discrediting, Connor, Glick, and Fiske (2017, p299) note that "*by virtue of their social position, men, as the dominant group, have greater power to define intergroup stereotypes and attitudes. Notably, maintaining gender inequality does not require that individual men consciously intend to control or dominate women. Gender inequality becomes routinized through the widespread diffusion and acceptance of sexist ideology, which serves to explain and justify inequalities.*" Therefore, where a scientific publication provides an unfavourable comparison of men to women, its rejection or discrediting by men may be unconscious; unintentionally maintaining the status quo. But equally, it may also be intentional. Holding sexist attitudes toward women predicts the attribution of less positive emotions toward and more negative evaluations of career women (Glick, Wilkerson, and Cuffe, 2015; Gaunt, 2013), as these "non-traditional" women pose a threat to the status hierarchy. Indeed, women who outperform men in masculine domains are perceived as threatening to men's masculinity, causing both anger and discomfort and increasing the sexualisation of the superior-performing woman (Dahl, Vescio, and Weaver, 2015). Ambivalent Sexism is therefore predicted to moderate science discrediting by males, where that science concludes that women outperform men.

4.3.5.3 Collective Narcissism (CN)

Narcissism is an inflated belief in one's own superiority and entitlement. To be narcissistic is to require constant external validation from others in the form of attention and admiration (Crocker and Park, 2004; Morf and Rhodewalt, 2001). Through constant self-affirmation, narcissists support their exaggeratedly positive yet chronically vulnerable self-concepts (Morf and Rhodewalt, 2001). Baumeister and Vohs (2001) describe narcissists as being "addicted" to self-esteem. Failing to satisfy this addiction or to receive information that diminishes one's self-esteem (e.g. criticism, humiliation) causes threat to an already fragile self-concept, which is subsequently responded to with aggression and hostility (Crocker and Park, 2004; Bushman and Baumeister, 1998).

Applied to the social self, Collective Narcissism (CN; Golec de Zavala *et al*., 2009; Golec de Zavala and Lantos, 2020, p273) is a type of ingroup identification that is tied to "*the belief that one's own group (the in-group) is exceptional but not sufficiently recognized by others.*" It predicts that

ingroup members faced with group-related criticisms will respond with outgroup derogation. Indeed, as Golec de Zavala *et al.* (2013) reveal, under ingroup image threat, those with High CN retaliate with greater intentions to harm the source of threat. It is also revealed to be the only reliable predictor of outgroup hostility, compared to ingroup identification, social dominance orientation, and right wing authoritarianism (*ibid.*). This defensive behaviour is to satisfy the need to belong to a strong group (Marchlewska *et al.*, 2020).

Though only a small number of studies have investigated the effects of male-specific Collective Narcissism (e.g. Górska *et al.*, 2020, Study 2; Golec de Zavala and Bierwiaczonek, 2020, Study I), the evidence suggests it is a reliable predictor of ingroup-serving biases. For instance, at the time of the 2018 Black Friday March (against Polish abortion restrictions) (Koper and Goettig, 2018), Górska *et al.* (2020) surveyed both male attendees and non-attendees. Their findings revealed that male-specific CN was a negative predictor of attendance, indicating that as Collective Narcissism increased, solidarity-based collective action intended to benefit the outgroup of women by improving gender equality, decreased. Furthermore, their findings revealed that male CN had an indirect effect on empathy toward women, such that higher male-specific CN was associated with lower female-directed empathy. Male-specific Collective Narcissism is also revealed to be a reliable predictor of Ambivalent Sexism (AS; Glick and Fiske, 1996), traditional gender beliefs, and Precarious Manhood (PM; Vandello *et al.* 2008) (Golec de Zavala and Bierwiaczonek, 2020).

In terms of science discrediting, CN is hypothesised to moderate the discrediting of a scientific publication that is perceived to be threatening to the male ingroup. As male-specific CN positively predicts ambivalent sexism and traditional gender beliefs (Golec de Zavala and Bierwiaczonek, 2020), and negatively predicts intentions and behaviours associated with improving equality for women (Górska *et al.*, 2020), it is likewise predicted that research concluding that women make for better leaders than men will be discredited as a function of the individuals male-specific Collective Narcissism.

4.3.5.4 Precarious Manhood (PM)

Precarious Manhood (PM; Vandello *et al.*, 2008, p1325; Vandello and Bosson, 2013) refers to the belief that manhood, as opposed to womanhood, is a culturally defined "*precarious state requiring continual social proof and validation*." Men with High PM are especially prone to masculinity threats (Vandello *et al.*, 2008), which are responded to with acts of aggression (Bosson *et al.*, 2009). In this sense, PM is akin to male-specific Collective Narcissism (CN; Golec de Zavala *et al.*,

2009), as each relies on the continual affirmation of a vulnerable self-concept, that if not affirmed leads to feelings of threat. However, PM is affirmed through continued demonstrations of masculinity, while CN is affirmed through the external recognition of men's exceptionality.

From the Precarious Manhood perspective, aggressive responses to a loss of masculinity is part of men's cultural script (Bosson *et al.*, 2009). It helps downregulate the negative effects of masculinity threat. In a series of experiments, Bosson *et al.* (2009) tasked men with styling the hair of a female mannequin; a nonnormative task intended to threaten the participants masculinity (vs. making rope, a neutral task). Following this first task, all participants were then asked to punch a punchbag. Bosson *et al.* (2009) report that men tasked with styling hair, hit the punchbag harder than men tasked with making rope. To follow this up, a second experiment gave participants an option for their second task: I. punch a punchbag or II. solve a brainteaser. The majority of those tasked with styling hair chose the punchbag. Therefore, behaving in a way that is non-gender normative puts at risk men's masculinity, which is responded to with acts of aggression.

The belief that masculinity must be outwardly displayed and protected is further evidenced by Kroeper, Sanchez, and Himmelstein (2014). Their findings reveal that heterosexual men with High PM are less likely to confront someone expressing sexual prejudice toward homosexual men. They are also less likely to negatively evaluate such behaviour. The authors argue that to confront such behaviour is to behave in a way that is not representative of a "real man", and so sexual prejudice of homosexual men goes unchallenged. High PM is also found to predict support for political aggression and politicians that signal strength and toughness (DiMuccio and Knowles, 2020), as well as greater risk taking and the avoidance of femininity (Vandello and Bosson, 2013). In Chapter 5 Hypotheses Development, it is hypothesised that a scientific publication that concludes women are better leaders than men, will be perceived as a threat to male social identity, and so those with High PM will discredit the findings more so than those with Low PM.

4.3.6   Stream II: Summary

The Stream II review highlights the need to explore science discrediting from a male social identity perspective. The Theoretical Framework reveals that male social identity is high status, and as such is prone to social identity threat. It also revealed that discussion alone of gender equality can cause physiological responses in men that are akin to physical threat. Yet, men occupy the majority of executive and management positions. If scientific publications are intended for practitioners then that same group of people who may be threatened by the science,

are also the gatekeepers to its introduction to the workplace. This risks a disconnection between research and practice.

The objective of Stream II is to investigate the possibility of this disconnection. The literature provides multiple causes for science discrediting, including the Scientific Impotence Excuse (SIE), Hostile Media Perceptions (HMP), the Defence Motivation Perspective (DMP), and the Motivated Rejection of Science (MRS). The objective of Stream II is to explore science discrediting from this latter perspective – the MRS as a social identity need. Where Stream II differs from the MRS perspective, is that here science discrediting is perceived as a defence mechanism intended to protect social identity.

The review also revealed that science discrediting from a social identity perspective has only recently begun to receive attention. The Social Identity Approach has a long history of using negative ingroup-relevant feedback and criticism to elicit social identity threat, which has firmly established that strength of ingroup identification is a key moderator to defensive responding. Applied to science discrediting, recent studies have revealed that scientific publications that devalue ingroup members (e.g. "gamers"), causes ingroup members to feel angered and stigmatized, while eliciting defensive responses such as the discrediting of the science itself (its methodology) and the scientist who published the study (its author). Thus the argument is made, if scientific publications are perceived to be threatening to male gender-derived social identity, how will that science be perceived? How will it be evaluated?

While Stream II is primarily interested in the impact of male gender-derived social identity on science discrediting, alternative explanations are explored, also. These include Social Dominance Orientation (SDO), Ambivalent Sexism (AS), male-specific Collective Narcissism (CN), and Precarious Manhood (PM). Hypotheses relating to both Streams I and II are developed in the next chapter.

CHAPTER 5
HYPOTHESES DEVELOPMENT

5.1 Introduction

To reiterate, the thesis aims to investigate the impact of social identity on consumer behaviour, using two unique perspectives. These two perspectives are referred to as Streams I and II. Having reviewed the relevant literatures, the following research questions have been identified:

Stream I: Dissociation as Outgroup Derogation

RQ_1. To what extent is the dissociation effect as reported in the consumer reference group literature, the consequence of social identity?

RQ_2. To what extent does strength of ingroup identification moderate preferences for an outgroup-associated product?

RQ_3. What effect does group-affirmation have on consumer preferences for an outgroup-associated product?

Stream II: Science Discrediting

RQ_4. To what degree are evaluations of identity-threatening scientific publications influenced by male gender-derived social identity?

RQ_5. To what extent can the act of science discrediting by male's be attributed to alternative explanations, including Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Collective Narcissism (CN), and Precarious Manhood (PM)?

RQ_6. What impact does group-affirmation have on the consumers evaluations of identity-threatening scientific publications?

To answer these questions, the following chapter develops a series of hypotheses that draw upon the literature discussed in the review. Hypotheses are broadly defined as predicted answers to a research question (Punch, 2005, p37-39), and so the intention here is to use the existing literature to formulate hypotheses (answers to the above questions) that may later be accepted or rejected depending on the results of the forthcoming studies.

5.2 Stream I: Dissociation as Outgroup Derogation

To investigate the dissociation effect as reported in the reference group literature, the Menu Selection Task (MST) is employed. Initially developed by White and Dahl (2006), the MST presents participants with a food menu from which they are instructed to select three dishes (starter, main, dessert). The dissociation effect is manipulated using an outgroup-labelled steak, the *10oz Ladies' Cut Steak* (vs. *10oz Chef's Cut*). The dissociation effect is operationalised as the avoidance and/or negative evaluations of the steak by male participants. Within this thesis, the MST provides a paradigm within which to investigate the dissociation effect from a social identity perspective. The MST will remain relatively unchanged throughout its investigation, while the participants male gender-derived social identity will be measured and manipulated prior to their engagement with the task.

The idea that consumers will dissociate from an outgroup or dissociative group product, is well supported by the reference group literature. Tepper (1994) reveals that a coupon intended for an undesired self (e.g. senior citizen) is avoided by consumers so as to avoid misidentification. This is further supported by Sirgy's (1982) "negative self-incongruity" effect, which predicts that consumers will avoid products and brands that are incongruent with their own self-image. Escalas and Bettman (2005) support this prediction by revealing that brands possessing outgroup images, are incorporated into the consumers self-concept to a lesser extent than brands with images congruent with the consumers ingroup. Berger and Heath (2007; 2008) further reveal that products and catchphrases that were once ingroup defining, are abandoned by the ingroup upon their association with an outgroup. Therefore, as White and Dahl (2006) predicted, a food product labelled the *Ladies' Cut Steak* was dissociated from by male consumers.

The dissociation effect may also be predicted by *Social Identity Theory* (SIT; Tajfel and Turner, 1979) and *Self-Categorisation Theory* (SCT; Turner *et al.*, 1987). According to SCT, categorisation as an ingroup member results in the depersonalisation of the individual, such that their perceptions, behaviours, and attitudes become ingroup normative. This redefinition of self is dependent on the degree to which the individual identifies with the category, as well as the

salience of said category (Oakes, 1987) – the greater the salience, the greater the likelihood the category membership will manifest itself as a social identity. Given the importance of gender to self-definition, gender-derived social identity is said to be highly salient and thus 'always on' (van Knippenberg *et al.*, 1994; Fiske and Neuberg, 1990). With gender identity being active, male gender-derived social identity may have been salient in White and Dahl's (2006) MST. Therefore, it might reasonably be concluded that dissociation from the *Ladies' Cut Steak* is in reaction to the product being ingroup nonnormative.

However, if male social identity was *not* activated prior to engagement in the MST, presentation alone of the *Ladies' Cut Steak* may have primed male social identity in much the same way as outgroup religious symbols (e.g. jewellery, clothing) prime opposing ingroup identities (Razpurker-Apfeld and Shamoa-Nir, 2020; and Shamoa-Nir and Razpurker-Apfeld, 2020). And as White and Dahl (2007) reveal, when social identity *is* primed, evaluations of outgroup-associated products are negatively affected. Thus, it is predicted:

> H1. The dissociation of male consumers from an outgroup-associated product (the *Ladies' Cut Steak*) is influenced by male gender-derived social identity.

The literature as it relates to SIT and SCT reveals that strength of ingroup identification is a key moderator of the depersonalisation effect arising from self-categorisation and social identification (e.g. Hall and Crisp, 2008; Ellemers, Spears, and Doosje, 2002; Branscombe *et al.*, 1999; Terry and Hogg, 1996). The greater the individual identifies with the ingroup, the greater the chance their attitudes and behaviour will fall in line with group norms (Hogg and Smith, 2007; Terry and Hogg, 1996). Therefore, it is predicted that:

> H2. The dissociation effect will be moderated by strength of ingroup identification, with high identifiers exhibiting greater dissociation than low identifiers.

Alternatively, the dissociation of male participants from the *Ladies' Cut Steak* may be an act of outgroup derogation, rather than group norm conformity. The Theoretical Framework revealed there to be several types of social identity threat, including threats to ingroup acceptance (Branscombe *et al.*, 1999). This threat-type is experienced by those for whom ingroup membership is reliant on the acceptance of others, and as such is often felt by peripheral or non-

prototypical members. Therefore, to consume an outgroup-labelled product may pose a risk to the individuals acceptance as an ingroup member. If so, the above hypotheses remain true, while the potential for reducing the dissociation effect is made possible.

According to *Self-Affirmation Theory* (SAT; Steele, 1988), a person's self-worth is threatened when they fail to meet socially significant standards (e.g. failing to conform to ingroup norms) (Sherman and Cohen, 2006). But the effects of threat may be mitigated if provided the opportunity to affirm an important aspect of self, such as a self-relevant value. Applied to the MST, SAT suggests that if the *Ladies' Cut Steak* does indeed pose some form of social identity threat (e.g. acceptance threat), then providing the individual an opportunity to self-affirm prior to engaging in the MST, will ameliorate the effects of threat by expanding their self-worth beyond the situation at hand, possibly reducing the desire to dissociate. Thus, it is predicted that:

H_3.   The dissociation effect will be reduced where the consumer is provided the opportunity to self-affirm.

5.3 Stream II: Science Discrediting

To investigate the act of science discrediting, a fictional publication has been developed for Stream II. The publication is titled *Gender Diversity, Leadership, and Performance: Evidence from a National Survey*, and is said to have been published in *Women in Management Review* (see Appendix J and K). The publication reports that companies "*in the top-quartile of gender diversity saw a financial benefit of 15% over the industry median, while those that were predominantly female saw a benefit of 17%*", and that "*as the composition of executives moves from male-to-female dominant, the financial success of the company increases - referred to as the gender-composition effect.*" The paper indicates this difference in performance is owed to women's greater social intelligence and productivity (relative to men's), and a leadership style befitting the modern workplace.

Both the Theoretical Framework and the Stream II literature indicate the above fictional paper will elicit social identity threat in men who strongly identify with their male ingroup. This is supported by a multitude of studies of *Social Identity Theory* (SIT; Tajfel and Turner, 1979), in which negative ingroup-relevant feedback has been employed to elicit social identity threat in ingroup members (e.g. Adelman and Dasgupta, 2019; Thürmer, McCrea, and McIntyre, 2019;

Rabinovich and Morton, 2015; de Hoog, 2013; White, Argo, and Sengupta, 2012; White and Argo, 2009). It is further supported by investigations of science discrediting, in which scientific publications deemed to be threatening to the ingroup, are discredited by those most affected by its threat (Nauroth *et al.*, 2014; 2015; 2017). In this instance, those most affected are male's, whose gender-derived social identity is threatened by an unfavourable comparison with the outgroup of women – termed a *value threat* – in a post that is stereotypically male-dominated (executive teams) and along a dimension that is stereotypically male-defining (leadership ability). The act of science discrediting is therefore an act of ingroup defence. Therefore, it is predicted that:

> H_4. The scientific publication indicating that companies benefit from increased representation of women at senior management level, owing to their greater social intelligence and productivity, and a leadership style befitting the modern workplace, will be discredited by men more so than women.

This effect is expected to be moderated by the degree to which men identify with their male social identity. Nauroth *et al.* (2014; 2015) report that highly identified ingroup members discredit identity-threatening science to a greater extent than low identifiers. This is further supported by studies of SIT, which indicate that negative ingroup-relevant feedback and criticism is responded to defensively by highly identified ingroup members more so than low identifiers (Adelman and Dasgupta, 2019; de Hoog, 2013; Dietz-Uhler, 1999). Thus, it is predicted:

> H_5. The act of science discrediting will be moderated by the degree to which male's identify with their male social identity, such that high identifiers will discredit the science to a greater extent than low identifiers.

Stream II includes several alternative male-specific explanations for science discrediting. It is well understood that male identity is precarious, as it occupies a high status position (Kahn *et al.*, 2016; Ridgeway, 2014; Rudman *et al.*, 2012; Scheepers, Ellemers, and Sintemaartensdijk, 2009). For that reason, gender equality is perceived to be threatening to male's as it threatens to change the status hierarchy (Scheepers *et al.*, 2009), causing those threatened to "strike back" against the low-status outgroup (Scheepers and Ellemers, 2019).

According to *Social Dominance Theory* (SDT; Pratto *et al.*, 1994; Sidanius *et al.*, 2017), males benefit from the status quo, and as such are more likely to support hierarchy-legitimising myths that support the status hierarchy, including gender inequality. This support is operationalised as *Social Dominance Orientation* (SDO), with high SDO representing greater support for gender inequality (Sidanius and Pratto, 1999). SDO is revealed to be particularly high in countries with greater gender equality and greater number of female professionals (Lee, Pratto, and Johnson, 2011). Therefore, it is predicted that:

H$_6$.   The act of science discrediting will be moderated by Social Dominance Orientation (SDO), such that males with High SDO will discredit the science to a greater extent than males with Low SDO.

It is also predicted that sexist attitudes will influence science discrediting behaviour. *Ambivalent Sexism Theory* (AST; Glick and Fiske, 1996) also argues that men benefit from the status quo, and will retaliate against those who threaten it. AST is operationalised using the *Ambivalent Sexism Inventory* (Glick and Fiske, 1996), which includes measures of Benevolent Sexism (BS) and Hostile Sexism (HS). Dahl, Vescio, and Weaver (2015) report that women outperforming men increases BS and the sexualisation of outperforming-women. HS predicts the negative evaluations of career women (Glick, Wilkerson, and Cuffe, 2015). Furthermore, as Connor, Glick, and Fiske (2017) note, males are in a position to maintain gender inequality, i.e. to maintain and support 'hierarchy-legitimising myths' as they relate to gender. The above mentioned fictional scientific publication is expected to conflict with these hierarchy-legitimising myths, and as such will be discredited by those with sexist attitudes. Therefore, it is hypothesised that:

H$_7$.   The act of science discrediting will be moderated by Ambivalent Sexism (AS), such that males with High AS will discredit the science to a greater extent than males with Low AS.

In addition, it is also predicted that male-specific Collective Narcissism (CN; Golec de Zavala *et al.*, 2009) will moderate science discrediting behaviour. CN refers to a type of ingroup identification that is predictive of outgroup derogation. It describes both the individuals belief that their ingroup is exceptional and the belief that its exceptionality is not sufficiently recognised by others. Górska *et al.* (2020) reveal that High male-specific CN is negatively related to intentions

and actions that would improve gender equality, and negatively related to empathy toward women. Likewise, Golec de Zavala and Bierwiaczonek (2020) report that High male-specific CN is related to traditional gender beliefs and sexist attitudes. It is also a reliable predictor of Precarious Manhood (PM). In terms of science discrediting, it is predicted that scientific information that is in direct conflict with the 'exceptionality' of the male ingroup, will be discredited by those with High male-specific CN. Therefore, it is hypothesised that:

> H_8. The act of science discrediting will be moderated by Collective Narcissism (CN), such that males with High Male CN will discredit the science to a greater extent than males with Low Male CN.

In line with the above, the act of science discrediting is also predicted to be moderated by the degree to which the male participant believes their manhood is precarious. *Precarious Manhood* (PM; Vandello *et al.*, 2008; Vandello and Bosson, 2013) describes the belief that manhood requires constant social approval and validation. Its concern is with masculinity rather than male identity *per se*. In line with Collective Narcissism (CN), PM predicts aggressive defensive behaviour. Failure to affirm one's masculinity when faced with a masculinity threat, results in increased physical aggression (Bosson *et al.*, 2009) and support for strength, toughness, and the avoidance of femininity (Vandello and Bosson, 2013). Though PM shares certain similarities with the abovementioned moderators of science discrediting, it is distinct in its focus on masculinity. And as the identity-threatening scientific publication is not a direct threat to the individuals masculinity, it is expected to have less of an influence on science discrediting. That said, due to its similarities it is included here for exploratory purposes. Thus, it is predicted that:

> H_9. The act of science discrediting will be moderated by Precarious Manhood (PM), such that males with High PM will discredit the science to a greater extent than males with Low PM.

Finally, where the scientific publication is perceived to be ingroup-threatening, status threatening, or perhaps threatening to the status of one's manhood, a group-affirmation task should ameliorate the effects of threat by focusing the individuals attention on broadening their self-worth, such that science discrediting is reduced. McGregor *et al.* (2008) reveal that affirming an important ingroup reduces the tendency to engage in outgroup derogation. While Sherman *et*

al. (2007) report that affirming an important ingroup *value*, mitigates the effects of social identity threat. Indeed, they reveal that group-affirmation increases the acceptance of group-threatening information. Therefore, it is predicted that:

H_{10}.   Engaging in group-affirmation will reduce the tendency to discredit an identity-threatening scientific publication.

Having identified the hypotheses for investigation, the next chapter details the methodology employed within the thesis.

CHAPTER 6
METHODOLOGY

6.1 Introduction

The present chapter begins by addressing the research paradigm employed within the thesis, answering the ontological, epistemological, and methodological questions. The position taken is that of *scientific realism*; a post-positivist approach to quantitative social inquiry, that is able to account for the unobservables associated with social psychology and consumer behaviour, that the positivist approach is unable to account for. The chapter continues with discussion of survey experiments and crowdsourced samples, as well as notions of *reliability* and *validity*, as they relate to the *scientific realist* paradigm. Ethical considerations are also briefly discussed.

This chapter is to be considered a broad overview of the paradigm employed by the researcher and of the methodology employed within the thesis. For a more narrow account, each study includes a *Methods* section, which addresses the topics of power analysis, participant composition, the operationalisation of constructs, the manipulations (or *treatments*) employed within each experimental group, and the use of statistical analysis. This chapter is therefore to complement these later *Methods* sections.

6.2 Research Paradigm

"*Paradigms provide scientists not only with a map but also with some of the directions essential for map-making. In learning a paradigm the scientist acquires theory, methods, and standards together, usually in an inextricable mixture.*"

(Kuhn, 1970, p109)

Though not intended for the social sciences[20], Kuhn's (1970) notion of a paradigm is employed here to describe "*accepted examples of actual scientific practice—examples which include law,*

---

[20] In the Preface to *The Structure of Scientific Revolutions*, Kuhn (1970) notes how paradigms set the natural sciences apart from the social sciences. He writes, "*I was struck by the number and extent of the overt disagreements between social scientists about the nature of legitimate scientific problems and methods*", preventing them from practicing what Kuhn describes as *normal* science (periods of a scientific discipline during which a paradigm is predominant). He goes on to note that practice of the natural sciences (e.g.

theory, application, and instrumentation together… from which spring particular coherent traditions of scientific research" (Kuhn, 1970, p10). To this is also added what constitutes reality for the researcher, and what constitutes knowledge, also. Guba and Lincoln (1994, p105) explain that research paradigms within the social sciences, describe "*the basic belief system or worldview that guides the investigator, not only in choices of method but in ontologically and epistemologically fundamental ways*" (Guba and Lincoln, 1994, p105).

To combine both Guba and Lincoln's (1994) and Kuhn's (1970) descriptions of a research paradigm, Easterby-Smith *et al*. (2015) employ a "tree" metaphor. They begin first by explaining the roots of the tree represent the research traditions of a particular discipline, as well as the history and experiences of the researcher; including their ideas, perspectives, understandings, and beliefs – what Kuhn (1970) describes as a paradigm in the natural sciences. Together these form the foundations of the research process, *drawn-up* so to speak as roots draw water from the soil, to form the researcher's underlying ideas of research design, methods, and forms of analysis. From these roots emerge the trunk, providing strength and shape to the tree. Figure 3 illustrates how this strength or "trunk" is formed by the researchers ontology, epistemology, methodology, and methods. The outer-layers or "bark" are visible to the external onlooker, and so, as argued by Easterby-Smith *et al*. (2015), they provide only a glimpse of what is to be understood of the research. They explain:

"*The inner ring (or heartwood) is the densest part of the trunk, and we use it to represent ontology, the basic assumptions made by the researcher about the nature of reality. The next ring represents epistemology, the assumptions about the best ways of inquiring into the nature of the world. The third ring from the centre represents methodology, or the way research techniques and methods are grouped together to provide a coherent picture. And the fourth ring represents the individual methods and techniques that are used for data collection and analysis.*"

(Easterby-Smith *et al*. (2015, pXV)

Figure 3 The Cross-Section of a Tree Trunk Symbolising the Four Main Features of a Research Design

Source: Easterby-Smith *et al*. (2015, pXIV)

astronomy, physics, chemistry, and biology) "*fails to evoke the controversies over fundamentals that today often seem endemic among, say, psychologists or sociologists*" (Kuhn, 1970, pVIII).

Finally, they suggest the leaves of the tree represent the collection and analysis of data (as leaves collect and process sunlight), and the fruit its final form – "*written up and communicated to third parties*" (pXV). Easterby-Smith *et al.*'s (2015) metaphor helps explain the "*controversies over fundamentals"* described by Kuhn (1970, pVIII) when discussing the social sciences. But what is clear from the metaphor is that what constitutes a paradigm in the natural sciences provides only the roots of a project in the social sciences. The human element (that of the researcher and that of the subject) is not factored in. To include them, Guba and Lincoln (1994) suggest that three questions must be addressed:

1. The Ontological Question (what is the nature of reality?)
2. The Epistemological Question (what is knowledge and what can be known about reality?)
3. The Methodological Question (how can the researcher find out what can be known?)

Through answering these three questions, the researcher states their position on what constitutes reality, what constitutes knowledge of that reality, and how to go about investigating it. These answers then provide the framework for inquiry, helping to establish which research designs and strategies are appropriate, and what methods can be employed in the collection, analysis, and interpretation of data. They provide the strength and shape of the tree. However, as answering these three questions is to choose a side, philosophically speaking, one might conclude the side not chosen is believed to be incorrect. This is not the case. As Godfrey and Hill (1995, p523) explain, "*like all philosophical debates, ultimate resolution is impossible and one's position is arrived at by weighing the arguments*". The purpose of this chapter is therefore not to answer the above three questions and arrive at the conclusion that one ontology or epistemology or methodology is better than any other. Instead, it weighs up the arguments of the most appropriate positions to arrive at what is best suited to the purposes of the present thesis, only. To that end, the three questions are addressed.

6.2.1   The Ontological Question

Ontology, taken from the Latin term *ontologia* ("study of being"), is a branch of philosophy concerned with existence itself; the nature and structure of reality, and of what it means to *be* (Blaikie, 2007). Aristotle ([350BC, Book IV], 1998) refers to ontology as the *First Philosophy*, and as such, it provides the underpinnings of the researchers paradigm, or the heartwood of Easterby-

Smith's tree. To answer the ontological question is to express ones interpretation of the nature and structure of reality (Crotty, 1998), and to set the foundations for what things can or do exist, the terms of their existence, and the ways in which each relates to the other (Blaikie, 2007).

In the social sciences two opposing, mutually exclusive ontological positions are dominant: I. realism and II. relativism (Blaikie, 2007). To take a relativist position is to suggest that no single reality exists that is able to be discovered and investigated. It suggests that there are as many interpretations of reality as there are people to interpret it (Easterby-Smith *et al.*, 2015). As Collins (1983, p88) notes, "*what counts for the truth can vary from place to place and from time to time*". To relativists, scientific laws do not exist *out there* waiting to be discovered and investigated. Instead they are manmade. The relativist position holds that theories and scientific ideas are often influenced by the culture of the time, debated and accepted by those with status and reputation. "*The 'truth' of a particular idea or theory is reached through discussion and agreement between the main protagonists*" (Easterby-Smith *et al.*, 2015, p48). Thus from a relativist perspective reality is open to interpretation and influenced by those with status.

In contrast, the realist ontology holds that reality exists independent of the observer. Bunge (1993, p233) notes that a commonsensical variety of realism is employed to survive daily life, on account of a powerful biological motivation to "*know thy world or perish*". At its extreme, the realist ontology is "*an unproblematic belief in an external reality, consisting of things and/or events and/or states of affairs, which are controlled by natural or social laws.... [that] consists of nothing more than objects or events that can be observed*" (Blaikie, 2007, p14). This extreme is often referred to as *naïve realism*[21] (Madill *et al.*, 2000) or *shallow realism* (Blaikie, 2007). However, it is often criticised for being uncritical itself and open to sensory and/or self-deception (Bunge, 1993). To overcome these criticisms, numerous realist positions have been proposed, including *conceptual*, *cautious*, and *depth realism* (Blaikie, 2007), *internal realism*, (Easterby-Smith *et al.*, 2015), and *critical realism* (Bhaskar, 1979). Here, *scientific realism* is adopted.

Described as a refined version of critical realism (Bunge, 1993), scientific realism "*is the view that our best scientific theories are true, or approximately true, or to put it in terms other than truth, that they describe well, or to some significant degree of success, the ontology of parts of the world*" (Chakravartty, 2011, p157). That is to say, "*the central claims of our most successful scientific*

---

[21] Naïve Realism in this sense is not to be confused with the social perception bias of the same name. The naïve realism *bias* refers to the perception of social reality as "objective" reality, whereby the individuals attitudes, beliefs, preferences, etc. are believed to be dispassionate and unbiased, and as a result, shared by others. Failure by others to share one's attitudes, beliefs, etc. is assumed to be the result of the other person not having access to the same information or not having processed it as reasonably and openminded as the individual. Failure may also be attributed to laziness, irrationality, or biases of their own (Ross and Ward, 1996; Griffin and Ross, 1991). This differs to the ontological position discussed above.

theories are at least approximately true" (Hood, 2013, p739). These caveats ('best' theories, 'approximate' truth) help account for the limitations of the naïve position, which is unsuitable for the studying of things "*that are not directly perceptible and have counterintuitive properties*" (Bunge, 1993, p230). This is crucial for a thesis that applies social psychology, as the naïve realist would have difficulty accounting for concepts such as social identity and the cognition of groups and their boundaries. The scientific realist position is thus adopted.

In its adoption, three commitments are made. The first is a metaphysical commitment – that reality exists independent of the observer, and so investigation of reality is mind-independent. This appears problematic for a thesis investigating Social Identity Theory (SIT; Tajfel and Turner, 1979), as SIT is a theory that ultimately relies on the existence of the observer and other persons to observe it, i.e. without human thought, social identity would not exist, and so it cannot exist independent of the mind – it is not "real" in a realist sense. But to explain how a psychological construct (termed a 'mind-dependent kind') can exist in a realist ontology, Khalidi (2016) invokes the "causal criterion of reality" (i.e. mental causation). To explain, Kim (1998, p119) writes "*a plausible criterion for distinguishing what is real from what is not real is the possession of causal power*", such that that which is of the immaterial mind has impact on physical reality. In the previous chapters, SIT was revealed to have a material impact on human behaviour, and it is this impact that is analysed. Therefore, social identity and the constructs under investigation in this thesis are "real" insofar as they have a physical effect on the material world, and as such they exist *out there* in the minds of others. Thus, the first commitment is met.

The second and third commitments of the scientific realist position are of semantics and epistemology. Though both are epistemological in nature. The commitment to semantics is the commitment to a 'literal' interpretation of scientific theories, so that what is observable or unobservable may be considered as having a 'truth value', i.e. it may be considered true or false; to be taken at face value. Epistemologically speaking, what constitutes scientific knowledge in a scientific realist ontology must therefore be *objective* as it is either true or false (science and research endeavour to provide a true description of reality). The third commitment is a commitment to the belief that scientific claims (interpreted literally and describing a mind-independent reality) contribute to scientific knowledge (Chakravartty, 2011; Hood, 2013). "*For the scientific realist, the scientific pursuit of truth gives rise to genuine knowledge of the natural world* [that] *is not restricted to the empirical level* [as it] *extends to unobservable aspects of reality as well*" (Sankey, 2001, p38). This is crucial to a thesis in the social sciences where

"unobservables"[22] (latent variables) are the lifeblood of social inquiry. Thus the ontological position adopted in the thesis is that of scientific realism. The commitments to which are to a mind-independent world, where objective truths exist (both observable and unobservable) and to which science endeavours to contribute. To better qualify the researchers commitment to this position, discussion turns to the epistemological question.

6.2.2 The Epistemological Question

"*How one aligns oneself in this particular debate profoundly affects how one will go about uncovering knowledge of social behaviour. The view that knowledge is hard, objective and tangible will demand of researchers an observer role, together with an allegiance to the methods of natural science; to see knowledge as personal, subjective and unique, however, imposes on researchers an involvement with their subjects and a rejection of the ways of the natural scientist*"

(Cohen, Manion, and Morrison, 2018, p5)

Epistemology, taken from the Greek *epistēmē* ("knowledge") and *logos* ("reason"), describes "*a theory or science of the method or grounds of knowledge*" (Blaikie, 2007, p18). It is the theory of knowledge itself. Blaikie (2007, p18) explains that an epistemology "*provides a philosophical grounding for establishing what kinds of knowledge are possible – what can be known – and criteria for deciding how knowledge can be judged as being both adequate and legitimate.*" Thus an epistemology describes how the researcher interprets and makes sense of the world, what constitutes knowledge of that world, and how that knowledge is able to be accessed for analysis and interpretation. Therefore, to answer the epistemological question is to build on one's ontological position (i.e. that reality exists *out there*, objective and mind-independent), and to

---

[22] To explain unobservables, Godfrey and Hill (1995) invoke *Agency Theory* of strategic management research. Principle to Agency Theory is the assumption that the utility functions of principles and agents diverge, giving rise to an efficiency loss. The authors argue that "*researchers may observe choices made by agents (or principles), such as how they allocate their time between work-related effort and 'on-the-job consumption'; however, this is substantially different from the actual observation of utility*" (Godfrey and Hill, 1995, p522). Therefore, utility in Agency Theory is unobservable in a direct sense. By that same token, social identity and social identity threat are also unobservables. The review of the previous chapters has revealed several means by which social identity threat may be observed indirectly (e.g. loss of self-esteem, individual mobility, derogation toward the outgroup or source of threat), but these observables are the outcomes of social identity threat, rather than direct measures of it. Thus, the present thesis, in its study of *Social Identity Theory* (including SCT; Tajfel and Turner, 1979) and its influence on consumer behaviour, relies on the contribution of unobservable entities.

state how one goes about understanding that which is out there in objective reality, and whether what is out there is solely observable or whether unobservables contribute to knowledge, also.

Having accepted a scientific realist ontology, the range of epistemological positions is reduced to those which complement its understanding of an objective, mind-independent reality. It rules out a constructionist epistemology, which Crotty (1998, p8-9) describes as occupying the position that "*there is no objective truth waiting for us to discover it. Truth, or meaning, comes into existence in and out of our engagement with the realities of the world. There is no meaning without a mind. Meaning is not discovered, but constructed*". It also disqualifies the subjectivist epistemology, in which "*meaning does not come out of an interplay between subject and object but is imposed on the object by the subject*" (Crotty, 1998, p9). These two epistemologies are similar in this respect. But to occupy either of these positions is to suggest an object such a tree plays no part in ascribing meaning to itself, rather the meaning of *tree-ness* is imposed by those observing it. This is at odds with the realist ontology. From an objectivist position such as that of realism, a "*tree in the forest is a tree, regardless of whether anyone is aware of its existence or not. As an object of that kind ('objectively', therefore), it carries the intrinsic meaning of 'tree-ness'. When human beings recognise it as a tree, they are simply discovering a meaning that has been lying there in wait for them all along*" (Crotty, 1998, p8).

There are several epistemologies suited to a scientific realist ontology, including but not limited to, *empiricism*, *positivism*[23], and *realism* (Blaikie, 2007; Khanna, 2019). *Empiricism* and *Positivism* each favour objectivism via mathematical precision, yet each has difficulty accounting for unobservables. For instance, the basic tenet of empiricism is that knowledge depends on observation by the human senses alone, "*as any scientific idea that cannot be confirmed by observation is meaningless and has no role in science*" (Blaikie, 2007, p20). It is therefore best suited to the naïve realist ontology, and with its reliance on sensory observation it is unsuitable for fields containing unobservables, such as mathematics, physics (e.g. electrons, neutrinos, quarks), management, and social and cognitive psychology. Likewise, *Logical Positivism* also struggles to account for unobservables, owing to its adherence to the *Verification Principle*, which states:

---

[23] There is some debate as to whether Positivism is an epistemology or not. Those against this classification (e.g. Khanna, 2019; Wight, 2013; Smith, 1996) argue that it is a methodological commitment to an empiricist epistemology, that relies on observation by experience. Alternatively, there are those who situate it as *the* epistemology of quantitative research, in opposition to qualitative research (e.g. Easterby-Smith *et al.*, 2015; Bryman and Bell, 2011). And there are also those who classify it as a research paradigm of its own (e.g. Cohen, Manion, and Morrison, 2007; Scotland, 2012; Blaikie, 2007; Corbetta, 2003). Whatever the classification, it is generally accepted that Positivism refers to "*the study of social reality utilizing the conceptual framework and techniques of observation and measurement, the instruments of mathematical analysis, and the procedures of inference of the natural sciences*" (Corbetta, 2003, p13).

"*Scientific knowledge rests on the bedrock of facts formulated by way of 'protocol statements' that provide an unadulterated immediate recording of sensory experience elaborated via 'corresponding rules', forming a bridge between theoretical language and the language of observation.*"

(Wacquant, 1994, p496)

That is, no statement is meaningful unless it is capable of scientific verification. This to some extent was overcome by the later *Instrumental Positivism*, which takes a less strict adherence to the Verification Principle. Instrumental Positivism agrees that "*a scientific theory may contain, apart from observational sentences and empirical laws, theoretical sentences that are either empirical though not equivalent to any observational sentences or analytic or else indeterminate*" (Giedymin, 1975, p280). But according to this perspective, scientific theories such as Social Identity Theory (SIT) and Self-Categorisation Theory (SCT), or concepts such as self-esteem and social identity, can be neither true nor false, and are instead nothing more than tools, devices, or instruments for deriving predictions from data (Flew, 2002). This position is perhaps best suited to the twentieth century behaviourist approach to psychology, which itself was in response to the reduction of behaviour to an outcome rather than the central focus of research itself (Watson, 1913; 1994). But it is perhaps not well suited to a thesis in consumer psychology, studied through the lens of social psychology with its associated (and crucial) unobservable concepts and theories. The Instrumentalist perspective is also at odds with the second and third commitments of the realist ontology, those of semantics (*truth values*) and epistemology. For the realist (ontology), both observables *and* unobservables possess a truth value, and that value extends beyond the observable. Thus, neither the Logical Positivist nor the Instrumentalist position are appropriate for the scientific realist ontology.

The *realist* epistemology of scientific realism holds true the same objectivist position of Empiricism and Positivism, insofar as reality exists independent of the knower, and thus knowledge of the world is able to be acquired through scientific methods. However, where the realist diverges is in their acceptance of unobservables, and in the adoption of the *common-sense approach to knowledge*. This approach states that "*if a scientist makes a prediction on the basis of some theory that contains unobservable elements, and if this theory survives repeated attempts to falsify it, then we are justified in acting as if the theory were true. This holds even though we can never know for sure that the unobservable entities in the theory exist*" (Godfrey and Hill, 1995, p526). From the positivist perspective (traditional, logical, or instrumental), SIT would either be rejected for containing unobservables (e.g. the *boundaries* of an individual's social identity; the

value of that identity) or viewed as nothing more than an instrument of science, with no definitive truth value. To add to the latter point, Godfrey and Hill (1995) explain that in instrumentalising a theory which contains unobservables, normative rules (statements about how things ought to be) cannot be derived to guide action, i.e. statements on social identity such as '*information that devalues a defining characteristic of the social group, will be reacted to by high identifiers in a manner consistent with outgroup-derogation*', could not be made as the theory of SIT itself contains the unobservable of *identity*. The realist perspective takes no issue with such statements.

Therefore, in answer to the epistemological question, the *scientific realist* position is taken to understanding what knowledge is and how it may be obtained. To discuss how that knowledge may be analysed and interpreted once obtained, attention turns to the methodological question.

6.2.3   The Methodological Question

"*Where one subscribes to the view which treats the social world like the natural world – as if it were an external and objective reality – then scientific investigation will be directed at analysing the relationships and regularities between selected factors in that world. Hence, methodological issues, of fundamental importance, are thus the concepts themselves, their measurement and the identification of underlying themes in a search for universal laws which explain and govern that which is being observed.*"

(Cohen *et al.*, 2018, p6)

Having argued in favour of both a scientific realist ontology and a scientific realist epistemology, naturally, a scientific[24] methodology is adopted, also. From the discussion so far emerges an objective perspective of reality that exists *out there*, and as such is able to be objectively known – there is a truth to reality, and it is the pursuit of this truth that is focus of science. As Sankey (2008, p109) explains, "*scientific realists take the aim of science to be discovery of the truth about the world* [and] *defend the view that employment of the methods of science promotes the aim of truth*". To that end, the methodology of the scientific realist is one of quantification, applied inferential statistics (Nash, 2005; Kemp and Holmwood, 2003), and experimentation (Achinstein, 2002; Hacking, 1982). The methods by which investigation will take place in the present thesis are discussed below in terms of survey experiments, sampling, rigor, and ethics. They are also further

---

[24] Here, the term *scientific* is used to refer to a quantitative, experimental methodology, that is similar to the methods used in the natural sciences. It is not used to suggest that anti-realist positions are non-scientific.

discussed in the *Methods* sections of each individual study, where the design and procedure of each is explained, and the materials are discussed.

It should be noted that *scientific realism* is argued by some to be in opposition to the positivist position that measures of underlying concepts are assessed for adequacy based on their *validity* and *reliability* (Nash, 2005; *cf.* Hood, 2009). There exists also a more nuanced discussion of *what* exactly validity refers to, with some critical realists (e.g. Borsboom *et al.*, 2004) arguing that validity is not whether a test measures what it should measure, but whether the scores of a test can be interpreted along theoretical lines (i.e. validity is not a subject of test properties but of test score inferences). There are also those from the *scientific realist* position who oppose the use of experimentation in the social sciences (*see* Kemp and Holmwood, 2003), arguing that *patterns of connection* are analytically derived from experiments, but causation is not. These views are not maintained in the present thesis. Hood (2009) provides an agreeable position on validity and statistical inference that is worth quoting in full as it is the position taken in the thesis:

> "*Theoretical entities in the form of psychological attributes have causal powers manifested in scores and score patterns on valid tests. Ensuring that our tests are viable measurement instruments requires that we undertake validation studies. These studies return information concerning the quality and psychometric properties of psychological tests. This information can then be used as data for warranting interpretive inferences, including inference to the conclusion that the test measures what it purports to measure.*"

> (Hood, 2009, p470)

It is argued by some that scientific realism is *the* philosophy of quantitative methods in the behavioural sciences (Haig, 2013). This, it is argued, is owing to the fact that scientific realism is both generative, insofar as it is exploratory, involving "*reasoning to, and accepting, knowledge claims in question from warranted premises*" (Haig, 2013, p8), and consequentialist, insofar as it involves reasoning *from* knowledge, and the testing of its consequences by forming hypotheses that may be falsified by observation (i.e. the scientific *hypothetico-deductive* method). To the latter, Haig (2013, p29) advocates the use of statistical significance testing and of causal modelling within the scientific realist methodology, explaining that "*it is important to appreciate that the interpretive dimension on causal modelling methods is a proper part of its methodology. There is nothing in… scientific realism that prevents one from taking such an outlook on causal modelling. Indeed, scientific realism comports well with causal modelling methods that countenance latent variables.*" Indeed, as Chia (2002, p11) explains, "*theory for the realist becomes the means for 'describing the relationship between the unobservable causal mechanisms (or structures) and*

their observable effects'". The methodology employed then, while being quantitative may also be experimental in its approach, and exploratory where appropriate. Finally, Haig (2013, p8) notes that "*the* [scientific] *realist methodology has three major tasks: to describe how methods function; to evaluate methods critically against their rivals; and to recommend how to use particular methods to pursue chosen research goals*". To that end, the remainder of this chapter outlines the methods employed within this thesis, contrasting them against the alternatives so as to justify their use, and explaining where possible how and why said methods will be employed, and how and why said methods are valid and reliable. But in a final answer to the methodological question, the position taken in this thesis is that of quantification, applied inferential statistics, and experimentation.

6.3 Research Methods

"*Every research tool or procedure is inextricably embedded in commitments to particular versions of the world and ways of knowing that world made by researchers using them. To use a questionnaire, an attitude scale of behavior, take the role of a participant observer, select a random sample... is to be involved in conceptions of the world which allow these instruments to be used for the purposes conceived. No technique or method of investigation... is self validating: its effectiveness, its very status as a research instrument... is dependent, ultimately, on philosophical justification.*"

(Hughes, 1980, p13)

Having situated the present thesis within the paradigm of scientific realism, one is committed to the use of quantitative methods and statistical analyses (Haig, 2013). With that in mind, the remainder of the chapter includes discussion of the methods used to collect quantitative data, including discussion of survey experiments, crowdsourcing as a means of convenience sampling, and the underlying assumptions of what constitutes valid and reliable research within the scientific realist paradigm. The chapter closes with a discussion of adherence to the University of East Anglia's (UEA) ethics policy, and discussion of participant anonymity, informed consent, and the use of debriefing where deception has been employed.

6.3.1 Survey Experiments

Survey experiments are defined here as "*the random assignment of respondents to different stimuli under the active control of the researcher within a given survey*" (Schlueter and Schmidt, 2010, p93). That is, participants are randomly assigned to one of two conditions, represented by one of two questionnaires: the treatment or control. The only difference between the two conditions is the experimental stimulus or manipulation. Krupnikov and Findley, 2016, p485) explain, "*the experimental goal is to compare groups that are identical in all ways except the random assignment to a particular treatment. In doing so, scholars aim to isolate the causal relationship between the intervention and some particular outcome of interest.*" For instance, in Study 5 all participants were presented with the summary of a fictitious study ostensibly published in *Women in Management Review*. However, for participants in the *treatment* condition, the article concluded that women make for better leaders than men, while in the *control* condition the article concluded there to be no differences between genders. These are then analysed for their contrasting effects on Negative Research Evaluations (NRE) (the dependent variable) provided by participants.

The use of survey experiments differ from both traditional surveys and traditional experiments. For instance, traditional surveys often include a single questionnaire comprised of multiple measures, each representing a variable of interest (Spector, 2013). These may take one of three forms: I. *factual surveys*, for which the aim is to collect factual data from respondents, e.g. political leanings, where they shop and how often, i.e. for use in opinion polls and market research; II. *inferential surveys*, for examining the relationships between variables and concepts captured in the questionnaire – requires predetermined hypotheses, i.e. explanatory surveys; and III. *exploratory surveys*, in which predetermined hypotheses are not formulated, but instead patterns in the data are sought (Lau, 2016; Easterby-Smith *et al*., 2015). The benefits of traditional surveys include large sample sizes, allowing for greater generalisability and statistical power; flexibility, as the surveys can be administered online, via email and social media, in person, etc.; reduced cost by comparison to traditional experiments; and greater anonymity for respondents, reducing social desirability bias (Joinson, 1999). The key disadvantage of survey studies though, is the inability to determine causation. For instance, *inferential surveys*, which "*predominate in academic management research, particularly in the fields of strategy, marketing and organizational psychology*" (Easterby-Smith *et al*., 2015, p75), are limited as to what can be inferred, as an independent variable is not manipulated.

Traditional experiments provide the ability to imply causation, that traditional surveys lack. Typically, experiments rely on the random allocation of a participant to one of two or more conditions, representing the control and experimental treatment(s) (or interventions) (Easterby-

Smith *et al.*, 2015). From random allocation to one of the two groups, Hallberg *et al.* (2013, p223) explain that "*estimates of the average effect of the intervention are constructed by comparing mean outcomes in groups exposed to the different treatments under test – often just a treatment and no-treatment comparison group.*" They go on to explain that "*the pertinent logic is that posttreatment group differences cannot be the product of pre-treatment differences or any posttreatment group differences other than the intervention whose effects are being investigate*d" (Hallberg *et al.*, 2013, p223). Therefore, by randomly allocating participants to different groups, the researcher has greater control over confounding variables, so that the effect observed in the dependent variable can be said to have been caused by the intervention, i.e. evidence of internal validity. The benefits associated with this method include as noted, greater control over confounds so that alternative explanations are reduced (i.e. internal validity – establishing a trustworthy cause-effect relationship), and greater chance of replication by other researchers, owing to the high degree of internal validity. But where traditional surveys excel (greater flexibility, larger sample sizes across larger geographical areas, low cost, responses are provided in the participants natural setting and so are less artificial), the traditional laboratory experiment falls short.

The survey experiment is said to bridge the gap between the two, offering the randomisation and control that is often associated with experiments (providing internal validity and the ability to imply causation), and the generalisability of survey methods (increasing external validity) (Krupnikov and Findley, 2018). But survey experiments are not without their drawbacks. For instance, the present thesis employs a two-stage approach to data collection in several studies (Studies 2 – 8). These are referred to in each study as Time I and Time II, and are typically separated by an interval of one week. However, due to participants leaving Prolific (a crowdsourcing site, discussed below), or them not logging on to check which studies are available, not wanting to engage with Time II for whatever reason, etc., the retention rate for Time II is on average 84.7% (across Studies 2 – 8). Which is to say, there are additional self-selection biases at play, that a more formal laboratory experiment could overcome, by, for example, using filler tasks between Time I and II instead of a one week interval. But importantly, no method is perfect, and the benefits of combining experimentation with surveys outweigh its limitations, and have provided this thesis with a suitable, reliable, and contemporary method of investigation.

To reiterate the introduction to this chapter, each survey experiment reported in the thesis (Studies I – 8) includes a Methods section. The Methods section details the power analysis used to determine sample size, the composition of the sample, and the design and procedure used. This includes the materials used and the operationalisation of constructs, i.e. the measures or instruments used. Each survey experiment was designed using SmartSurvey (SmartSurvey.co.uk)

and administered online using a sample obtained from the crowdsourcing site *Prolific* (formerly *Prolific Academic*), which is discussed below.

6.3.2   Sample Selection, Crowdsourcing, and External Validity

> "*The quality of a piece of research stands or falls by the appropriateness of its methodology and instrumentation and by the suitability of the sampling strategy that has been adopted.*"
>
> (Cohen *et al.*, 2018, p202)

The sampling strategy employed is non-probability, and the method used is *convenience sampling*. This method involves recruiting participants based on ease-of-access, and carries with it several important biases that require consideration (Cohen *et al.*, 2018; Bryman and Bell, 2011). The most important bias is threat to external validity or the potential lack of generalisability. Cohen *et al.* (2018) explain that due to the non-representativeness of non-probability samples, generalisations to a larger population are not possible. This, Cohen *et al.* (2018) explain, is because the group sampled represents only itself.

The gold-standard of sampling strategies is probability sampling, employing methods such as *simple random sampling* (providing each member of the population equal chance of being selected), *systematic sampling* (combining randomisation with systematic selection, e.g. selecting every *nth* case from the population), and *random stratified sampling* (dividing a population into homogenous subgroups (strata), and randomly sampling each strata). The superiority of probability sampling lies in its ability to provide an unbiased, representative sample of the population, for which generalisations can be made from the sample under consideration. However, the costs associated with probability samples are often cited as a key disadvantage and reason for not employing them (e.g. Jager, Putnick, and Bornstein, 2017; Mullinix *et al.*, 2015; Krupnikov and Findley, 2016). To provide an example, the minimum sample required for a population of 100,000, with 95% confidence and a 3% confidence interval, is 1,056 cases, which is prohibitively expensive and time consuming (Cohen *et al.*, 2018). Similarly, the difficulties of not only defining the population parameters, but in executing a perfect probability strategy within that population, requires expertise and access that early researchers may not have at the start of their research careers (Jager *et al.*, 2017).

Despite the non-generalisability of convenience sampling, it has long been the standard method within the behavioural sciences. Both social psychology (Sherman *et al.*, 1999) and consumer research (Peterson, 2001) have long-standing traditions of using student samples. Sherman *et al.* (1999), in a meta-analysis of the *Personality and Social Psychology Bulletin* (PSPB), noted that 85% of studies employing subjects in 1996 used undergraduate student samples. Likewise, Peterson (2001) noted that 86% of empirical studies published in the *Journal of Consumer Psychology* (JCP) from 1992 to the time of his writing, employed student samples also, compared to 89% published in the 26th Volume of the *Journal of Consumer Research* (JCR).

Today, the use of student samples has begun to give way to crowdsourcing sites such as Amazon's Mechanical Turk (MTurk), Figure Eight (formerly *Appen*, formerly *CrowdFlower*), and Prolific (formerly *Prolific Academic*). These sites, it is argued, provide greater demographic representation than student samples (Behrend *et al.*, 2011; Paolacci, Chandler, and Ipeirotis, 2010), which are invariably comprised of WEIRD participants (Western, Educated, Industrialized, Rich, and Democratic; Henrich, Heine, and Norenzayan, 2010; *see also* Peterson and Merunka, 2014, *regarding issues surrounding student samples and reproducibility*). They may also be as equally representative as national surveys (Paolacci *et al.*, 2010), or at least not significantly different (Levay, Freese, and Druckman, 2016; *cf.* Chandler *et al.*, 2019; Goodman and Paolacci, 2017). Thus crowdsourcing as a unique form of convenience sampling has fast become the norm. As Goodman and Paolacci (2017, p196) note, "*consumer research is now routinely, if not by default, conducted using online marketplaces*", reporting that of the 1,350 surveys and experiments published in volumes 39-42 of JCR, 27% were conducted using MTurk. Further still, an estimated 15,000 papers were published between 2006 and 2014 that contained the phrase "Mechanical Turk" (Chandler and Shapiro, 2016), and half of all future cognitive science research is now expected to include crowdsourced samples (Stewart, Chandler, and Paolacci, 2017).

In the present thesis, the crowdsourcing site *Prolific* (formerly *Prolific Academic*) was used to obtain samples for each study. Prolific operates similar to Amazon's MTurk, providing a labour market from which the researcher is able to recruit participants, and compensating them on a study-by-study basis. The benefits offered by Prolific (compared to MTurk) include greater participant diversity[25], greater honesty, greater naivety (i.e. less likely to correctly guess the hypothesis of a study), and comparable data quality (Peer *et al.*, 2017). Participants are also paid a fairer wage, with a minimum rate of £5 per hour for Prolific compared to $0.01 for MTurk.

---

[25] Krupnikov and Findley (2016) make the distinction between *absolute* diversity and *relative* diversity. They note that absolute diversity refers to the representativeness of a sample, while relative diversity is *relative* to the diversity offered by a laboratory experiment employing undergraduates. With regard to convenience samples obtained via crowdsourcing sites such as Prolific and MTurk, diversity refers to *relative diversity*.

6.3.2.1 Crowdsourcing and Generalisability (Representativeness)

The issue of generalisability vis-à-vis representativeness (external validity) is still cause for concern. However, as Chandler and Shapiro (2016) note, psychology research is often not concerned with populations as a whole. They explain:

> "*A lack of representativeness is usually (but not always) a minor concern to psychologists, who are more interested in association between variables than in point estimates for the population at large. Because they are more interested in modelling relationships than in describing a population, psychologists typically respond to potential differences across subpopulations by recruiting them in sufficient numbers to test potential differences rather than by recruiting them in proportion that mirror the population as a whole.*"

(Chandler and Shapiro, 2016, p64)

The ability of a sample to accurately (statistically) test for differences, is therefore of more importance. This mirrors an earlier argument put forth by Cook and Campbell (1979; *see also* Calder, Phillips, and Tybout, 1982, for a similar argument as it relates to consumer research) on the importance (or not) of external validity to psychology researchers. It is worth quoting here in full, as it highlights the longstanding tradition of theory focused research:

> "*The priority among validity types varies with the kind of research being conducted. For persons interested in theory testing it is almost as important to show that the variables involved in the research are constructs A and B (construct validity) as it is to show that the relationship is causal and goes from one variable to the other (internal validity). Few theories specify crucial target settings, populations, or times to or across which generalization is desired. Consequently, external validity is often sacrificed for the greater statistical power that comes through isolating settings, standardized procedures, and homogeneous respondent populations. For investigators with theoretical interests our estimate is that the types of validity, in order of importance, are probably internal, construct, statistical conclusion, and external validity.*"

(Cook and Campbell, 1979, p83)

Thus, external validity is often sacrificed in favour of internal and construct validity, and to reducing Type I and Type II errors. The issue then is whether one *can* generalise, as opposed to whether or not it is possible to do so. If not, then the use of parametric statistical tests such as ANOVA, MANOVA, Multiple Regression, Correlation, and T-Tests are disqualified by the lack of a

population for which parameters can be known, and so the vast majority of experimental psychological research is inaccurate in its reporting. But if one *can* generalise, then to whom are we generalising? Brewer and Crano (2014) suggest that external validity should be distinguished in terms of *robustness* and *ecological validity*. They note that while ecological validity is concerned with representative generalisability, robustness refers to whether an effect can occur across different settings with different people. To that end, they suggest "*external validity refers to the question of whether an effect (and its underlying processes) that has been demonstrated in one research setting would be obtained in other settings, at different times, with different research participants, and different research procedures*" (Brewer and Crano, 2014, p19).

In terms of Studies I – 8 which were conducted using non-probability convenience samples, the issue is not whether the results generalise to a specific population, but whether they may "*safely generalize beyond the specific participants to other "generally similar" participants*" (Smith, 2014, p29). The key then is to not *over*generalise. For example, by suggesting that the results reported here regarding male-specific social identity threat generalise to *all* males would be considered an overgeneralisation. This is because such a statement fails to take into account the population from which the sample was obtained; a population which exists only on Prolific (assuming exact correspondence of participants does not exist with other sites), and which was subject to additional prescreening criteria, including: *all participants must be UK residents; all participants must be UK-born, participants may only take part if they have not previously taken part in a study hosted by the researcher*, etc. Thus concern here is with robustness, not ecological validity, and so to that end, each study reported here includes information regarding the composition of the sample and any prescreening criteria employed. It is also important that statistical power be adequate to detect effect sizes, should they exist, so that generalisations to alternative populations are reliably founded. To this latter point, a discussion of rigor in research is provided.

6.3.3   On Rigor in Research

> "*What criteria are appropriate for judging the goodness or quality of an inquiry? The appropriate criteria are the conventional benchmarks of "rigor": internal validity (isomorphism of findings with reality), external validity (generalizability), reliability (in the sense of stability), and objectivity (distanced and neutral observer). These criteria depend on the realist ontological position; without the assumption, isomorphism of findings with reality can have no meaning, strict generalizability to a parent population is impossible, stability cannot be assessed for inquiry into a phenomenon if the phenomenon itself can change, and objectivity cannot be achieved because there is nothing from which one can be "distant.*"

<div align="right">(Guba and Lincoln, 1994, p114)</div>

As the above quote reveals, the questions of reliability and validity within the realist position, are questions of *quality* in research. This is owing to the mind-independence of the realist position and its *Correspondence Theory of Truth*. This theory states that "*a proposition is true if and only if the world is as the proposition says it is*" (Haig and Borsboom, 2012, p272) (i.e. *isomorphism of findings with reality*). To that, Haig and Borsboom (2012, p278) add that "*it is widely held that correspondence truth and realism are closely related, such that a commitment to correspondence truth brings with it a metaphysical commitment to the belief that facts or states of affairs objectively exist in the world apart from the propositions to which they correspond*." That is to say, for the scientific realist, reality exists independent of the mind, and so by extension a theory of *truth* as it relates to mind-independence is accepted, also. For Guba and Lincoln (1994) this provides the basis for judging *rigor* in research.

With *external validity* having already been discussed, the remainder of this section addresses the issues of *internal validity*, *measurement reliability and validity,* and the link between *power* and *replicability*.

6.3.3.1 Internal Validity

To infer causation in the forthcoming survey experiments, internal validity must first be established. Internal validity refers to "*the effectiveness of a method in its ability to determine the causal relationship between the treatment and outcome*" (Figueredo *et al.*, 2013, p344). That is, "*Did in fact the experimental treatments make a difference in this specific experimental instance?*" (Campbell and Stanley, 1963, p5). Campbell and Stanley (1963) introduce several threats to

internal validity that may affect whether a causal relationship is observed or not, and whether or not the observation of a causal relationship is trustworthy. The threats to internal validity include, but are not limited to:

I.   Selection Bias (*biases in participant assignment to experimental groups*)

II.   History (*events occurring between measures that affect the outcome*)

III.   Maturation (*naturally occurring changes within participants that can be confused with an effect of exposure*)

IV.   Testing (*pretests affecting post-tests*)

V.   Instrumentation (*changes in calibration of a measurement instrument or in the observers*)

VI.   Attrition (*participant dropouts affecting the outcome*)

VII.   Regression to the mean (*extreme scores moving toward the mean overtime / over repeated measures*)

To conclude that a causal relationship has been observed, these threats must first be ruled out (Matthay and Glymour, 2020; Campbell and Stanley, 1963).

The design of the survey experiments minimises the impact of the above threats. For instance, to account for the threat of *testing*, independent measures are obtained one week (minimum) before administering the intervention and measuring the dependent variable, e.g. at Time I measures of gender-derived social identity are captured, at Time II the Menu Selection Task (MST) is administered – the interval is intended to reduce the likelihood of participants equating the measuring of gender identity with the MST. For this reason also, deception is used in a majority of the studies. To control for *selection bias*, participants are randomly allocated to the treatment and control conditions. This is achieved using Microsoft Excel's RAND function, allocating a random number between 0 and 1 (e.g. 0.427439) to each participant in an Excel file, and sorting the file by largest to smallest or vice versa. The file is then split in two halves, with the top 50% being allocated to the treatment condition, and the bottom 50% to the control. The use of randomisation and control groups also helps reduce the threats of *history* and *maturation*, as changes to the treatment group affecting the outcome between Time I and II, are equally likely to affect the control group. Likewise, as allocation to the two groups is based on randomisation, participants are not selected based on extreme scores, thereby minimising *regression to the mean*. *Instrumentation* is also controlled for by ensuring questionnaires are comparable in terms of design, measurement consistency (all items of a scale are included, the range of scales remains

consistent), and administration (all questionnaires are administered online; can only be completed on a PC), for both the treatment and control groups. Finally, *attrition* is reduced (though not eliminated) by providing participants adequate compensation for participating. To further account for attrition, sample sizes are conservatively overestimated, thereby ensuring each study has adequate statistical power to observe effects where present.

6.3.3.2 Measurement Validity and Reliability

> "*Most social psychological researchers accept the philosophy that the specific operations and measures employed in a given research study are only partial representations of the theoretical constructs of interest – and imperfect representations at that.*"

<div align="right">(Brewer and Crano, 2014, p15).</div>

Guba and Lincoln (1994) note the criteria for judging research quality includes the concepts of validity and reliability, each of which depends on a realist ontology. This is due to the fact that to the scientific realist, scientific truth corresponds with truths in reality. As Chia (2002, p11) explains, "*established theories are mirror images of the world and reflect how it is actually ordered. The more accurately our theories correspond with reality, the more true they are held to be*" (Chia, 2002, p11). Thus to accurately test hypotheses and advance theories that represent reality, measures of unobservable, latest constructs such as social identity, must be valid insofar as they measure what they purport to measure, and reliable to the extent that results are consistent across populations.

With regard to validity, McGrath (2011, p141) defines *construct validity* as "*the degree to which an indicator accurately reflects a latent or unobserved attribute*". For instance, a measure or indicator of social identification is said to be high in construct validity to the extent that it accurately represents one's identification with a social identity. However, as Brewer and Crano (2014) note above, psychologists are acutely aware of the fact that measures of psychological phenomena are imperfect. This, McGrath (2011, p141) notes, is "*because the attribute of interest by definition cannot be directly observed,* [and so] *only indirect methods are available for assuring the validity of an indicator. A course of research to examine the validity of the indicator from multiple perspectives is therefore necessary before psychologists should feel comfortable using a particular indicator to represent a particular construct*". Therefore, validity is not determined by a single event, but is an ongoing process throughout the life of an indicator. In the present thesis, to minimise threats to construct validity, only well-established measures are employed, rather

than *ad hoc* measures, and their use in this thesis is intended to contribute to the process of further establishing their validity.

The reliability of the research is also ensured to a greater extent with the use of established measures. Cohen *et al.* (2018, p268) describe reliability as an umbrella term for "*dependability, consistency and replicability over time, over instruments and over groups of respondents.*" They go on to explain that "*for research to be reliable it must demonstrate that if it were to be carried out on a similar group of respondents in a similar context (however defined), then similar results would be found*" (Cohen *et al.*, 2018, p268). Reliability is therefore linked to the generalisability of a research project, as an instrument (e.g. the Collective Self-Esteem Scale; CSES) must *reliably* measure a construct (Collective Self-Esteem) across multiple time points, and across multiple samples. The greater the reliability of an instrument, the greater the replicability of a study (all else being equal). The reliability of measures such as the CSES, has therefore been previously established with its use in prior research.

Further still, scale reliability in terms of internal consistency is enhanced to a greater extent with the use of established methods, as the inter-item correlations will have previously been tested. Cronbach's (1951) alpha (α) is employed here as an index of internal consistency (scale reliability). The use of Cronbach's alpha has "*become routine practice in virtually all psychological and social science research in which multiple-item measures of a construct are used*" (Schmitt, 1996, p350). The alpha (α) represents the inter-item correlation of items that make up a scale, which is to say it represents the degree to which the items are likely measuring a similar latent construct, or at the very least are unlikely to be measuring unique, unrelated constructs. Typically, a minimum of .70 is accepted (Taber, 2018; Peterson, 1994), with higher values representing greater internal consistency. Values exceeding .95 potentially represent item redundancy, i.e. the items ask the same question (Kaplan and Saccuzzo, 2009; Nunnally, 1967). The alphas for each measure used in this thesis are reported in the Methods sections accompanying each study.

To sum, the present thesis attempts to ensure reliability and validity in measurement by employing previously established measures. The operationalisation of each construct is included in the Methods section of each study, along with the Cronbach's alpha as indication of scale reliability.

6.3.3.3 Power and Replicability

"*Scientific claims should not gain credence because of the status or authority of their originator but by the replicability of their supporting evidence.*"

(Open Science Collaboration, 2015, p943)

Included in Cohen *et al.*'s (2018, p268) description of reliability, is the notion of reliability as "*replicability over time, over instruments and over groups of respondents.*" In this sense, replicability refers to "*re-performing the experiment and collecting new data*" (Stevens, 2017, p1), thereby replicating previously reported effects. As Asendorpf *et al.* (2013, p109) explain, "*replication is obtained if differences between the finding in the original Study A and analogous findings in replication Studies B are insubstantial and due to unsystematic error, particularly sampling error, but not to systematic error, particularly differences in the facets of the design.*" This ability to replicate findings is the cornerstone of science. But in recent years, there has been growing concern regarding replicability of psychology research (van Bavel *et al.*, 2016; Open Science Collaboration, 2015; Lindsay, 2015; Yong, 2012).

The Reproducibility Project (Open Science Collaboration, 2015), which attempted to replicate 100 studies published in 2008 by three psychology journals (I. *Psychological Science (PSCI)*, II. *Journal of Personality and Social Psychology (JPSP)*, and III. *Journal of Experimental Psychology: Learning, Memory, and Cognition*), reported that the mean effect sizes of the replicated studies were half that of the original studies, and that of the original 97% of studies that reported a significant result ($p < 0.05$), only 36% of replications were significant[26]. Investigation of so-called 'hidden moderators' (i.e. contextual factors affecting the significance of a result) within the same 100 studies, were later analysed and found to significantly affect the replicability of a study. Factors such as sample composition (e.g. race), study location (e.g. urban vs. rural), and cultural dimensions (e.g. individualist vs. collectivist), when indexed to represent *contextual sensitivity*, were found to negatively affect the replicability of study, i.e. the higher the contextual sensitivity, the less likely the original study was able to be replicated.

In addition to the above hidden moderators, lack of replicability is also attributed to low statistical power (Maxwell, Lau, and Howard, 2015; Vankov, Bowers, and Munafo, 2014; Button *et al.*, 2013;

---

[26] Relevant to the present thesis, several studies related to intergroup bias and social identity were attempted to be replicated in the Reproducibility Project (Open Science Collaboration, 2015). These studies included but were not limited to: Amodio, Devine, and Harmon-Jones (2008; unable to replicate), Halevy, Bornstein, and Sagiv (2008; replicated), Goff, Steele, and Davies (2008; unable to replicate), and Purdie-Vaughns *et al.* (2008; unable to replicate).

Cohen, 1962). Low statistical power increases the likelihood of committing a Type II error, a false negative. That is, an under-powered study has a greater chance of producing a non-significant effect that would otherwise have been significant had the study being adequately powered. As Button *et al.* (2013, p366) explain:

> "*Low power, by definition, means that the chance of discovering effects that are genuinely true is low. That is, low-powered studies produce more false negatives than high-powered studies. When studies in a given field are designed with a power of 20%, it means that if there are 100 genuine non-null effects to be discovered in that field, these studies are expected to discover only 20 of them.*"

Thus, a study must be adequately powered in order to reduce the likelihood of false-negatives. But as Vankov, Bowers, and Munafo (2014) reveal, one-third of researchers when contacted, reported holding beliefs that would significantly reduce statistical power. The authors note that in general, researchers adhered to *accepted norms*, rather than using formal power analysis (Vankov *et al.*, 2014). Likewise, the editor of *Psychological Science* revealed that most researchers when asked, admitted to calculating sample sizes based on prior research (Lindsay, 2015). But as Cohen (1962), Sedlmeier and Gigerenzer (1989), and more recently the Open Science Collaboration (2015) have revealed, past psychological research has often been underpowered.

To that end, the present thesis employs both *a priori* power analysis and *post-hoc* sensitivity analysis where appropriate. *A priori* power analysis helps establish the sample size required to detect an effect, with an alpha (α) of .05 (i.e. 5% chance of making a Type I error by accepting a false-positive) and power of .80 (i.e. 20% chance of making a Type II error by accepting a false-negative). While *post hoc* sensitivity analysis demonstrates the sensitivity afforded by the actual sample obtained (taking into account the retention rates of Time II, the removal of outliers and participants for whom the study did not load correctly, etc.). To provide an example, in Study 2 it was determined that a sample of $N = 199$ was required to detect a small moderation effect of $f^2 = .04$, based on $\alpha = .05$ and power = .80. However, for reasons discussed in Study 2 the actual sample was $N = 164$, which *post hoc* sensitivity analysis revealed adequate to detect an effect of $f^2 = .05$, a marginally larger yet still small effect. The use of these two methods, while not able to eliminate the acceptance of false-negatives altogether (Type II error), significantly reduces the likelihood. Each study therefore discusses power analysis within its Methods section.

6.4 Ethical Considerations

Ethical approval was obtained from the Research Ethics Committee, Norwich Business School (NBS), University of East Anglia (UEA). All research conducted was in line with UEAs Research Ethics Policy. This includes but is not limited to, obtaining informed consent from all participants prior to their taking part in the studies reported in the thesis. This was obtained at the start of every study. For details as to how informed consent was obtained, see Study I Design and Procedure. It also includes recruiting participants of 18 years or older.

For each study, participants were provided with a Participant Information Sheet.[27] This document outlined both the purpose of the study and what the participant could expect from taking part, including the average time taken to complete the study and type of question formatting (e.g. Likert-type, semantic differentials, etc.). Participants were also advised of the rate of compensation, calculated at an hourly rate of no less than £6.00 per/hour. They were also informed of their right to withdraw. To ensure anonymity, participants were only identifiable by their unique Prolific ID (e.g. 5f511eed82c8655108cdec11d). Demographic information was restricted to age, gender, and nationality, and was used to further screen the eligibility of participants recruited via Prolific (e.g. in a study of male participants only, gender was collected to ensure only male participants were sampled).

Where deception was employed, the final page of a study included the debrief material, which highlighted any falsehoods that the participant may have been informed about during the study, as well as information regarding experimental conditions and the context of the study, including free-to-access publications available online. This information was presented to participants in PDF format via a link to Dropbox.com. Dropbox allows for documents to be shared / viewed without subscription. The debrief material was also provided upon request in those instances where Dropbox was blocked by the participants firewall. The debriefs for each study are included in the Appendix.

---

[27] To better understand what it is like to be a participant, the researcher took part in several studies hosted by post-graduate students at the *School of Psychology*, UEA. Both the *Participant Information Sheet* and *Participant Debrief* documents were modelled on those used by the post-grad researchers in the studies attended.

CHAPTER 7

STREAM I RESULTS

7.1 Study I – The Menu Selection Task (MST)

The objectives of Study I were twofold. First, it set out to test the researchers interpretation of White and Dahl's (2006) *Menu Selection Task* (MST). The MST employed in the thesis is based on the descriptions provided by the authors in their original paper, as the materials were not included[28]. Second, Study I administers the MST using an online survey experiment with a UK-based sample, as opposed to a sample comprised of Canadian university students (White and Dahl, 2006). The aim is to determine whether the MST is an appropriate method for investigating the dissociation effect using this sample.

The function of the MST is to demonstrate the dissociation effect as it relates to ingroup preferences for an outgroup-associated product. The MST employs men as the ingroup relative to the outgroup of women. The MST requires participants to select three courses from a food menu, including a steak as their main course. The MST includes two conditions: I. treatment and II. control. In the treatment condition, the steaks available include the *10oz Ladies' Cut* and *12oz House Cut*, while in the control condition the steaks include a *10oz Chef's Cut* and *12oz House Cut*.

White and Dahl (2006) reveal the *Ladies' Cut Steak* is both avoided and negatively evaluated by male participants. They suggest this is due to a need to 'dissociate' from the dissociative group of women. To help explain this dissociative behaviour, the present thesis applies the Social Identity Approach in Studies 2-4. The dependent variables of interest to the present study are *steak selection* and *steak evaluation*, measured using the scales from the original publication.

7.1.1   Methods

7.1.1.1 Participants

One hundred and sixty (N = 160; 81 male (50.63%), 79 female (49.37%)) participants aged between 18 and 76 years old (M_{age} = 35.45, SD_{age} = 12.39) were recruited via Prolific

---

[28] The authors were not contacted for copies of the original material.

(http://prolific.co) to take part in an online survey. Participants were advised the researchers were in the process of designing a menu selection task that they hoped would feature in later studies of consumer behaviour (see Appendix A, *Participant Information Sheet for Study I*)[29]. Each participant was paid £0.80 calculated on a completion time of 7 minutes at a rate of £6.86 per hour. Following the removal of 10 outliers, the sample comprised $N = 150$ (75 male, 75 female) participants, aged between 18 and 76 years old ($M_{age} = 35.56$, $SD_{age} = 12.40$).

Using MorePower V6.0.4 (Campbell and Thompson, 2012), *post hoc* power analysis revealed a sample of $N = 150$ had 86% chance of detecting a moderate effect of $f = .25$ or partial $\eta^2 = .06$ (Cohen, 1988, p285-287) for a three-way mixed-factorial ANOVA, used here to analyse steak evaluations. MorePower V6.0.4 is software developed to calculate statistical power. It differs from the more popular G*Power 3.1 (Faul *et al.*, 2007) by enabling the user to calculate statistical power for complex ANOVA designs (e.g. 2x2x2 mixed-factorial). Perugini, Gallucci, and Constantini (2018, p3) warn against post hoc power analyses, noting them to be "*pointless and potentially misleading.*" Yet they do provide *some* insight into the potential power afforded by the sample. For comparative purposes, White and Dahl's (2006) sample of $N = 81$ is revealed to have had 59% chance of detecting the same moderate effect. Thus, the sample size of Study I is agreeable.

For all studies reported on the thesis, screening criteria was applied. For Study I, screening ensured the sample consisted of UK nationals residing in the UK, aged 18 and above, and with an approval rate of 95% or above on Prolific (*see* Goodman and Paolacci, 2017, *for justification*)

7.1.1.2 Design and Procedure

Participation took place online. To ensure participants understood the purpose of the study and their rights as a participant, Page I read:

---

[29] For each study reported in the thesis (Studies I – 8), a Participant Information Sheet (PIS) was provided to participants. The PIS informed participants of the purpose of the research, the risks involved, the monetary compensation they could expect to receive, the handling of their data, and the researchers contact details (including lead supervisor). With Studies 2 – 8 each including a Time I and Time 2 (ostensibly, two unrelated studies so far as the participant was concerned), and a Pilot for Study 8, this meant that a total of 16 Participant Information Sheets were created. To prevent repetition in the Appendix, the thesis includes a copy of Study I's PIS as an example. For PIS relating to Studies 2 – 8, copies are available upon request.

Thank you for your interest in this study. Before taking part, please read the Participant Information Sheet available **here**.

The information sheet outlines the purpose of the research, the handling of your data, your rights as a participant, and our contact details should you require further information or wish to withdraw. You are under no obligation to agree to take part, but if you do agree you can withdraw at any time without giving a reason.

Please note that responses provided in under 3 minutes will be considered low-effort and will not be approved.

Please indicate that you understand and agree with the following:

- I understand the purpose and nature of the study.
- I understand that my participation is voluntary and that I can withdraw at any time without giving a reason.
- I understand that all information collected as part of the study will be treated as completely confidential, and the data will be anonymised.

To proceed to Page 2, participants were required to indicate their understanding by selecting **Yes** to each statement. The first page is identical for all studies included in the thesis.

For Study I, participants were randomly assigned to one of two conditions (*Ladies' Cut* vs. *Chef's Cut*). In accordance with White and Dahl (2006), participants were instructed to:

> *Please read the following scenario carefully:*
>
> *Imagine[30] that you've been invited to attend a meal for work. You're presented with the menu below, and asked to select a starter, main, and dessert. You're tempted to select a light starter and perhaps a steak for your main course.*
>
> *Using the menu below, please select and enter your starter, main, and dessert.*

Below the instruction was the menu for a fictional restaurant: *The Birch Street Tavern*. The menu contained two steak options. Participants in the *Chef's Cut* (control) condition were presented with a *10oz Chef's Cut* and *12oz House Cut*. Participants in the *Ladies' Cut* (treatment) condition

---

[30] White and Dahl (2006) do not comment on whether an imagined audience will provide social influence. However, research indicates that it can (Kirmani and Ferraro, 2017; Ratner and Kahn, 2002; Allport, 1954), and that it may have a similar effect on consumer behaviour as a physically present audience (Dahl, Manchanda, and Argo, 2001).

were presented with a *10oz Ladies' Cut* and *12oz House Cut*. Presentation of steak options was counterbalanced[31]. Participants were required to select their menu items by typing them into three boxes, titled I. Starter, II. Main, and III. Dessert. Following their selection, participants were required to evaluate six ostensibly random options from the food menu. They were then asked to provide demographic information (age, gender, and nationality) and to state in their own words what the purpose of the study was. This final task operated as a suspicion probe. Finally, participants were thanked and compensated for their time.

7.1.1.3 Materials

The online survey experiment was designed and hosted on Smart Survey (www.smartsurvey.co.uk). Appendix B provides a copy of the questionnaire. As White and Dahl (2006) do not provide examples of the materials used in the original publication, the Birch Street Tavern food menu was created using Gimp (www.gimp.org), a free, downloadable graphics editing program.

Steak Selection. Three textboxes labelled Starter, Main, and Dessert were provided. Participants were required to enter the name of each food choice in their respective box, e.g. "*House Cut 12oz*" in the box labelled "*Main*".

Evaluations of Steak. Having selected their food options, participants were then presented with a page that read:

> *We're interested in what you think about the menu options. This next stage will be a little repetitive, so we understand that you might be tempted to rush through. To reduce repetition, we ask that you only evaluate six options from the menu (some that you selected, and some that you didn't).*

---

[31] The use of counterbalancing was to reduce presentation effects. For participants in the *Ladies' Cut Steak* condition, evaluations of said steak did not differ as a consequence of the order in which they were presented (i.e. *Ladies' Cut* listed before the *House Cut*, and vice versa), $t(72) = 1.42$, $p = .161$. Likewise, in the *Chef's Cut* condition, the order of presentation had no significant effect on steak evaluations, $t(74) = -0.18$, $p = .859$.

Participants then evaluated six menu items, presented two at a time across three pages. To reduce demand effects, the *10oz Ladies' Cut / 10oz Chef's Cut Steak* featured on separate pages to the *12oz House Cut Steak*. The page ordering was again randomised. To provide evaluations of the food items, a 3-item, nine-point semantic differential scale developed by White and Dahl (2006) was used ($\alpha = .93$). The adjectives used were unfavourable | favourable, dislike | like, and bad | good. The three items were presented in randomised order. Given the nature of the study, only evaluations of the steak options were analysed.

Instructional Manipulation Check (IMC). A two-stage IMC was included among the three pages of menu item evaluations. The first stage reads: "*Please select the number four for this question, and No for the next question. This is to help us filter out random clicking*". This includes a single-item, nine-point scale weighted 1 (*rarely*) to 7 (*frequently*). The second stage of the IMC reads "*Please select the correct response*", followed by two options: **Yes** and **No**. The IMC was influenced by a similar method employed by Oppenheimer, Meyvis, and Davidenko (2009). Participants that failed the IMC were rejected, and their data deleted.

7.1.1.4 Data Analysis

Data was analysed using IBM SPSS 25 - this holds true for all studies reported in the thesis. Chi-squared tests of independence were conducted to analyse the effect of steak label (*Chef's Cut* v. *Ladies' Cut*) on steak selection. A three-way mixed factorial ANOVA was used to analyse steak evaluations.

7.1.2 Results

7.1.2.1 Preliminary Analysis

To ensure the assumptions of normality, homogeneity of variance, and sphericity were not violated, preliminary analyses were conducted. Based on the assessment of skewness and kurtosis, the assumption of normality was not violated. Nevertheless, violations of normality in sample sizes of 30+ are not expected to cause issue (Pallant, 2016). Levene's test (Levene, 1960)

indicated the assumption of homogeneity of variance had been violated for both the 10oz, F (3, 146) = 4.99, p = .003, and 12oz steak, F (3, 146) = 9.68, p < .001. However, ANOVA is noted to be robust to violations of the assumption of homogeneity of variance where sample sizes are near equal (Blanca *et al.*, 2018; Levene, 1960). Table 4 reveals near equal sample sizes, and so the heterogeneity indicated by the Levene's statistic is to be disregarded. The assumption of sphericity is also not to be considered as the experimental design includes no more than two levels for each independent variable (Field, 2013).

7.1.2.2 Steak Selection

Table 3 includes two 2 x 2 contingency tables. Table 3: A displays the frequency distributions for male respondents in the *Ladies' Cut* and *Chef's Cut* conditions, and their respective choice of steak (10oz vs. 12oz). Table 3: B displays the same information but for female participants. Chi-square (χ^2) analysis was used to examine steak selections. Effect sizes are reported here as Cramer's *Phi*, interpreted as phi = .10 is small, .30 is moderate, and .50 is large (Cohen, 1988).

Excluding participants whose choices did not include steak (n = 38, 25.3%), a χ^2 test of independence (with Yates' Continuity Correction[32]; $\chi^{2\prime}$; Yates, 1934) of male participants revealed that in the *Chef's Cut* (control) condition, 54.8% chose the 10oz steak (i.e. *Chef's Cut*), while 45.2% chose the 12oz steak (i.e. *House Cut*). However, in the *Ladies' Cut* (treatment) condition, 6.5% chose the 10oz steak (i.e. *Ladies' Cut*), while 93.5% chose the 12oz steak (i.e. *House Cut*), $\chi^{2\prime}$ (1, n = 62) = 14.87, p < .001, phi = - .525, indicating a large effect (Cohen, 1988).

For female participants, there was no significant difference in steak selection for either condition. In the *Chef's Cut* condition, 54.5% chose the 10oz steak (i.e. the *Chef's Cut*) and 45.5% chose the 12oz steak (i.e. *House Cut*), while in the *Ladies' Cut* condition, 60.7% chose the 10oz steak (i.e. *Ladies' Cut*) and 39.3% chose the 12oz steak (i.e. *House Cut*), $\chi^{2\prime}$ (1, n = 50) = .02, p = .88, phi = .06, representing a very small effect.

---

[32] Yates' Correction ($\chi^{2\prime}$) is used to account for the use of a 2x2 contingency table, which is prone to an upward bias when using χ^2 tests (i.e. results may be larger than they should), causing Type I error. The use of $\chi^{2\prime}$ is somewhat debated (*see* Hitchcock, 2009; Furr, 2012). To account for this, it is report here that in the *Ladies' Cut* condition, the selection of steaks by male participants is significant, as indicated by Pearson χ^2 (1, n = 62) = 17.08, p < .001, and Fisher's Exact Test, p < .001. That is, irrespective of the test used, the difference in steak selection is significant for male participants in the *Ladies' Cut* condition.

Table 3 Steak Selection for Male (A.) and Female (B.) Participants by Experimental Condition

		A. Male Steak Selection		Total	B. Female Steak Selection		Total
Experimental Condition		10oz	12oz		10oz	12oz	
Ladies' Cut	Count	2	29	31	17	11	28
	% within c.	6.5%	93.5%	100%	60.7%	39.3%	100%
Chef's Cut	Count	17	14	31	12	10	22
	% within c.	54.8%	45.2%	100%	54.5%	45.5%	100%
Total	Count	19	43	62	29	21	50
	% within c.	30.6%	69.4%	100%	58%	42%	100%

The analysis indicates no significant difference in tendency to choose steak (vs. non-steak) across the *Chef's Cut* (69.7%) and *Ladies' Cut* (79.7%) conditions, χ^2 (1, n = 150) = 1.49, p = .22.

7.1.2.3 Steak Evaluations

Table 4 displays the means and standard deviations (descriptive statistics) for steak evaluations in both the *Chef's Cut* and *Ladies' Cut* conditions, split by participant gender. Overall, female participants reported lower steak evaluations than male participants, in both the *Chef's Cut* and *Ladies' Cut* conditions.

Table 4 Mean and Standard Deviation for Steak Evaluation, Split by Gender

Condition	Steak Size	Male			Female		
		N	Mean	Std. Dev	N	Mean	Std. Dev
Chef's Cut	10oz	38	7.89	1.21	38	6.74	1.90
	12oz	38	7.79	1.41	38	6.65	2.05
Ladies' Cut	10oz	37	7.03	1.76	37	6.49	2.48
	12oz	37	8.05	1.11	37	6.74	2.56

To determine the significance of the differences in steak evaluations provided by male and female participants across the two conditions, a three-way mixed factorial ANOVA was conducted. The mixed factorial ANOVA combines both a within-subjects and between-subjects design, testing for differences between two or more independent groups, while simultaneously testing those same groups on repeated measures (Maxwell and Delaney, 1990). Because each participant provided evaluations of the 10oz and 12oz steaks, steak size serves as the within-subjects factor. Effect sizes are reported here as Partial Eta Squared (partial η^2), with interpretation being: .01 = small, .06 = moderate, and .14 = large effects (Cohen, 1988, p284-287). This interpretation of partial η^2 is used for all subsequent studies where partial η^2 is reported.

The three-way mixed factorial ANOVA took the form of 2 (gender: male vs. female) x 2 (steak label: *Ladies' Cut* vs. *Chef's Cut*) x 2 (steak size: 10oz vs. 12oz), with steak evaluations as the dependent variable. The analysis revealed a similar three-way interaction (gender x steak label x steak size) to that reported by White and Dahl (2006), Wilk's Λ .98, $F(1, 146) = 3.20$, $p = .08$, partial $\eta^2 = .02$, representing a small effect that approached significance. Figure 4 displays the interaction plots for steak size (10oz vs 12oz) x steak label (*Ladies' Cut* vs *Chef's Cut*) for steak evaluations provided by male and female participants.

Figure 4 Steak Evaluations by Male and Female Participants as a Function of Experimental Condition
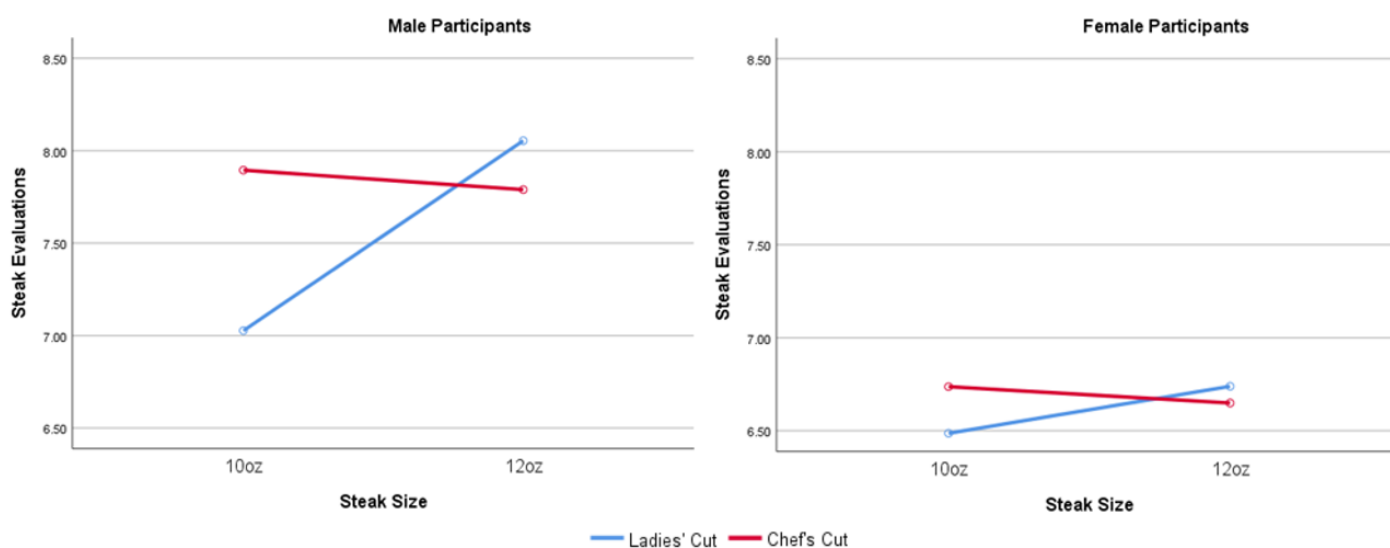
Figure 4 illustrates clear interactions. For male participants, the relationship between steak size and steak evaluations changes as a consequence of the experimental condition. Figure 4 and Table 4 reveal that the 10oz steak was more negatively evaluated by male participants in the *Ladies' Cut* condition ($M_{ladies} = 7.03$, $SD_{ladies} = 1.76$) than males in the *Chef's Cut* condition ($M_{chefs} = 7.89$, SD_{chefs}

= 1.21). The results reveal a similar, though less pronounced effect for female participants evaluating the 10oz steak. To decompose the third-order interaction effect, simple second-order interaction effects were analysed using two 2x2 mixed factorial ANOVAs. This method of decomposition was preferable to simple simple effects as splitting the data along the levels of a factor is preferable when that factor is theoretically relevant, as gender is in this instance (Roberts and Russo, 1999).

To that end, the responses provided by male participants were first examined. The 2x2 ANOVA took the form of 2 (steak label: *Ladies' Cut* vs. *Chef's Cut*) x 2 (steak size: 10oz vs. 12oz), with steak size as the within-subjects measure. The analysis revealed a significant interaction between the steak label and steak size, Wilk's Λ .85, F (1, 73) = 12.79, $p < .01$, partial η^2 = .15, representing a large effect. The effect reveals that for male participants, evaluations of the 10oz and 12oz steaks differed between the two conditions (*Ladies' Cut* vs. *Chef's Cut*). The steak size by condition interaction effect was analysed using a simple main effects analysis. The *Ladies' Cut* label significantly influenced evaluations of the 10oz (M_{ladies} = 7.03) and 12oz (M_{house} = 8.05) steaks, Wilk's Λ .78, F (1, 73) = 20.76, $p < .001$, partial η^2 = .22, representing a very large effect. Whereas the *Chef's Cut* label did not influence male participants evaluations of the 10oz (M_{chefs} = 7.90) and 12oz (M_{house} = 7.79) steaks, Wilk's Λ 1.0, F (1, 73) = .22, $p = .64$, partial η^2 = .003, representing a very small effect.

Analysis of the 2x2 ANOVA for female participants, revealed there to be no significant interaction between steak label and steak size, Wilk's Λ .98, F (1, 73) = 1.21, $p = .28$, partial η^2 = .02. And there was also no significant main effect for steak size, Wilk's Λ 1.0, F (1, 73) = .28, $p = .60$, partial η^2 = .004, representing small and very small effects, respectively.

7.1.3   Discussion

The objectives of Study I were to test the effectiveness of the researchers interpretation of White and Dahl's (2006) MST, and to demonstrate the dissociation effect using a UK-based online panel. To that end, Study I was successful. The results revealed that 93.5% of male participants presented with an outgroup labelled product (*Ladies' Cut Steak*), dissociated from it by selecting a neutrally labelled alternative (*House Cut Steak*). This is further evidenced by the lack of dissociation reported in the control condition, where 54.8% of male participants chose the *Chef's Cut* steak, and 48.2% chose the *House Cut*, as well as the lack of dissociation presented by female participants.

Beyond selection, evaluations of the outgroup labelled product were also demonstrative of the dissociation effect. The results revealed that male participants negatively evaluated the *Ladies' Cut Steak* (M_{ladies} = 7.03, SD_{ladies} = 1.76) compared to the alternative, neutrally labelled *House Cut Steak* (M_{house} = 8.05, SD_{house} = 1.11). While evaluations for the two neutrally labelled products in the control condition were not significantly different (M_{chefs} = 7.89, SD_{chefs} = 1.21; M_{house} = 7.79, SD_{house} = 1.41). Female participants again, showed no evidence of dissociation.

Having established that the MST produces the dissociation effect using the materials developed for the thesis, and employing a UK-based online panel, attention now turns to investigating this effect using the Social Identity Approach. The next study (Study 2) explores the role of social identity in the MST by first establishing whether male social identity is at play when dissociating from an outgroup-labelled product, and then determining whether or not social identity moderates the dissociation effect.

7.2 Study 2 – The MST and Social Identity

The objective of Study 2 was to determine whether male gender-derived social identity influenced the dissociation effect, as observed in the Menu Selection Task (MST). Study I revealed that male participants both avoided and negatively evaluated a steak option when it bore an outgroup label – the *Ladies' Cut Steak*. The reference group literature accounts for this dissociation by suggesting the individual is attempting to put distance between themselves and the outgroup (or dissociative group), so as to avoid misidentification or the projection of an undesired self (Tepper, 1994; Berger and Health, 2007; Sirgy, 1982). In Study 2, the Social Identity Approach was applied to ascertain whether dissociation as operationalised by the negative evaluations of the *Ladies' Cut Steak*, was as a consequence of male social identity. Furthermore, the study examined whether strength of male ingroup identification moderated the dissociation effect, such that higher identification with one's male ingroup results in greater dissociation.

Study 2 is a direct test of the following hypotheses, which together contribute to answering RQ1:

RQ$_1$.   To what extent is the dissociation effect as reported in the consumer reference group literature, the consequence of social identity?

H$_1$.   The dissociation of male consumers from an outgroup-associated product (the Ladies' Cut Steak) is influenced by male gender-derived social identity.

H$_2$.   The dissociation effect will be moderated by strength of ingroup identification, with high identifiers exhibiting greater dissociation than low identifiers.

To explore the role played by male gender-derived social identity in the MST, data was collected in two separate stages (Time I and II). Time I employed several measures relating to social identification. Using the same participants, Time II (two weeks later) employed the MST as reported in Study I. Time I and II data was then combined. The dependent variable of interest is *steak evaluation*.

7.2.1 Methods

7.2.1.1 Power Analysis

To analyse the data, Moderated Multiple Regressions (MMR) and Two-Way (2x2) Mixed-Factorial ANOVAs were conducted. To determine the sample size needed to detect moderation, *a priori* power analysis was conducted using G*Power 3.1 (Faul *et al.*, 2007). Perugini, Gallucci, and Constantini (2018) suggest that as power depends on the population effect size, something which is typically unknown, that the researcher should use their 'best guess'. It was therefore conservatively estimated that social identification would have a relatively small effect on evaluations of the *Ladies' Cut Steak*, R^2 change (ΔR^2) = .04[33]. From this best guess, G*Power 3.1 recommends a minimum sample size of N = 199, based on alpha (α) = .05 and power of .80. Using this same criteria (α = .05, power = .80, N = 199) the Two-Way Mixed Factorial ANOVA was capable of detecting a small (η^2 = .01) effect size, also.

7.2.1.2 Participants

Two hundred and two (N = 202) male participants aged between 18 and 75 years old (M_{age} = 36.04, SD_{age} = 12.83) were recruited via Prolific. To reduce carryover effects, participants took part at two separate stages, herein referred to as Time I and Time II. Due to the nature of Prolific, participants entered into Time I not knowing they would be recruited again at Time II. Likewise, at Time II participants were unaware that their taking part was related to Time I.

At Time I, participants were informed that the researchers were in the process of developing a new measure of gender identification. Each participant was paid a fee of £0.50 calculated on a

---

[33] G*Power 3.1 reports effect sizes in terms of f^2. f^2 = .02 is small, .15 is medium, and .35 is a large effect (Cohen, 1988). In the forthcoming studies (including the present), effect sizes are reported in terms of R^2 change (ΔR^2) (Warner, 2012). Using Cohen's (1988, p413-414) formula for converting f^2 (as reported in G*Power) to R^2 (as reported in SPSS and here) (formula: $R^2 = f^2/(1 + f^2)$), R^2 = .02 is small, .13 is moderate, and .26 is large. However, as Faul *et al.* (2009) note, the substantive meaning of these effects may differ in Moderated Multiple Regression (MMR), compared to typical interpretations of f^2 (or as is reported here, ΔR^2), owing to the variance explained by the predictors prior to the inclusion of the interaction term (i.e. when the effect (*beta*) of each predictor is not conditional on the value of the moderator). As Aiken and West (1991, p163) explain, "*the greater the proportion of variance accounted for by the first order effects, the sharper is the decline in the effect sizes, variance accounted for, and power of the test for the interaction term as reliability decreases*". Therefore, what constitutes a small, medium, or large effect in terms of f^2 or ΔR^2 may actually be smaller so far as substantive effects are concerned.

completion time of 5 minutes at a rate of £6.00 per hour. Two weeks later at Time II, the same participants were invited to take part in an ostensibly unrelated study. For the Time II study, participants were provided with the same cover story as was used in Study I. That is, the researchers were in the process of designing a menu selection task (MST) that they hoped would feature in later studies of consumer behaviour. Each participant was paid a fee of £0.80 calculated on a completion time of 7 minutes at a rate of £6.86 per hour.

The retention rate for Time II was 87.6% (N = 177). Following the removal of outliers (n = 9) and vegans, vegetarians, and those with dietary restrictions preventing them from eating meat (n = 4), the sample was comprised of N = 164 aged between 18 and 75 (M_{age} = 36.82, SD_{age} = 12.85) years old. Using the same power criteria as noted above (α = .05, power = .80), N = 164 was capable of detecting a small effect using MMR (ΔR^2 = .06) and the two-way mixed ANOVA (partial η^2 = .01).

Identical prescreening criteria was employed to that used in Study I, with the additional criteria that participants who took part in Study I were ineligible to take part in Study 2. This criteria is used throughout – participants who have taken part in a previous study conducted in fulfilment of the thesis, were ineligible to take part in later studies.

7.2.1.3 Design and Procedure

Participation took place online. Informed consent was obtained at the start of each stage. To detect insufficient effort responding (IER) (Curran, 2016), it was stipulated that a minimum response time of 2 minutes for Time I and 3 minutes for Time II. Participants were informed of this prior to taking part, and again in the accompanying *Participant Information Sheet*. Participants failing to adhere to this requirement were advised their submission had been rejected, that they were not entitled to payment, and that their data had been deleted. Participants were able to contest their rejection. Though, as Prolific captures completion times themselves, disputes were handled by Prolific directly[34].

---

[34] It should be noted that at the time of data collection, this practice was accepted by Prolific. Prolific have since updated their policy, noting that rejection for completing a study too fast is only permissible where the study was completed "exceptionally fast" and where said submission results in a statistical outlier.

Time I: Participants were informed they were taking part in a study for the development of a new measure of gender identification. In truth, the study primed the participants gender-derived social identity before measuring their gender specific Collective Self-Esteem (CSE) as measured by Luhtanen and Crocker's (1992) Collective Self-Esteem Scale (CSES), and their gender-specific social identity as measured by Postmes *et al.*'s (2013) Single-Item Social Identification (SISI) measure and Cameron's (2004) Three-Factor Model of Social Identity (TFM)[35].

To reduce demand characteristics, the three scales were counterbalanced. Additionally, participants were asked to select their gender at the start of the questionnaire, with the intention being to disguise the fact that only male participants had been recruited.

Time II: Two weeks later, the same participants were recruited to take part in an ostensibly unrelated study. They were advised that the researchers were in the process of designing a menu selection task that they hoped would feature in later studies of consumer behaviour. Time II proceeded the same as Study I, save for two exceptions. Exception I: The allocation of participants to the two experimental conditions (*Ladies' Cut* vs. *Chef's Cut*) was determined by Microsoft Excel's RAND function. This involved allocating each row of participant data from Time I a random number between 0 and 1. The data was then sorted largest to smallest (e.g. from 0.981508 to 0.003273). The first 50% of participants were allocated to the *Ladies' Cut* (treatment) condition, and the second to the *Chef's Cut* (control) condition. Data provided at Time I and II was matched using the participants unique Prolific ID numbers. Exception 2: Participants were able to note dietary restrictions regarding meat consumption. Finally, participants were debriefed (see Appendix C), thanked, and compensated.

---

[35] Though CSE, TFM, and SISI each capture the participants identification with their gender group, they each differ in the *type* of ingroup identification being measured. From the outset, Tajfel (1978, p63) understood the multidimensionality of social identity, defining it as "*that part of an individual's self-concept which derives from his [or her] **knowledge** of his [or her] membership of a social group (or groups) together with the **value** and **emotional** significance attached to that membership*" [bold added]. Thus, from his definition emerges three dimensions of social identity, namely, a cognitive dimension (one's cognitive awareness or *knowledge* of one's membership to a group; i.e. self-categorisation), an evaluative dimension (one's evaluation of the ingroup, i.e. Collective Self-Esteem), and an emotional dimension (one's emotional connection to the group; i.e. affective commitment) (Ellemers *et al.*, 1999[b]). The TFM and CSES provide measures of each dimension (Leach *et al.*, 2008, p146, Table I). The SISI provides a single-item alternative.

7.2.1.4 Materials

For copies of the questionnaires used at Time I and Time II, see Appendices D and B, respectively. Here, discussion is limited to Time I only, as the materials used for Time II were identical to the those used in Study I, save for the inclusion of a question regarding dietary requirements.

Social Identity Prime. Gender-derived social identity was made salient using the "*three-things*" manipulation devised by Haslam *et al.* (1999). Having stated their gender on a previous page, participants were presented with the following: "*You selected [male/female][36] as your gender group. We'd like you to take a moment to think about what you and other [men/women] have in common. Please read the instructions below and provide answers where needed*". Participants were then instructed to "*List up to three things that you and other [men/women] do relatively often… relatively rarely… generally do well… generally do badly*".

Following the priming of gender-derived social identity, participants were presented with the following three scales, in counterbalanced order.

Collective Self-Esteem Scale (CSES). CSE was measured using Luhtanen and Crocker's (1992) 16-item CSES ($\alpha = .89$). The CSES is comprised of four subscales:

1. CSE Membership – the individual's judgment of how good or worthy they are as an ingroup member[37] ($\alpha = .77$)
2. CSE Private – the individual's personal judgment of their ingroup ($\alpha = .76$)
3. CSE Public – their judgement of how *others* evaluate the ingroup ($\alpha = .71$)
4. CSE Importance to *Identity* – the importance of the ingroup to the individual's self-concept ($\alpha = .88$).

---

[36] Although prescreening criteria ensured that only males were recruited, gender was still able to be determined by the participants. The reasons for this are threefold. First, if by mistake a male participant selected female, and then proceeded to the second page where males were referred to, then they would be made aware of the fact that the study was intended for males only. Second, despite Prolific's prescreening, undesirable participants (i.e. not screened for) do at times make it through. And third, participants on crowdsourcing sites such as Prolific and Amazon's Mechanical Turk (MTurk) are known to discuss studies on sites such as Reddit.com and Faircrowd.work – putting at risk the deception used in the study to conceal its true intent, if its true intent were to be discovered.

[37] Luhtanen and Crocker (1992, p305) note that Membership CSE is "*the most individualistic aspect of collective self-esteem*", and that it is perhaps not as closely related to social identity as the other three subdimensions.

Table 5 displays the items that comprise each subscale. Each item was presented on a seven-point scale, weighted 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Higher scores indicated greater Collective Self-Esteem.

Single-Item of Social Identification (SISI). Ingroup identification was also measured using Postmes, Haslam, and Jans (2013) SISI, which reads "*I identify with my group*", weighted 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). The SISI was adapted to read *"I identify with my gender group"*. Higher scores indicated greater gender identification.

Three-Factor Model of Social Identity (TFM). Cameron's (2004) 12-item TFM scale (α = .86) measures three dimensions of social identity:

1. Ingroup Ties – the individual's emotional connection to their gender group (α = .84)
2. Centrality – the individual's cognitive awareness or knowledge of their membership to their gender group, i.e. their self-categorisation as male (α = .80)
3. Ingroup Affect – the individual's evaluation of their gender group; theoretically, the most closely aligned to collective self-esteem (α = .79).

Table 5 displays the items comprising each subscale. Each item was presented on a six-point scale, weighted 1 (*Strongly Disagree*) to 6 (*Strongly Agree*). Higher scores indicated greater gender identification in terms of each of the three factors.

Instructional Manipulation Check. To identify inattentive participants, a 17th item was included within the Collective Self-Esteem Scale. The item read: "*It's important that you pay attention to this study. Please tick 'Strongly Disagree'*". Participants who failed to select *Strongly Disagree* were advised that their submission had been rejected, that they were not entitled to payment, and that their data had been deleted. Participants were able to contest their rejection. Though, as this particular IMC is recommended by Prolific, disputes were referred to them directly[38].

---

[38] It should be noted that at the time of data collection, Prolific accepted this as a valid reason to reject a participants submission. Prolific have since updated their policy so that rejection based on the failure of <u>one</u> attention check is only permissible where the questionnaire takes no longer than 5 minutes to complete.

Table 5 Operationalisation of Social Identification

Scale	Construct	Scale Items	Source
Collective Self-Esteem (CSE)	Membership Self-Esteem	1. I am a worthy member of my gender group. 2. I feel I don't have much to offer my gender group.[*] 3. I am a cooperative participant in the activities of my gender group. 4. I often feel I'm a useless member of my gender group.[*]	Adapted from Luhtanen and Crocker (1992)
	Private Collective Self-Esteem	5. I often regret that I belong to my gender group.[*] 6. In general, I'm glad to be a member of my gender group. 7. Overall, I often feel that my gender group is not worthwhile.[*] 8. I feel good about my gender.	
	Public Collective Self-Esteem	9. Overall, my gender is considered good by others. 10. Most people consider my gender group to be more ineffective than other groups.[*] 11. In general, others respect my gender. 12. In general, others think that my gender group is unworthy.[*]	
	Importance to Identity	13. Overall, my gender has very little to do with how I feel about myself.[*] 14. The social groups I belong to are an important reflection of who I am. 15. My gender is unimportant to my sense of what kind of a person I am.[*] 16. In general, belonging to my gender is an important part of my self-image.	
Single-Item Social Identification (SISI)	Social Identification	1. I identify with my gender group.	Adapted from Postmes, Haslam, and Jans (2013)

[*] Reverse Scored

Table 5 (Continued) Operationalisation of Social Identification

Scale	Construct	Scale Items	Source
Three-Factor Model of Social Identity (TFM)	Centrality	1. I often think about the fact that I am a man. 2. Overall, being a man has very little to do with how I feel about myself.* 3. In general, being a man is an important part of my self-image. 4. The fact that I am a man rarely enters my mind.*	Adapted from Cameron (2004)
	Ingroup Ties	5. I have a lot in common with other men. 6. I feel strong ties to other men. 7. I find it difficult to form a bond with other men.* 8. I don't feel a sense of being "connected" with other men.*	
	Ingroup Affect	9. In general, I'm glad to be a man. 10. I often regret that I am a man.* 11. I don't feel good about being a man.* 12. Generally, I feel good when I think about myself as a man.	

* Reverse Scored

7.2.2 Results

7.2.2.1 Preliminary Analysis

The assumptions of normality, homogeneity of variance, and sphericity were all met for conducting a Mixed-Factorial ANOVA (Field, 2013; Pallant, 2016). To reiterate Study I, groups with sample sizes of 30+ were assumed to be normally distributed. Levene's test again indicated violations of the assumption of homogeneity of variance, but as with Study I the group sizes analysed were near equal. The assumption of sphericity is not to be considered as the experimental design includes no more than two levels for each independent variable. Finally, the assumptions of linearity, multivariate normality, multicollinearity (checked against Variance Inflation Factors; VIF), and homoscedasticity, as they relate to Multiple Regression, were analysed and found to have been met. Outliers were analysed using boxplots, Mahalanobis (Mahalanobis, 1936) and Cook's (Cook and Weisberg, 1982) distances, where appropriate.

To ensure there were no significant differences in gender-derived social identification between the two conditions (*Ladies' Cut* vs. *Chef's Cut*), two one-way MANOVAs were conducted. The first MANOVA included the four subdimensions of CSE, three subdimensions of TFM, and the SISI. The results revealed no significant difference between participants in the two conditions, F (8, 155) = 1.57, p = .138, Wilks' Lambda = .93, partial η^2 = .08. To avoid singularity (i.e. including composite scales in the MANOVA alongside their component subscales), a second MANOVA was conducted on the composites of CSE Total and TFM Total. Again, no significant difference was observed, F (2, 161) = .17, p = .840, Wilks' Lambda = .998, partial η^2 = .00. It may therefore be assumed that participants in the two conditions did not significantly differ in terms of CSE, TFM, and SISI.

7.2.2.2 Descriptive Statistics and Bivariate Correlations

Tables 7 and 8 display the descriptive statistics and bivariate correlations for each independent and dependent variable, split by condition. Effect sizes are reported as Pearson product-momentum correlation coefficients (*r*), with interpretation being: .10 – .29 = small / weak, .30 – .49 = medium / moderate, and ≥ .50 = large /strong.

Table 8 reveals no significant correlation between evaluations of the *10oz Ladies' Cut Steak* and any measure of social identification (CSE, TFM, and SISI), providing the first indication that the

dissociation effect may not being influenced by male gender-derived social identity. Table 8 indicates a positive, significant relationship between evaluations of the *10oz Chef's Cut Steak* and CSE Public ($r = .269$, $p < .05$), CSE Importance to Identity ($r = .229$, $p < .05$), Centrality ($r = .220$, $p < .05$), and SISI ($r = .228$, $p < .05$). However, as the influence of social identification on evaluations of the *Chef's Cut Steak* is not the focus of the study, discussion of these findings would be *post hoc* speculation.

Instead, discussion of correlation is limited to the interscale correlations of the Single-Item Social Identification (SISI), and the more stable measures of CSE and TFM. This will help determine whether the SISI is suitable for future studies in the present thesis as a representation of ingroup identification. To aid in the analysis, Table 6 presents ungrouped correlations.

Table 6 Ungrouped Descriptive Statistics and Bivariate Correlations (N = 164)

	CSE Mem.	CSE Pri.	CSE Pub.	CSE Imp.	CSE Total	Cent.	IG Ties	IG Affect	TFM	SISI
CSE Mem.	1									
CSE Pri.	.623**	1								
CSE Pub.	.436**	.535**	1							
CSE Imp	.431**	.582**	.401**	1						
CSE Total	.765**	.847**	.727**	.813**	1					
TFM Centrality	.261**	.427**	.314**	.795**	.612**	1				
TFM IG Ties	.588**	.513**	.345**	.465**	.603**	.334**	1			
TFM IG Affect	.543**	.764**	.396**	.523**	.697**	.398**	.554**	1		
TFM Total	.577**	.699**	.443**	.771**	.805**	.768**	.802**	.784**	1	
Single-Item (SISI)	.487**	.587**	.391**	.479**	.613**	.404**	.566**	.546**	.637**	1
M	5.08	5.58	4.80	3.86	4.83	3.16	3.91	4.82	3.96	5.41
SD	1.08	0.98	1.07	1.54	0.92	1.18	1.11	0.85	0.82	1.36

** Correlation is significant at the 0.01 level (2-tailed).

7.2.2.3 CSE, TFM and their Relationship to the SISI

Table 6 reveals there were moderate to strong, positive correlations between each of the four CSE subscales (Membership, Private, Public, and Importance to Identity), indicating multidimensionality and independence of factors, i.e. each subscale is capturing related, yet separate aspects of the same or similar concept(s). The TFM subdimensions also revealed moderate to strong, positive correlations with one another. Unsurprisingly, both the CSE and TFM composites were strongly, positively related to each of their respective subdimensions. The Single-Item Social Identification (SISI) measure was revealed to share a moderate to strong, positive relationship with each of the social identification measures. In particular, the SISI shows a strong, positive relationship with the TFM composite ($r = .637$, $p < .01$), which is intended to capture the three dimensions of social identification. It was also revealed to share a strong, positive relationship with the CSE composite ($r = .613$, $p < .01$). Therefore, the SISI will continue to be used throughout the thesis as a measure of gender identification.

Table 7 Descriptive Statistics and Bivariate Correlations of Independent and Dependent Measures, Chef's Cut (Control) Condition (N = 84)

	CSE Membership	CSE Private	CSE Public	CSE Importance	CSE Total	TFM Centrality	TFM Ingroup Ties	TFM Ingroup Affect	Three-Factor Model	Single-Item (SISI)	10oz Steak	12oz Steak
CSE Membership	1											
CSE Private	.571**	1										
CSE Public	.432**	.498**	1									
CSE Importance to Identity	.461**	.624**	.490**	1								
CSE Total	.760**	.826**	.743**	.848**	1							
TFM Centrality	0.205	.432**	.365**	.822**	.613**	1						
TFM Ingroup Ties	.681**	.520**	.434**	.500**	.667**	.279*	1					
TFM Ingroup Affect	.500**	.739**	.411**	.559**	.686**	.461**	.551**	1				
Three-Factor Model Total	.575**	.692**	.513**	.818**	.832**	.774**	.774**	.806**	1			
Single-Item (SISI)	.364**	.562**	.376**	.472**	.554**	.317**	.575**	.600**	.615**	1		
10oz Steak	-0.038	0.107	.269*	.229*	0.186	.220*	0.147	0.112	0.213	.228*	1	
12oz Steak	-0.075	0.077	0.122	0.130	0.085	0.128	0.087	0.103	0.137	0.163	.779**	1
M	5.12	5.60	4.83	3.88	4.86	3.16	3.86	4.89	3.97	5.63	7.80	7.66
SD	1.13	0.95	1.06	1.52	0.93	1.19	1.09	0.78	0.80	1.10	1.26	1.36

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).

Table 8 Descriptive Statistics and Bivariate Correlations of Independent and Dependent Measures, Ladies' Cut (Treatment) Condition (N = 80)

	CSE Membership	CSE Private	CSE Public	CSE Importance	CSE Total	TFM Centrality	TFM Ingroup Ties	TFM Ingroup Affect	Three-Factor Model	Single-Item (SISI)	10oz Steak	12oz Steak
CSE Membership	1											
CSE Private	.682**	1										
CSE Public	.441**	.569**	1									
CSE Importance to Identity	.397**	.542**	.311**	1								
CSE Total	.772**	.870**	.710**	.777**	1							
TFM Centrality	.327**	.424**	.262*	.767**	.612**	1						
TFM Ingroup Ties	.493**	.509**	.260*	.433**	.543**	.390**	1					
TFM Ingroup Affect	.592**	.788**	.384**	.495**	.711**	.347**	.569**	1				
Three-Factor Model	.583**	.705**	.375**	.726**	.780**	.762**	.830**	.772**	1			
Single-Item (SISI)	.610**	.622**	.414**	.504**	.680**	.491**	.599**	.508**	.677**	1		
10oz Steak	-0.058	0.177	0.082	0.048	0.077	0.029	-0.045	0.021	0.001	0.016	1	
12oz Steak	-0.015	0.168	0.113	0.002	0.075	-0.049	-0.003	0.032	-0.013	-0.025	.523**	1
M	5.03	5.56	4.77	3.84	4.80	3.17	3.96	4.75	3.96	5.18	6.82	7.81
SD	1.03	1.02	1.08	1.56	0.92	1.19	1.14	0.91	0.85	1.56	1.74	1.40

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).

7.2.2.4 Steak Selection

Table 9 illustrates a 2 x 2 contingency table for steak selection by experimental condition. In keeping with Study I, chi-square (χ^2) analysis was used, with interpretation of Cramer's *Phi* being phi = .10 is small, .30 is moderate, and .50 is large (Cohen, 1988).

Table 9 Steak Selection by Condition

Condition		Selection		Total
		10oz	12oz	
Ladies' Cut	Count	9	52	61
	% within c.	14.8%	85.2%	100%
Chef's Cut	Count	33	31	64
	% within c.	51.6%	48.4%	100%
Total	Count	42	83	125
	% within c.	33.6%	66.4%	100%

Excluding those participants whose choices did not include steak (*n* = 39, 23.8%), a χ^2 test of independence (with Yates' Continuity Correction; $\chi^{2'}$) of participants revealed that in the *Chef's Cut* condition, 51.6% chose the 10oz steak (*Chef's Cut*), while 48.4% chose the 12oz steak (*House Cut*). In the *Ladies' Cut* condition, 14.8% chose the 10oz steak (*Ladies' Cut*), while 85.2% chose the 12oz steak (*House Cut*), $\chi^{2'}$ (1, *n* = 125) = 17.35, *p* < .001, phi = -.39, representing a medium to large effect. The analysis indicates no significant difference in tendency to choose steak (vs. non-steak) across the *Chef's Cut* (76.2%) and *Ladies' Cut* (76.3%) conditions, χ^2 (1, *n* = 164) = 0.00, *p* = 1.00, phi = .001, representing no effect. Thus, the neutrally labelled products of *Chef's Cut* and *House Cut* steak were selected by male participants at a greater rate than the outgroup-associated, *Ladies' Cut* steak. This is in line with the findings of the Study I and White and Dahl (2006).

7.2.2.5 Steak Evaluations

Consistent with the Study I, male participants negatively evaluated the outgroup-labelled *10oz Ladies Cut* steak (*M* = 6.82, *SD* = 1.74) by comparison to the neutrally-labelled *10oz Chef's Cut* (*M* = 7.80, *SD* = 1.26). To determine the effect size and significance of this difference, a 2 (steak label:

Ladies' Cut vs. *Chef's Cut*) x 2 (steak size: 10oz vs. 12oz) Mixed-Factorial ANOVA was conducted, with steak size as the within subjects measure. Effect sizes are once again reported here as partial η^2, with interpretation being: .01 = small, .06 = moderate, and .14 = large effect (Cohen, 1988).

The analysis revealed a significant interaction between steak label and steak size, Wilk's Λ .83, F (1, 162) = 33.14, p < .001, partial η^2 = .17, representing a large effect. This is illustrated by Figure 5. The interaction effect was analysed using simple effects analysis. The *Ladies' Cut* label was found to have significantly influenced evaluations of the 10oz (M_{ladies} = 6.82) and 12oz (M_{house} = 7.81) steaks, Wilk's Λ .77, F (1, 162) = 49.78, p < .001, partial η^2 = .24, representing a very large effect. Whereas the *Chef's Cut* label was found to have had no significant influence on participant evaluations of the 10oz (M_{chefs} = 7.80) and 12oz (M_{house} = 7.66) steaks, Wilk's Λ .99, F (1, 162) = 1.03, p < .31, partial η^2 = .006. That is to say, as with Study I and White and Dahl (2006), labelling a steak option the *Ladies' Cut* causes male's to dissociate from the product by means of negative evaluation. The outgroup-label was found to have a large effect on its evaluations.

Figure 5 Estimated Marginal Means of Steak Evaluations as a Function of Steak Label
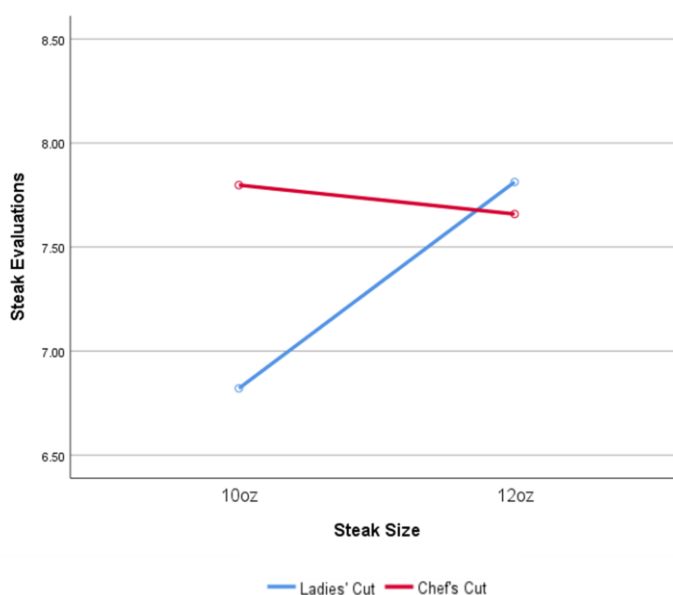
To provide a comparison between the present study (Study 2) and Study I, Figure 6 displays average steak evaluations provided by male participants in both studies, across both conditions.

Figure 6 reveals a near-identical interaction, though evaluations appear to have been greater overall in Study I. To determine if the difference was significant for the *Ladies' Cut Steak* across the two studies, an independent samples *t*-test was conducted. The results revealed that evaluations of the *10oz Ladies' Cut* provided by male participants in Study I (*M* = 7.03, *SD* = 1.76) did not significantly differ from evaluations of the *10oz Ladies' Cut* in Study 2 (*M* = 6.82, *SD* = 1.74), *t*(115) = 0.60, 95% CI [-0.48, 0.90], *p* = .55. Therefore, the manipulation provided by the MST held true across the studies, and may confidently be assumed to continue to do so for Studies 3 – 4.

Figure 6 Steak Evaluations as a Function of Steak Label. Data Plotted for Studies I and 2
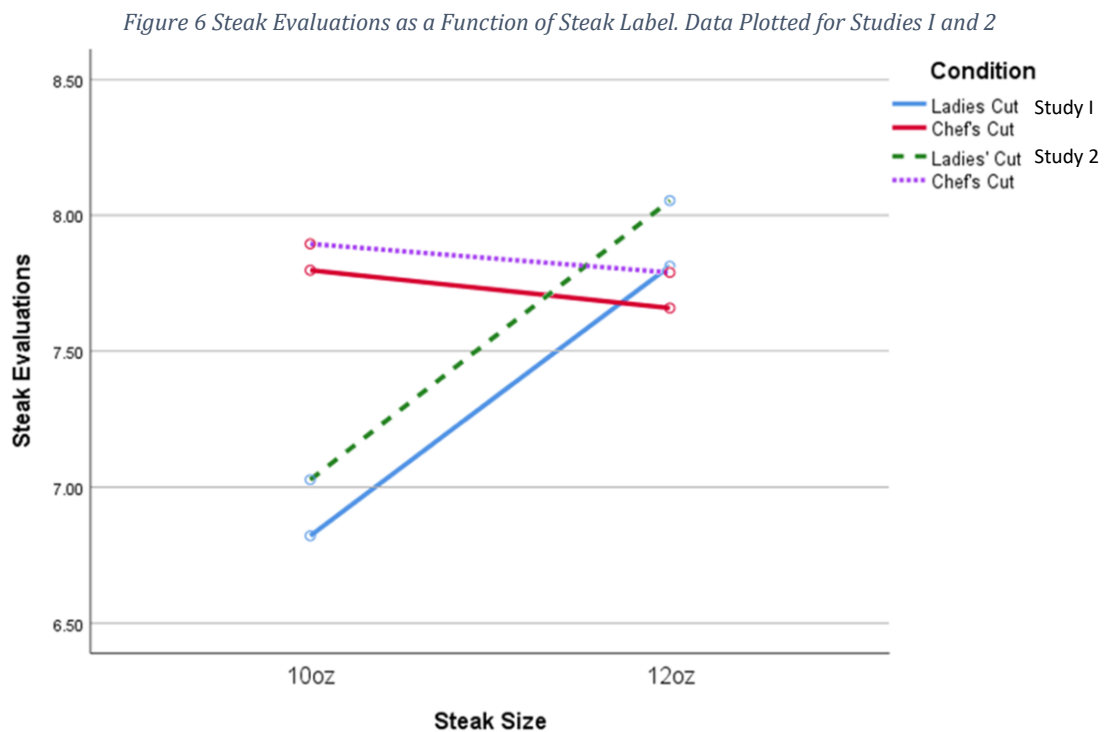
7.2.2.6 The Moderating Role of Social Identity on Steak Evaluations

To determine whether CSE, TFM, and SISI moderated the relationship between steak label and steak evaluations, a series of Moderated Multiple Regressions (MMR) were conducted. MMR was employed using Hayes' (2013) PROCESS Macro (Model I). The multiple aspect of MMR allows for

analysis of the relationship between a dependent (criterion) variable (e.g. Steak Evaluations) and multiple independent (predictor) variables (e.g. *Steak Label*, *CSE Membership*) (Tabachnick and Fidell, 2014). The moderated aspect refers to the relationship between the dependent variable (*Steak Evaluations*) and independent variable (*Steak Label*) being conditional on values of the moderator (e.g. *CSE Membership*). The significance of an interaction (e.g. *Steak Label* x *CSE Membership*) indicates whether moderation occurred.

The moderators of CSE, TFM, and SISI were tested, including all subdimensions and composites. *Steak Label* was dummy coded (1 = *Ladies' Cut*, 0 = *Chef's Cut*), and all continuous predictors were mean centred (Aiken and West, 1991). To summarise the results, the analysis did not provide evidence that strength of social identification (as measured by CSE, TFM, and SISI) moderated the dissociation effect. However, in the interest of completeness, all results are reported. The results relating to Collective Self-Esteem (CSE) and its four subdimensions (Membership, Private, Public, and Importance to Identity) are reported below, while the results for the Three-Factor Model (TFM) and SISI are reported in Appendix E.

Following the advice of Brambor, Clark, and Golder (2006), all unstandardised betas (*b*) and standard errors (*SE*) of constitutive terms (i.e. lower order) and interactions are reported. However, standardised betas (β) are not (*see* Whisman and McClelland, 2005). Interpretation of constitutive terms are not discussed as these constitute conditional effects (*see* Hayes, 2013; 2018; Aiken and West, 1991).

7.2.2.7 Testing the Moderating Effect of CSE Total and CSE Subdimensions

To test the moderating effect of Collective Self-Esteem (CSE) on evaluations of the 10oz steak across the two conditions (*Ladies' Cut* vs. *Chef's Cut*), separate MMRs were conducted for each of the four CSE subdimensions, as well as the CSE composite (CSE Total). Despite Crocker *et al*. (1994) warning against the use of the Collective Self-Esteem Scale (CSES) as a composite, many researchers continue to do so (e.g. Houston and Andreopoulou, 2003). The subscales were tested in the following order: CSE Membership, CSE Private, CSE Public, and CSE Importance to Identity, and finally CSE Total.

7.2.2.7.1 Moderated Multiple Regression for CSE Membership

Table 10 displays the results of the MMR as it relates to CSE Membership. The results revealed that while the model as whole was significant, R^2 = .10, F (3, 160) = 5.81, p = .001, the individual contribution of the interaction *Steak Label* x *CSE Membership* was not, b = -.05, R^2 change (ΔR^2) = .00, F change (1, 160) = 0.06, p = .807. Thus, the results indicate the relationship between *Steak Label* and *Steak Evaluations* was not moderated by CSE Membership.

Table 10 MMR Results of CSE Membership on Steak Evaluations by Steak Label

	b	$SE\ b$	t	p
Constant	7.80	0.17	47.09	0.000
Steak Label	-0.98	0.24	-4.14	0.000
CSE Membership	-0.04	0.15	-0.29	0.773
Label x CSE Membership	-0.05	0.22	-0.25	0.807

Model R^2 =.10; ΔR^2 for Interaction = .00
N = 164.

7.2.2.7.2 Moderated Multiple Regression for CSE Private

Table 11 displays the results of the MMR as it relates to CSE Private. The MMR revealed that the model as a whole was significant, accounting for 12% of the variance in *Steak Evaluations*, R^2 = .12, F (3, 160) = 7.13, p < .001. However, the interaction of *Steak Label x CSE Private* was not significant, b = 0.16, ΔR^2 = .00, F change (1, 160) = 0.45, p = .505, indicating that CSE Private did not significantly moderate the relationship between *Steak Label* and *Steak Evaluations.*

Table 11 MMR Results of CSE Private on Steak Evaluations by Steak Label

	b	$SE\ b$	t	p
Constant	7.79	0.16	47.60	0.000
Steak Label	-0.97	0.23	-4.12	0.000
CSE Private	0.14	0.17	0.82	0.413
Label x CSE Private	0.16	0.24	0.67	0.505

Model R^2 =.12; ΔR^2 for Interaction = .00
N = 164.

7.2.2.7.3 Moderated Multiple Regression for CSE Public

Table 12 displays the results of the MMR as it relates to CSE Public. The results revealed that while the model was significant in accounting for 12% of the variance in *Steak Evaluations*, R^2 = .12, F (3, 160) = 7.48, $p < .001$, the relationship between *Steak Label* and *Steak Evaluations* was not significantly moderated by CSE Public, b = -0.19, ΔR^2 = .00, F change (1, 160) = 0.73, $p = .395$.

Table 12 MMR Results of CSE Public on Steak Evaluations by Steak Label

	b	*SE b*	*t*	*p*
Constant	7.79	0.16	47.70	0.000
Steak Label	-0.96	0.23	-4.12	0.000
CSE Public	0.32	0.15	2.06	0.041
Label x CSE Public	-0.19	0.22	-0.85	0.395

Model R^2 =.12; ΔR^2 for Interaction = .00
N = 164.

Table 12 reveals a conditional main effect for CSE Public (b = 0.32, $p = .041$). To inspect this further, the interaction was removed from the model and a multiple regression was conducted, regressing Steak Label and CSE Public on Steak Evaluations. Table 13 displays the results. Table 13 reveals that CSE Public had a significant main effect on Steak Evaluations after controlling for Steak Label ($\beta = 0.15$, $p = .041$). This indicates that CSE Public significantly predicted evaluations of the 10oz steak irrespective of whether it was titled the *Ladies' Cut* or the *Chef's Cut*. This finding itself is not relevant to the present thesis, though it may provide the basis for an alternative stream of research into meat consumption, portion sizes, and male social identity. However, this is not explored further here.

Table 13 MMR Results of Steak Label and CSE Public on Steak Evaluations

	b	*SE b*	*β*	*p*
Constant	7.79	0.16		0.000
Steak Label	-0.96	0.23	-0.31	0.000
CSE Public	0.23	0.11	0.15	0.041

Model R^2 =.12, $p < .001$
N = 164.

7.2.2.7.4   Moderated Multiple Regression for CSE Importance to Identity

Table 14 displays the results of the MMR as it relates to CSE Importance to Identity. The model was once again significant in predicting *Steak Evaluations*, explaining 11% of the variance, R^2 = .11, F (3, 160) = 6.86, $p < .001$. However, the individual contribution of the interaction term was non-significant, b = -0.14, ΔR^2 = .00, F change (1, 160) = 0.78, p = .378, indicating that CSE Importance to Identity was not a significant moderator.

Table 14 MMR Results of CSE Importance to Identity on Steak Evaluations by Steak Label

	b	*SE b*	*t*	*p*
Constant	7.79	0.16	47.51	0.000
Steak Label	-0.97	0.23	-4.14	0.000
CSE Importance	0.19	0.11	1.75	0.083
Label x CSE Importance	-0.14	0.15	-0.88	0.378

Model R^2 =.12; ΔR^2 for Interaction = .00
N = 164.

7.2.2.7.5   Moderated Multiple Regression for CSE Total

Table 15 displays the results of the MMR for CSE Total, the composite of the four CSE subscales. In line with the MMRs of the four subdimensions, CSE Total was also found not to significantly moderate the relationship between *Steak Label* and *Steak Evaluations*. The model as a whole accounted for 11% of the variance in *Steak Evaluations*, R^2 = .11, F (3, 160) = 6.62, $p < .001$. But the interaction of *Steak Label* x *CSE Total* was non-significant, b = -0.11, ΔR^2 = .00, F change (1, 160) = 0.17, p = .681, suggesting CSE Total was not a reliable moderator.

Table 15 MMR Results of CSE Total on Steak Evaluations by Steak Label

	b	*SE b*	*t*	*p*
Constant	7.79	0.16	47.37	0.000
Steak Label	-0.96	0.24	-4.10	0.000
CSE Total	0.25	0.18	1.42	0.159
Label x CSE Total	-0.11	0.26	-0.41	0.681

Model R^2 =.11; ΔR^2 for Interaction = .00.
N = 164.

The findings reported above, as well as those relating to the TFM and SISI reported in Appendix E, indicate that the relationship between *Steak Label* and *Steak Evaluations* did not depend on the participants social identity as measured by CSE, TFM, and SISI. That is, neither positive nor negative evaluations of the *Ladies' Cut Steak* were dependent on the degree to which the participants identified with their gender-derived social identity.

7.2.3   Discussion

The objective of Study 2 was to determine whether male gender-derived social identity influenced the dissociation effect observed in the MST. To that end, a series of Moderated Multiple Regressions (MMR) were conducted using Hayes' (2013) PROCESS Macro, on the relationship between *Steak Label* (*Ladies' Cut* vs. *Chef's Cut*) and *Steak Evaluations*. The MMRs were a direct test of hypotheses 1 and 2, which state:

H_1.   The dissociation of male consumers from an outgroup-associated product (the *Ladies' Cut Steak*) is influenced by male gender-derived social identity.

H_2.   The dissociation effect will be moderated by strength of ingroup identification, with high identifiers exhibiting greater dissociation than low identifiers.

The results of Study 2 do not support either hypothesis[39]. This suggests the dissociation effect as observed in White and Dahl's (2006) Menu Selection Task (MST) is *not* the result of the participants male gender-derived social identity. To explore this further, Study 3 analyses the effects of gender priming. It was assumed in Study 2 that male social identity would be salient at the time participants engaged in the MST. However, this assumption is not evidenced by Study 2.

---

[39] Later in the thesis, Hayes' (2013) PROCESS Macro is replaced with an alternative method of moderation analysis (Hierarchical MMR), whereby multiple predictors are included at Step 1, and their products at Step 2. For example, at Step 1 the dummy coded experimental condition is entered along with all four CSE subdimensions. At Step 2, their products are included (e.g. *Condition x CSE Membership*). Using this method on the Study 2 data also produced non-significant interactions. Thus, neither method (PROCESS vs. Hierarchical MMR) provided support for H_1 or H_2.

7.3 Study 3 – The MST and Identity Priming

The results of Study 2 indicate the MST-related dissociation effect is not a consequence of male social identity, finding no significant effect of social identity on evaluations of the *Ladies' Cut Steak*. However, Study 2 made two important assumptions. First, it was assumed that male gender-derived social identity was 'always on', and as a result it would have significant influence on evaluations of an outgroup-related product. This assumption was based on van Knippenberg *et al.* (1994). Second, Study 2 assumed that if male social identity wasn't salient at the time of the MST, that the presence of the *Ladies' Cut Steak* would be enough to make it so. This second assumption was informed by research indicating that outgroup symbols prime relevant opposing ingroup identities (e.g. Razpurker-Apfeld and Shamoa-Nir, 2020; and Shamoa-Nir and Razpurker-Apfeld, 2020). Study 2 did not include a manipulation check to determine whether male social identity was salient at the time participants engaged in the MST, and so it is unclear whether these two assumptions held true.

The objective of Study 3 was to therefore advance Study 2 by manipulating social identity salience. The Theoretical Framework revealed that social identity may be primed in a number of ways, including answering questions related to the ingroup (Kelley, 2020; Wang and Dovidio, 2017; McLeish and Oxoby, 2011; Neuville and Croizet, 2007; Haslam *et al.*, 1999), being presented with ingroup-relevant symbols (Seger, Smith, and Mackie, 2009), and confirming one's membership to the group (Steele and Aronson, 1995). In the present study, Haslam *et al.*'s (1999) "Three Things" identity prime was employed prior to engaging with the MST, which falls within the category of answering questions related to the ingroup. This identity prime has proven to be effective in making social identities salient (Millward and Haslam, 2012; Adarves-Yorno, Postmes, and Haslam, 2006), including gender and national identity (e.g. Fischer, Haslam, and Smith, 2010; Haslam *et al.*, 1999).

Though not directly hypothesised for, Study 3 contributes to the testing of H_1 and H_2, thereby contributing to the answering of RQ_1, as highlighted below:

RQ₁.   To what extent is the dissociation effect as reported in the consumer reference group literature, the consequence of social identity?

H₁.   The dissociation of male consumers from an outgroup-associated product (the *Ladies' Cut Steak*) is influenced by male gender-derived social identity.

H$_2$.   The dissociation effect will be moderated by strength of ingroup identification, with high identifiers exhibiting greater dissociation than low identifiers.

Importantly, as the dissociation effect has already been evidenced in Studies I and 2, Study 3 does not employ a control group in which participants are presented with the *Chef's Cut Steak*. Instead, the control group of the present study is tasked with making salient their national identity (vs. gender identity in the treatment group). The dependent variables of interest are *Steak Selection* and *Steak Evaluations*. The independent variables are Collective Self-Esteem (CSE), the Three-Factor Model (TFM) of Social Identity, and the Single-Item of Social Identification (SISI).

7.3.1   Methods

7.3.1.1 Power Analysis

Study 3 employed the same power analysis as Study 2, as determined by G*Power 3.1 (Faul *et al.*, 2007). That is, in order to detect a relatively small effect in terms of R^2 = .04 within a Moderated Multiple Regression (MMR), with α = .05 and power = .80, the minimum sample required was N = 199. However, with a retention rate of 87.6% observed in Study 2, a sample of N = 250 was sought.

7.3.1.2 Participants

Two hundred and fifty (N = 250) male participants aged between 18 and 79 years old (M_{age} = 37.98, SD_{age} = 13.61) were recruited via Prolific. In line with Study 2, participants were recruited twice for two ostensibly unrelated studies, separated by a period of one week.

Time I: Participants were informed the researchers were in the process of developing a new measure of gender identification. Each participant was paid a fee of £0.60 calculated on a completion time of 6 minutes at a rate of £6.00 per hour. **Time II:** Extending the Time I cover story, a week later the same participants were invited to help test the reliability of the new measure they helped create at Time I. They were also invited to take part in an unrelated pilot

study (the MST). Each participant was paid a fee of £1.00 calculated on a completion time of 9 minutes at a rate of £6.66 per hour.

The retention rate for Time II was 87.2% (N = 218). Following the removal of those who failed an attention check (n = 12), failed to complete the study (n = 3), were not able to view the menu (n = 2), do not consume meat (n = 12), as well as outliers identified in the preliminary analysis (n = 2), the sample was comprised of N = 187 males aged 18 to 74 (M_{age} = 37.98, SD_{age} = 13.40) years old. With a sample of N = 187, the analyses were able to detect a relatively small effect of R^2 = .04 within the Moderated Multiple Regression (MMR). Study 2 prescreening criteria was employed.

7.3.1.3 Design and Procedure

Participation took place online. Informed consent was obtained at the start of each stage. To detect insufficient effort responding (IER) (Curran, 2016), minimum response times were stipulated: 3 minutes for Time I and 5 minutes for Time II. Participants were informed of this before agreeing to take part in the study. **Time I** was identical to Time I of Study 2.

Time II: To maintain the cover story used at Time I, participants at Time II were invited to help test the new measure they helped develop at Time I. In truth, participants were separated into two groups (Gender Prime vs. Nationality Prime) using Time I data and Microsoft Excel's RAND function. Operating as the 'new' measure developed at Time I was Ellemers, Kortekaas, Ouwerkerk's (1999) Three Aspects of Social Identity scale, which captures Group Self-Esteem, Self-Categorisation, and Commitment to the Group. To prime Gender Identity, participants in the Gender Prime condition were presented with Haslam *et al.*'s (1999) *three things* identity prime, adapted to male gender-derived social identity. This was followed by the 'new' measure of gender identification. To prime National Identity, participants in the Nationality Prime condition were presented with Haslam *et al.*'s (1999) identity prime, adapted to National Identity. They were then presented with the 'new' measure of social identity, adapted to National Identity. Participants in the Nationality Prime condition were advised they were helping test the ability of the new scale to measure more than just gender identity.

Having helped test the new measure, participants were then invited to take part in an ostensibly unrelated pilot study – the Menu Selection Task (MST). The MST was administered in the same way as reported in Study 2. Finally, participants were debriefed (see Appendix F), thanked, and compensated.

7.3.1.4 Materials

Appendix G provides a copy of the questionnaire used at Time II in the Gender Prime condition. For the questionnaire presented to participants in the Nationality Prime condition, substitute *man/men* for *British / British people*. The Time I questionnaire was identical to that used in Studies I and 2 (see Appendix B). Table 16 displays the scale reliability of the measures used at Time I and II, represented as Cronbach's alpha (α). Each measure exceeds .70, representing an acceptable level of reliability (Taber, 2018). Table 17 presents the items of Ellemers, Kortekaas, Ouwerkerk's (1999) Three-Aspects (TA) of Social Identity scale, employed as the 'new' measure at Time II.

Table 16 Internal Consistency of Measures Used at Times I and II

	No. of Items	α
CSE: Membership	4	.76
CSE: Private	4	.77
CSE: Public	4	.75
CSE: Importance to Identity	4	.79
Total CSE	16	.87
Centrality	4	.73
Ingroup Ties	4	.80
Ingroup Affect	4	.77
Three-Factor Model	12	.77
Single-Item (SISI)	1	-
Three-Aspects (TA) (Prime)	10	.93

Table 17 Three Aspects (TA) of Social Identity, Employed as the 'New' Measure of Gender Identity Created at Time I and Operating as an Additional Identity Prime at Time II

Scale	Construct	Scale Items
Three Aspects (TA) of Social Identity	Group Self-Esteem	1. I think men have little to be proud of.* 2. I feel good about being a man. 3. I have little respect for other men.* 4. I would rather not be a man.*
	Self-Categorisation	5. I identify with other men. 6. I am like other men. 7. Being a man is an important reflection of who I am.
	Commitment to the Group	8. I would like to continue working with other men. 9. I dislike being a man.* 10. I would rather belong to an alternative gender group.*

*Reverse Scored   Adapted from Ellemers, Kortekaas, and Ouwerkerk (1999)

The TA scale is included in the correlation analysis (below) for participants in the Gender Prime condition only.

7.3.2   Results

7.3.2.1 Preliminary Analysis

The assumptions of linearity, multivariate normality, multicollinearity (checked against Variance Inflation Factors; VIF), and homoscedasticity, as they relate to Moderated Multiple Regression (MMR), were analysed and found to have been met. Outliers were analysed using boxplots, Mahalanobis (Mahalanobis, 1936) and Cook's (Cook and Weisberg, 1982) distances, where appropriate.

To determine whether participant scores differed by priming group on measures of Collective Self-Esteem (CSE), the Three Factor Model (TFM) of social identification, and the Single-Item of Social Identification (SISI), two One-Way MANOVAs were conducted. The preliminary analysis identified two outliers with Mahalanobis distance scores of 33.79 and 26.78. With 8 variables included in the first MANOVA (see below), the critical value for evaluating Mahalanobis distance scores is 26.14 (Pallant, 2016, p294). Following the advice of Pallant (2016) and Tabachnick and Fidell (2014), the two cases were removed from the sample.

The first MANOVA included the four subdimensions of CSE, three subdimensions of TFM, and the SISI. The results revealed no significant difference between participants in the two priming conditions, F (8, 178) = 1.94, p = .057, Wilks' Lambda = .92, partial η^2 = .08. However, it is worth noting that the difference approached significance (p = .057), owing to a difference in scores of Ingroup Ties between the two conditions, F (1, 185) = 5.09, p = .025, partial η^2 = .03, representing a small effect. That is to say, participants in the Nationality Prime condition reported (at Time I) higher Ingroup Ties ($M_{Ties\_Control}$ = 4.19, $SD_{Ties\_Control}$ = 1.02) than participants in the Gender Prime condition ($M_{Ties\_Treatment}$ = 3.86, $SD_{Ties\_Treatment}$ = 1.01). To determine if this was a mistake, the data was entered into a new SPSS file and reanalysed. The findings remained the same – ingroup ties differed between conditions. Importantly, the difference did not achieve significance.

To avoid singularity (i.e. including composite scales in the MANOVA alongside their component subscales), a second MANOVA was conducted on the composites of CSE Total and TFM Total. Again, no significant difference was observed, F (2, 184) = 1.64, p = .197, Wilks' Lambda = .982,

partial η^2 = .02. Therefore, it may reasonably be concluded that participants in the two conditions did not significantly differ in terms of CSE, TFM, and SISI, and so gender-related social identification was similar between groups.

7.3.2.2 Descriptive Statistics and Bivariate Correlations

Tables 18 and 19 display the descriptive statistics and bivariate correlations for each independent and dependent variable, within the Gender Prime and Nationality Prime conditions, respectively. Pearson Product-Moment Correlations are interpreted as: .10 – .29 = small / weak, .30 – .49 = medium / moderate, and ≥ .50 = large /strong.

Table 18 indicates that in the Gender Prime condition, evaluations of the *House Cut Steak* were positively, significantly correlated with gender-specific CSE Public (r = .213), CSE Total (r = .219), Ingroup Affect (r = .222), and the Three Aspects (TA) of Social Identification (r = .213), each significant at p < .05 (2tailed). Evaluations of the *Ladies' Cut Steak* were not significantly correlated with any of the included measures of social identification, providing the first indication that Gender Identity priming had no effect on evaluations of the *Ladies' Cut Steak.* In the Nationality Prime condition, neither evaluations of the *Ladies' Cut* nor *House Cut* steaks were statistically, significantly correlated with any of the measures of gender-related social identification captured at Time I.

Table 18 Descriptive Statistics and Bivariate Correlations of Independent and Dependent Measures, Gender Prime Condition (N = 90)

	CSE Mem.	CSE Pri.	CSE Pub.	CSE Imp.	CSE Total	Central	IG Ties	IG Affect	Three-Factor Model	SISI	TA	Ladies' Cut	House Cut
CSE Membership	1												
CSE Private	.704**	1											
CSE Public	.314**	.435**	1										
CSE Importance to Identity	.384**	.356**	-0.040	1									
CSE Total	.820**	.841**	.542**	.664**	1								
Centrality	0.088	0.082	-0.171	.705**	.311**	1							
Ingroup Ties	.458**	.550**	.261*	0.203	.499**	0.017	1						
Ingroup Affect	.597**	.735**	.260*	.325**	.655**	0.169	.489**	1					
Three-Factor Model Total	.531**	.617**	0.130	.604**	.679**	.622**	.701**	.730**	1				
Single-Item (SISI)	.523**	.549**	.259*	.380**	.596**	0.127	.443**	.585**	.535**	1			
Three Aspects (TA)	.582**	.710**	.288**	.381**	.678**	0.187	.611**	.740**	.688**	.607**	1		
Ladies' Cut Steak	-0.039	0.096	0.169	0.015	0.087	-0.049	0.103	0.063	0.059	0.040	0.065	1	
House Cut Steak	0.080	0.174	.213*	0.168	.219*	0.108	0.037	.222*	0.166	0.109	.213*	.433**	1
M	5.27	5.69	4.95	4.31	5.05	3.28	3.86	4.96	4.04	5.59	5.58	6.45	7.83
SD	1.05	0.97	0.99	1.38	0.79	1.13	1.01	0.78	0.66	1.05	0.84	2.09	1.54

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).
TA = *Three Aspects* of Gender Identity (Ellemers *et al.*, 1999[a])

Table 19 Descriptive Statistics and Bivariate Correlations of Independent and Dependent Measures, Nationality Prime Condition (N = 97)

	CSE Mem.	CSE Pri.	CSE Pub.	CSE Imp.	CSE Total	Central	IG Ties	IG Affect	Three-Factor Model	SISI	TA	Ladies' Cut	House Cut
CSE Membership	1												
CSE Private	.725**	1											
CSE Public	.620**	.648**	1										
CSE Importance to Identity	.386**	.524**	.426**	1									
CSE Total	.807**	.871**	.816**	.763**	1								
Centrality	.228*	.359**	.267**	.705**	.513**	1							
Ingroup Ties	.643**	.484**	.393**	.226*	.514**	0.131	1						
Ingroup Affect	.573**	.777**	.590**	.543**	.758**	.408**	.404**	1					
Three-Factor Model Total	.625**	.658**	.519**	.666**	.765**	.707**	.695**	.727**	1				
Single-Item (SISI)	.532**	.641**	.384**	.458**	.614**	.284**	.419**	.482**	.468**	1			
Three Aspects (TA)	-	-	-	-	-	-	-	-	-	-	-		
Ladies' Cut Steak	0.033	0.042	-0.069	-0.043	-0.018	-0.066	-0.079	-0.002	-0.071	0.156	-	1	
House Cut Steak	0.070	0.039	-0.141	-0.066	-0.039	-0.078	0.084	0.156	0.050	0.142	-	.598**	1
M	5.50	5.82	5.09	3.96	5.09	3.21	4.19	5.12	4.18	5.70	-	6.64	7.71
SD	0.97	0.99	1.10	1.38	0.90	1.09	1.02	0.70	0.67	1.37	-	2.07	1.80

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).
TA = *Three Aspects* of National Identity, not included.

7.3.2.3 Steak Selection

Table 20 is a 2 x 2 contingency table for steak selection by priming condition.

Table 20 Steak Selection by Priming Condition

Priming Condition		Selection		Total
		Ladies Cut	House Cut	
Nationality	Count	3	68	71
	% within c.	4.2%	95.8%	100%
Gender	Count	3	62	65
	% within c.	4.6%	95.4%	100%
Total	Count	6	130	136
	% within c.	4.4%	95.6%	100%

Chi-square ($χ^2$) analysis was used, with interpretation of Cramer's *Phi* being phi = .10 is small, .30 is moderate, and .50 is large (Cohen, 1988). Excluding participants whose choices did not include steak (*n* = 51, 27.3%), a χ2 test of independence (with Yates' Continuity Correction; $χ^{2'}$) of participants revealed that in the Nationality Prime condition, 95.% chose the *House Cut* steak, while 4.2% chose the *Ladies' Cut* steak. Similarly, in the Gender Prime condition, 95.4% chose the *House Cut* steak, while 4.6% chose the *Ladies' Cut*, $χ^{2'}$ (1, *n* = 136) = 0.00, *p* = 1.00, phi = -.01, representing a very small, non-significant effect. Importantly, the results violate one of the assumptions of the χ2 of independence – 80% of cells should have expected frequencies of 5 or more. Table 20 indicates that 2 cells have an expected count of less than 5. The literature regarding interpretation is mixed. McHugh (2013) suggests reporting the Likelihood ratio, which in this instance is *p* = .912. Kim (2017) suggests reporting Fisher's Exact Test, which in this instance is *p* = 1.00. Whichever statistic, the results indicate that priming Gender Identity (vs. National Identity) had no significant effect on steak selection. The analysis also indicated no significant difference in tendency to choose steak (vs. non-steak) across the Nationality Prime (73.2%) and Gender Prime (72.2%) conditions, $χ^2$ (1, *n* = 187) = 0.00, *p* = 1.00, phi = .011, representing a very small, non-significant effect.

7.3.2.4 Steak Evaluations

Tables 18 and 19 (above) reveal that evaluations of the of the *Ladies' Cut* (LC) steak were marginally more negative in the Gender Prime condition (M_{LC_Gender} = 6.45, SD_{LC_Gender} =2.09) than in the Nationality Prime condition ($M_{LC\_Nationality}$ = 6.64, $SD_{LC\_Nationality}$ =2.07), while evaluations of the *House Cut* steak were marginally more positive in the Gender Prime condition (M_{HC_Gender} = 7.83, SD_{HC_Gender} =1.54), relative to the Nationality Prime ($M_{HC\_Nationality}$ = 7.71, $SD_{HC\_Nationality}$ =1.80). Figure 7 illustrates this. To determine whether the differences in evaluations of the *Ladies' Cut Steak* were significant, an independent samples *t*-test was conducted, with effect sizes reported as eta squared (η^2): .01 = small, .05 = moderate, and .14 = large (Cohen, 1988, p284-287). The results indicate the differences in mean scores for the *Ladies' Cut Steak* were not statistically significant, t (185) = 0.62, p = .538 (two-tailed). The magnitude of the difference in the means (mean difference = .19, 95% CI: -.41 to .79) was very small (η^2 = .002)[40]. Therefore, priming male Gender Identity (vs. National Identity) prior to participating in the MST had no statistically significant effect on evaluations of the *Ladies' Cut Steak*.

Figure 7 Steak Evaluations as a Function of Priming Condition (Gender vs. Nationality)

---
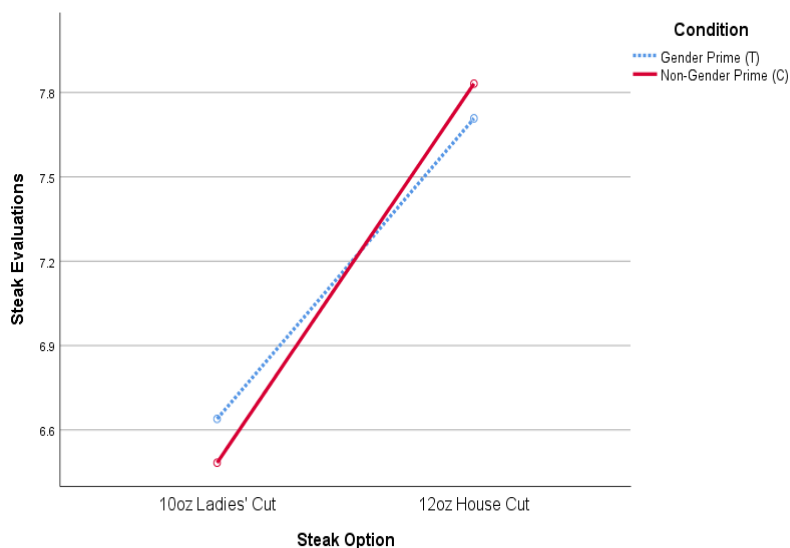
[40] Eta squared (η^2) was calculated using the formula provided by Pallant (2016, p248) and the output provided by SPSS. The formula is: $\eta2 = \frac{t2}{t2 + (N1 + N2 - 2)}$ resulting in $\eta2 = \frac{0.3844}{0,3844 + (97 + 90 - 2)} = .002$ (very small)

7.3.2.5 The Moderating Role of Social Identity on Steak Evaluations

To determine whether evaluations of the *Ladies' Cut Steak* differed as a function of Gender Identity (vs. National Identity), a series of Moderated Multiple Regressions (MMR) were conducted using Hayes (2013) PROCESS Macro (Model I). Table 21 presents the results of the MMRs as they relate to Total CSE and its four subdimensions (CSE Membership, Private, Public, and Importance to Identity). The results indicate that no form of CSE significantly moderated evaluations of the *Ladies Cut Steak*, irrespective of whether gender Identity was made salient or not.

Table 21 MMR of the Relationships Between Identity Prime and Evaluations of the Ladies' Cut Steak by Collective Self-Esteem (CSE)

	CSE Membership			
	b	*SE b*	*t*	*p*
Constant	6.63	0.21	31.10	.000
Condition	-0.19	0.31	-0.62	.539
CSE Member.	0.07	0.22	0.32	.753
Interaction	-0.15	0.31	-0.49	.628
$\Delta R^2 = .00$, $F(1, 183) = 0.24$, $p = .628$				
	CSE Private			
	b	*SE b*	*t*	*p*
Constant	6.33	0.21	31.32	.000
Condition	-0.17	0.31	-0.55	.583
CSE Private	0.09	0.21	0.41	.686
Interaction	0.12	0.31	0.38	.706
$\Delta R^2 = .00$, $F(1, 183) = 0.14$, $p = .706$				
	CSE Public			
	b	*SE b*	*t*	*p*
Constant	6.65	0.21	31.57	.000
Condition	-0.17	0.30	-0.56	.575
CSE Public	-0.13	0.19	-0.68	.500
Interaction	0.48	0.29	1.66	.099
$\Delta R^2 = .01$, $F(1, 183) = 2.75$, $p = .099$				
	CSE Importance to Identity			
	b	*SE b*	*t*	*p*
Constant	6.63	0.21	31.04	.000
Condition	-0.18	0.31	-0.59	.559
CSE Importance	-0.06	0.15	-0.42	.676
Interaction	0.09	0.22	0.39	.696
$\Delta R^2 = .00$, $F(1, 183) = 0.15$, $p = .696$				
	CSE Total			
	b	*SE b*	*t*	*p*
Constant	6.64	0.21	31.38	.000
Condition	-0.18	0.31	-0.60	.547
CSE Total	-0.04	0.24	-0.17	.865
Interaction	0.27	0.37	0.74	.460
$\Delta R^2 = .00$, $F(1, 183) = 0.55$, $p = .460$				

Condition = Dummy Coded Priming Condition (0 = Nationality, 1 = Gender)
Interaction = Product Term (e.g. *Condition x CSE Private*)

Table 22 presents the results of the MMRs as they relate to the TFM and its three subdimensions (Centrality, Ingroup Ties, and Ingroup Affect). The results indicate that none of the TFM subdimensions moderated evaluations of the *Ladies Cut Steak*, irrespective of whether gender Identity was made salient or not. Table 22 also indicates the SISI was a non-significant moderator.

Table 22 MMR of the Relationships Between Identity Prime Condition and Evaluations of the Ladies' Cut Steak by the Three-Factor Model (TFM) and Single-Item of Social Identification (SISI)

	TFM Centrality			
	b	*SE b*	*t*	*p*
Constant	6.64	0.21	31.45	.000
Condition	-0.18	0.31	-0.59	.556
TFM Centrality	-0.13	0.20	-0.64	.524
Interaction	0.03	0.28	0.13	.900
ΔR^2 = .00, F (1, 183) = 0.02, p = .900				
	TFM Ingroup Ties			
	b	*SE b*	*t*	*p*
Constant	6.66	0.21	31.19	.000
Condition	-0.18	0.31	-0.57	.569
TFM Ties	-0.16	0.21	-0.76	.445
Interaction	0.37	0.30	1.23	.220
ΔR^2 = .01, F (1, 183) = 1.51, p = .220				
	TFM Ingroup Affect			
	b	*SE b*	*T*	*p*
Constant	6.64	0.21	31.15	.000
Condition	-0.17	0.31	-0.57	.570
TFM IG Affect	-0.01	0.30	-0.02	.981
Interaction	0.18	0.41	0.43	.671
ΔR^2 = .00, F (1, 183) = 0.18, p = .671				
	TFM Total			
	b	*SE b*	*t*	*p*
Constant	6.65	0.21	31.30	.000
Condition	-0.19	0.31	-0.61	.540
TFM Total	-0.22	0.32	-0.69	.489
Interaction	0.41	0.46	0.88	.379
ΔR^2 = .00, F (1, 183) = 0.78, p = .379				
	Single-Item of Social Identification (SISI)			
	b	*SE b*	*t*	*p*
Constant	6.63	0.21	31.45	.000
Condition	-0.17	0.30	-0.56	.576
SISI	0.24	0.15	1.53	.128
Interaction	-0.16	0.26	-0.60	.548
ΔR^2 = .00, F (1, 183) = 0.36, p = .548				

Condition = Dummy Coded Priming Condition (0 = Nationality, 1 = Gender)
Interaction = Product Term (e.g. *Condition x TFM Centrality*)

Tables 21 and 22 each indicate that priming male gender identity (vs. national identity) had no significant effect on the relationship between male gender-derived social identity (as measured by CSE, TFM, and SISI) and evaluations of the *Ladies' Cut Steak*.

7.3.3 Discussion

Following the results of Study 2 it was argued that male social identity may not have been salient during the participants engagement with the MST. Study 3 aimed to rectify this by priming male social identity prior to the MST, thereby ensuring salience. Together, Studies 2 and 3 provide no support for the following hypotheses being tested:

H_1. The dissociation of male consumers from an outgroup-associated product (the *Ladies' Cut Steak*) is influenced by male gender-derived social identity.

H_2. The dissociation effect will be moderated by strength of ingroup identification, with high identifiers exhibiting greater dissociation than low identifiers.

That is to say, Studies 2 – 3 provide no evidence to suggest that male social identity is the cause of the dissociation effect, as observed in the MST. The next study of Stream I provides a final examination of the dissociation effect as observed in the MST, by analysing the effects of both threat and affirmation on evaluations of the *Ladies' Cut Steak*. Study 4 concludes the investigation into the dissociation effect within this thesis.

7.4 Study 4 – The MST: Gender Affirmation vs. Threat

The findings of Studies 2 and 3 indicate that male gender-derived social identity is not an influencing factor in the dissociation effect, as observed in the Menu Selection Task (MST). Study 4 attempts to explore this further. It is not yet clear whether social identity may be induced beyond identity priming. Study 4 explores the possibility that gender threat may activate gender identity such that the dissociation effect becomes identity motivated. Furthermore, whether social identity is at play or not, it is not yet clear whether the dissociation effect may be reduced by means of affirmation. Study 4 offers a unique opportunity to assess the effects of threat and affirmation on the consumption of an otherwise dissociated-from outgroup-related product.

To induce both gender threat and self-affirmation, the study employs the 'ease-of-retrieval' technique (Schwarz *et al*., 1991; *see* Weingarten and Hutchinson, 2018, *for a review*). This technique relies on an availability heuristic to temporarily alter the individual's self-image. The availability heuristic (or availability bias) is a type of mental shortcut that describes how the information that is most readily available to an individual, shapes their decisions and judgments. For example, Tversky and Kahneman (1973) found that people overestimate the probability of an event occurring when they're able to recall with ease several instances of it occurring previously[41]. That is, they drew inferences from the ease with which the information was recalled. This heuristic applies to self-related information, also. The easier it is for an individual to recall examples of them behaving in a particular manner, the more likely they will believe they possess the trait that led to that behaviour. Schwarz *et al*. (1991) provide an example. The researchers tasked half of their participants with providing 12 examples of them having behaved assertively (difficult recall), while the other half were tasked with providing 6 examples (easy recall). All participants were then all asked to rate their own assertiveness. In line with the availability heuristic, the more difficult it was to recall assertive behaviours (i.e. 12), the less likely participants were to rate themselves as being assertive. Thus, they inferred their own assertiveness based on the difficulty of recalling examples.

---

[41] To provide an example, Tversky and Kahneman (1973, Study 3: 'Judgement of Word Frequency') presented their participants with several letters: K, L, N, R, V. They were then asked to judge whether these letters appeared more often in the first or third position of words within the English language, i.e. are there more words that begin with the letter K (e.g. Knife) than possess the letter K as its third letter (e.g. Duke). Importantly, the participants were not provided examples. The results revealed a majority of participants believed more words began with each of the five letters, than contained them as their third letter. This is owing to the fact that it is easier to recall words that begin with a particular letter, than it is to recall words that contain a letter in its third position. In reality, the letters K, L, N, R, V appear more frequently in the third position than the first.

Applied to the present study, the ease-of-retrieval technique is predicted to cause gender identity threat in men asked to recall 10 examples of them behaving like a "real man", and self-affirmation in those asked to recall 2 examples. This manipulation has proven successful elsewhere (e.g. Weaver, Vandello, and Bosson, 2013; Sinclair and Carlsson, 2013), with gender threat (vs. affirmation) causing men to increase their gender stereotypicality (Sinclair and Carlsson, 2013), make riskier financial decisions (Weaver, Vandello, and Bosson, 2013), and increase their attachment to meat consumption (believed to be a masculine trait) (Nakagawa and Hart, 2019). However, the manipulation has not proven successful in all circumstances. Sinclair, Carlsson, and Björklund (2016) report it did not work for men when asked to recall agentic (masculine) traits, and Michniewicz *et al*. (2015) report it had no effect at all. With regard to the present study, as male social identity has thus far not significantly influenced the dissociation effect as it relates to the MST, it is unclear whether threat (vs. affirmation) will have an effect. Hence, Study 4 is to some extent exploratory.

To provide direction, it is predicted that male participants tasked with providing 10 examples of them behaving like "real men" will feel threated by the difficulty of the task, and as such will behave gender stereotypically by negatively evaluating the *Ladies' Cut Steak* – i.e. they will continue to demonstrate dissociation as reported in Studies 1 – 3, but will be motivated by gender identity. Likewise, it is predicted that men tasked with providing 2 examples will experience self-affirmation resulting from the ease of the task. Evidence suggests that when male social identity is affirmed, preferences for feminine products increase (Gal and Wilkie, 2010, Experiment 4), and so affirmation is expected to reduce the dissociation effect (to increase the selection and positive evaluations of the *Ladies' Cut Steak*). The prediction relating to affirmation is outlined in Hypothesis 3:

> H_3. The dissociation effect will be reduced where the consumer is provided the opportunity to self-affirm.

The dependent variables of interest are *Steak Selection* and *Steak Evaluations* as they relate to the *Ladies' Cut Steak*. The independent variables are Collective Self-Esteem (CSE), the Three-Factor Model (TFM), and the Single-Item of Social Identification (SISI), each relating to male social identity.

7.4.1   Methods

7.4.1.1 Power Analysis

Study 4 employed identical power analysis as Studies 2 and 3. To reiterate, in order to detect a relatively small effect in terms of R^2 = .04 within a Moderated Multiple Regression (MMR), with α = .05 and power = .80, the minimum sample required was N = 199. However, given the retention rate of Studies 2 and 3 being 87.6% and 87.2%, respectively, and there being several participants for whom meat consumption was not an option, and several who failed an attention check, a sample of N = 280 was sought.

7.4.1.2 Participants

Two hundred and eighty (N = 280) male participants aged between 18 and 74 years old (M_{age} = 34.73, SD_{age} = 12.65) were recruited via Prolific. In line with Study 2, participants were recruited twice for two ostensibly unrelated studies; separated by a period of one week.

Time I: In line with Studies 2 – 3, participants were informed the researchers were in the process of developing a new measure of gender identification. Each participant was paid a fee of £0.65 calculated on a completion time of 6 minutes at a rate of £6.50 per hour. **Time II:** The participants were recruited again at Time II to take part in a pilot study for later use in the field of Consumer Behaviour – the Menu Selection Task (MST). Each participant was paid a fee of £0.80 calculated on a completion time of 7 minutes at a rate of £6.85 per hour.

The retention rate for Time II was 82.9% (N = 232). Following the removal of an outlier identified in the preliminary analysis (n = 1), participants who failed an attention check (n = 7), failed to engage in the manipulation task (n = 6), were not able to view the menu (n = 2), and were unable to eat meat (n = 17), the sample was comprised of N = 199 males aged 18 to 73 (M_{age} = 34.85, SD_{age} = 12.53) years old. Eligibility criteria used in Studies 1 – 3 was employed in Study 4, also.

7.4.1.3 Design and Procedure

Time I and II: To reduce repetition, Times I and II proceeded as reported in Study 2. However, at Time II the ease-of-retrieval (threat vs. affirm) manipulation was included after informed consent had been obtained, and prior to engagement in the MST as reported in Study I. Importantly, the inclusion of the manipulation was not mentioned in the Participant Information Sheet or the Study Description on Prolific. It was anticipated that drawing attention to the task had the potential to cause demand effects (*cf.* Mummolo and Peterson, 2017). However, participants were later debriefed on the matter (see Appendix H).

7.4.1.4 Materials

Appendix I provides a copy of the questionnaire used at Time II for both conditions. Participants in the affirmation condition were asked to:

> *Please list 2 ways in which you have recently behaved that would be considered typical of a "real man".*
>
> *We understand that most men struggle to think of 1 example. But if you're able to provide 2 then please do so.*

The above was subsequently followed by two boxes for the participant to enter their examples. For participants in the threat condition, they were instructed to:

> *Please list 10 ways in which you have recently behaved that would be considered typical of a "real man".*
>
> *We understand that most men are able to provide 12 or more examples. If you wish to provide additional examples, please do so using the box below.*

This was subsequently followed by the presentation of 10 numbered boxes for the 10 examples of them behaving like a "real man". An 11th box labelled "Additional Examples" was also included. Participants who failed to provide the required number of examples were removed from the sample prior to analysis.

Table 23 displays the scale reliability of the measures used at Time I and II, represented as Cronbach's alpha (α). Each measure exceeds .70, suggesting an acceptable level of reliability (Taber, 2018).

Table 23 Internal Consistency of Measures Used at Times I and II

	No. of Items	α
CSE: Membership	4	.82
CSE: Private	4	.83
CSE: Public	4	.77
CSE: Importance to Identity	4	.81
Total CSE	16	.88
Centrality	4	.77
Ingroup Ties	4	.80
Ingroup Affect	4	.77
Three-Factor Model	12	.82
Single-Item (SISI)	1	-

7.4.2   Results

7.4.2.1 Preliminary Analysis

The assumptions as they relate to Moderated Multiple Regression (MMR) were analysed and found to have been met. Outliers were analysed using boxplots, Mahalanobis (Mahalanobis, 1936) and Cook's (Cook and Weisberg, 1982) distances, where appropriate (i.e. for the MANOVA below).

In line with Studies 2 and 3, a MANOVA was conducted to ensure no significant difference in social identification between the two experimental groups (threat vs. affirm) as measured by the Collective Self-Esteem (CSE) subdimensions, the Three Factor Model (TFM) subdimensions, and the Single-Item of Social Identification (SISI). Preliminary analysis revealed that one case

contained a Mahalanobis distance score of 28.75, which is above the critical value for 8 variables (4 x CSE subdimensions, 3 x TFM, and SISI) = 26.13 (Pallant, 2016). This case was removed from the sample and was not included in further analysis. The removal of this case is reflected in the Participants section detailed above.

The MANOVA included the four subdimensions of CSE, three subdimensions of TFM, and the SISI. The results revealed no significant difference between participants in the two conditions, F (8, 190) = 1.10, p = .362, Wilks' Lambda = .96, partial η^2 = .04. The composites of CSE and TFM were not tested due to the use of hierarchical MMR, instead of Hayes' (2013) PROCESS Macro.

7.4.2.2 Descriptive Statistics and Bivariate Correlations

Tables 24 and 25 display the descriptive statistics and bivariate correlations for each independent and dependent variable, within the gender affirmation and gender threat conditions, respectively.

Table 24 reveals that after engaging in the gender affirmation task (listing 2 examples of behaving like a "real man"), evaluations of the *Ladies' Cut Steak* were positively, significantly correlated with CSE Public (r = .198), Ingroup Ties (r = .224), Three-Factor Model (TFM Total) (r = .204), and SISI (r = .202), each significant at $p < .05$ (2-tailed). The results provide the first indication that affirmation (vs. threat) may have positively influenced evaluations of the outgroup-associated product. Table 25 indicates no significant correlations among the IVs and evaluations of the *Ladies' Cut Steak*, following threat. Though it is worth noting that in the threat condition, while no significant correlations were observed for the *Ladies' Cut Steak*, CSE Membership (r = -.071), CSE Private (r = -.030), CSE Public (r = -.038), CSE Importance to Identity (r = -.110), CSE Total (r = -.089), and SISI (r = -.083) were all in the expected direction, such that increases in each, decreased evaluations of the *Ladies' Cut Steak*.

Table 24 Descriptive Statistics and Bivariate Correlations of Independent and Dependent Measures, Affirmation Condition (N = 104)

	CSE Mem.	CSE Pri.	CSE Pub.	CSE Imp.	CSE Total	Central	IG Ties	IG Affect	Three-Factor Model	SISI	Ladies' Cut	House Cut
CSE Membership	1											
CSE Private	.700**	1										
CSE Public	.385**	.447**	1									
CSE Importance to Identity	.418**	.484**	.323**	1								
CSE Total	.797**	.836**	.682**	.761**	1							
Centrality	.256**	0.192	0.025	.652**	.399**	1						
Ingroup Ties	.606**	.452**	.279**	.392**	.551**	.333**	1					
Ingroup Affect	.619**	.821**	.355**	.407**	.697**	.272**	.541**	1				
Three-Factor Model Total	.630**	.554**	.265**	.644**	.686**	.737**	.779**	.675**	1			
Single-Item (SISI)	.598**	.610**	.384**	.436**	.646**	.227*	.430**	.586**	.481**	1		
Ladies' Cut Steak	0.095	0.120	.198*	0.109	0.162	0.064	.224*	0.151	.204*	.202*	1	
House Cut Steak	.235*	.236*	.196*	0.165	.259**	0.109	.271**	0.173	.233*	.251*	.579**	1
M	5.38	5.86	5.00	4.26	5.12	3.32	4.20	5.08	4.23	5.77	6.64	7.69
SD	1.08	0.96	1.05	1.37	0.86	1.13	1.07	0.74	0.67	1.22	1.72	1.33

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).

Table 25 Descriptive Statistics and Bivariate Correlations of Independent and Dependent Measures, Threat Condition (N= 95)

	CSE Mem.	CSE Pri.	CSE Pub.	CSE Imp.	CSE Total	Central	IG Ties	IG Affect	Three-Factor Model	SISI	Ladies' Cut	House Cut
CSE Membership	1											
CSE Private	.640**	1										
CSE Public	.390**	.454**	1									
CSE Importance to Identity	.462**	.446**	.325**	1								
CSE Total	.813**	.803**	.681**	.766**	1							
Centrality	.287**	.231*	0.185	.653**	.468**	1						
Ingroup Ties	.522**	.319**	0.200	.278**	.431**	.280**	1					
Ingroup Affect	.631**	.807**	.359**	.432**	.716**	.300**	.345**	1				
Three-Factor Model Total	.624**	.567**	.321**	.627**	.707**	.754**	.751**	.687**	1			
Single-Item (SISI)	.483**	.723**	.323**	.463**	.642**	.279**	.277**	.605**	.502**	1		
Ladies' Cut Steak	-0.071	-0.030	-0.038	-0.110	-0.089	0.070	-0.012	0.004	0.030	-0.083	1	
House Cut Steak	-0.005	0.092	0.081	0.092	0.083	0.130	0.006	0.072	0.091	0.069	.604**	1
M	5.19	5.67	4.79	3.86	4.88	2.99	3.92	5.01	3.97	5.57	6.30	7.51
SD	1.16	0.99	1.04	1.40	0.89	1.04	0.99	0.73	0.69	1.21	2.33	1.67

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).

7.4.2.3 Steak Selection

Table 26 is a 2 x 2 contingency table for steak selection by experimental condition.

Table 26 Steak Selection by Condition (Affirmation vs. Threat)

Condition		Selection		Total
		Ladies Cut	House Cut	
Affirm	**Count**	6	62	68
	% within c.	8.8%	91.2%	100%
Threat	**Count**	4	61	65
	% within c.	6.2%	93.8%	100%
Total	**Count**	10	123	133
	% within c.	7.5%	92.5%	100%

Excluding participants whose choices did not include steak (n = 66, 33.2%), Table 26 reveals that for participants in the gender affirmation condition, 91.2 % chose the *House Cut Steak*, while 8.8% chose the *Ladies' Cut* steak. Similarly, in the gender threat condition, 93.8% chose the *House Cut Steak*, while 6.2% chose the *Ladies' Cut Steak.* As with Study 3 the results indicate a violation of the χ^2 assumption that 80% of cells contain 5 or more cases, and so Fisher's Exact Test is reported, p = .745. The result suggests that despite gender being affirmed, the selection of the *Ladies' Cut Steak* was not significantly affected. The analysis also indicated no significant difference in tendency to choose steak (vs. non-steak) across the gender affirmation (65.4%) and gender threat (68.4%) conditions, χ^2 (1, n = 199) = 0.09, p = .761, phi = -.032, representing a very small, non-significant effect (Cohen, 1988).

7.4.2.4 Steak Evaluations

According to Tables 24 and 25 (above), evaluations of the of the *Ladies' Cut Steak* (LC) were marginally more positive in the gender affirmation condition (M_{LC_Affirm} = 6.64, SD_{LC_Affirm} = 1.72) than in the gender threat condition (M_{LC_Threat} = 6.30, SD_{LC_Threat} =2.33). However, an independent samples *t*-test revealed the difference to be non-significant, t (197) = 1.17, p = .245 (two-tailed).

The magnitude of the difference in the means (mean difference = .34, 95% CI: -.23 to .91) was very small (η^2 = .006) (Cohen, 1988). Thus, the ease-of-retrieval technique that was employed to affirm and threaten male gender, had no statistically significant effect on evaluations of the *Ladies' Cut Steak*. That said, the result relates specifically to differences between groups, and does not reveal whether the evaluations differed as a consequence of the participants gender-derived social identity.

7.4.2.5 The Moderating Role of Social Identity on Steak Evaluations

To determine whether male gender-derived social identity moderated the relationship between *Experimental Condition* ("Condition") and *Steak Evaluations* of the *Ladies' Cut Steak*, a series of Moderated Multiple Regressions (MMR) were conducted.

In a departure from Studies 2 – 3, Hayes' (2013) PROCESS Macro was not employed. Instead, a hierarchical method outlined by Aiken and West (1991) was used, whereby each continuous predictor was mean centred, and the two experimental conditions were dummy coded (0 = Affirm, I = Threat). The predictor variables were then entered at Step I of a hierarchical multiple regression (e.g. *Condition, CSE Membership, CSE Private*, etc.), and their product terms were entered at Step 2 (e.g. *Condition x CSE Membership, Condition x CSE Private*, etc.). Where Step 2 statistically significantly differs from Step I (Step 2 $p \leq$ .05), moderation is said to have occurred. This method allows for the inclusion of multiple predictors at Steps I and 2, thus enabling the researcher to test the combined predictive ability of multiple measures (e.g. CSE Membership, CSE Private, etc.). It also enables the researcher to determine the individual contribution of each measure. In this case, it allows for each of the four CSE subdimensions to be tested simultaneously, providing a composite of CSE, while allowing for the contribution of each dimension to be analysed.

To reiterate Study 2, for models that include an interaction (Step 2), unstandardised betas (*b*) and standard errors (*SE*) are reported (Brambor, Clark, and Golder, 2006), though standardised betas (β) are not (Whisman and McClelland, 2005). β is reported for Step I models that do not include interactions, representing Main Effects.

7.4.2.5.1 Testing the Moderating Influence of the CSE Subdimensions

The first hierarchical MMR tested the four Collective Self-Esteem (CSE) subdimensions as moderators on the relationship between *Steak Evaluations* of the *Ladies' Cut Steak* and *Experimental Condition* (Threat vs. Affirmation). Experimental condition ("Condition") was entered at Step I, along with CSE Membership, Private, Public, and Importance to Identity – each of which was centred. Their product terms (interactions) were then entered at Step 2. Table 27 presents the results for Steps I and 2.

The results indicate that neither Steps I nor 2 were significant. Step I explained 1.4% of the variance in evaluations of the *Ladies' Cut Steak*, while failing to reach significance, F (5, 193) = 0.56, p = .733. At Step 2, with the inclusion of the two-way interactions the model explained 3.1% of the variance in evaluations of the *Ladies' Cut Steak*, again, failing to reach significance, F (9, 189) = 0.68, p = .728. The interactions explained an additional 1.7% of the variance, after controlling for the four CSE subdimensions, ΔR^2 = .02, F change (4, 189) = 0.83, p = .507. Therefore, the results indicate that CSE was not a significant moderator in the relationship between evaluations of the *Ladies' Cut Steak* and experimental condition.

Table 27 MMR of the Relationships Between Affirmation (vs. Threat) and Evaluations of the Ladies' Cut Steak by Collective Self-Esteem (CSE)

	b	*SE b*	*β*	*p*
Step One				
Constant	6.63	0.20		0.000
Condition	-0.33	0.29	-0.08	0.269
CSE Membership	-0.08	0.18	-0.04	0.651
CSE Private	0.11	0.22	0.05	0.620
CSE Public	0.15	0.16	0.08	0.357
CSE Importance	-0.06	0.12	-0.04	0.617
Step Two				
Constant	6.60	0.20		0.000
Condition	-0.33	0.29	-	0.262
CSE Membership	-0.02	0.27	-	0.951
CSE Private	0.05	0.32	-	0.878
CSE Public	0.29	0.22	-	0.190
CSE Importance	0.06	0.17	-	0.747
Condition x Membership	-0.09	0.36	-	0.799
Condition x Private	0.08	0.43	-	0.848
Condition x Public	-0.30	0.32	-	0.345
Condition x Importance	-0.24	0.25	-	0.340

R^2 = .01 for Step 1: ΔR^2 = .02 for Step 2.
N = 199.

7.4.2.5.2   Testing the Moderating Influence of the TFM Subdimensions

The second hierarchical MMR tested the subdimensions of the Three-Factor Model (TFM) as moderators on the relationship between *Steak Evaluations* of the *Ladies' Cut Steak* and *Experimental Condition.* Experimental condition ("Condition") was entered at Step I, along with gender Centrality, Ingroup Ties, and Ingroup Affect – each of which was centred. Their interactions were then entered at Step 2. Table 28 presents the results for Steps I and 2.

The results again indicate that neither Steps I nor 2 were significant. Step I explained 1.8% of the variance in evaluations of the *Ladies' Cut Steak*, while failing to reach significance, F (4, 194) = 0.89, p = .469. At Step 2, with the inclusion of the two-way interactions the overall model explained 3% of the variance in evaluations of the *Ladies' Cut Steak*, but it again failed to reach significance, F (7, 191) = 0.84, p = .555. The interactions explained an additional 1.2% of the variance in steak evaluations, after controlling for the TFM subdimensions, ΔR^2 = .01, F change (3, 191) = 0.77, p = .511. Therefore, the results indicate that the TFM was not a significant moderator in the relationship between evaluations of the *Ladies' Cut Steak* and experimental condition.

Table 28 MMR of the Relationships Between Affirmation (vs. Threat)
and Evaluations of the Ladies' Cut Steak by the Three-Factor Model (TFM)

	b	*SE b*	*β*	*p*
Step One				
Constant	6.60	0.20		.000
Condition	-0.27	0.29	-0.07	.363
TFM Centrality	0.07	0.14	0.04	.642
TFM Ingroup Ties	0.15	0.16	0.07	.366
TFM Ingroup Affect	0.07	0.22	0.03	.751
Step Two				
Constant	6.59	0.20		.000
Condition	-0.27	0.29	-	.356
TFM Centrality	-0.03	0.19	-	.894
TFM Ingroup Ties	0.33	0.23	-	.150
TFM Ingroup Affect	0.10	0.32	-	.755
Condition x Centrality	0.21	0.29	-	.471
Condition x Ingroup Ties	-0.41	0.33	-	.215
Condition x Ingroup Affect	-0.13	0.45	-	.773

R^2 = .02 for Step 1: ΔR^2 = .01 for Step 2.
N = 199.

7.4.2.5.3 Testing the Moderating Influence of the SISI Measure

Finally, the same approach was employed to test the moderating effect of male social identity as measured by the Single-Item of Social Identification (SISI). Table 29 displays the results.

Step I explained a non-significant 1% of the variance in evaluations of the *Ladies' Cut Steak*, F (2, 196) = 0.87, p = .420. However, at Step 2 with the inclusion of the interaction terms the model explained 2.6% of the variance, F (3, 195) = 1.76, p = .156. The interaction term provided an additional 1.8% of the variance, after controlling for condition and SISI, ΔR^2 = .02, F change (1, 195) = 3.51, p = .062, which approached significance. Figure 8 displays the interaction.

Table 29 MMR of the Relationships Between Affirmation
(vs. Threat) and Evaluations of the Ladies' Cut Steak by SISI

	b	*SE b*	*β*	*p*
Step One				
Constant	6.63	0.20		0.000
Condition	-0.32	0.29	-0.08	0.270
SISI	0.07	0.12	0.04	0.532
Step Two				
Constant	6.61	0.20		0.000
Condition	-0.32	0.29	-	0.262
SISI	0.29	0.16	-	0.082
Condition x SISI	-0.45	0.24	-	0.062

R^2 = .01 for Step 1: ΔR^2 = .02 for Step 2.
N = 199.

Figure 8 Simple Slopes of Condition (Affirmation vs. Threat) for Gender
Identification (SISI) on Evaluations of the Ladies' Cut Steak
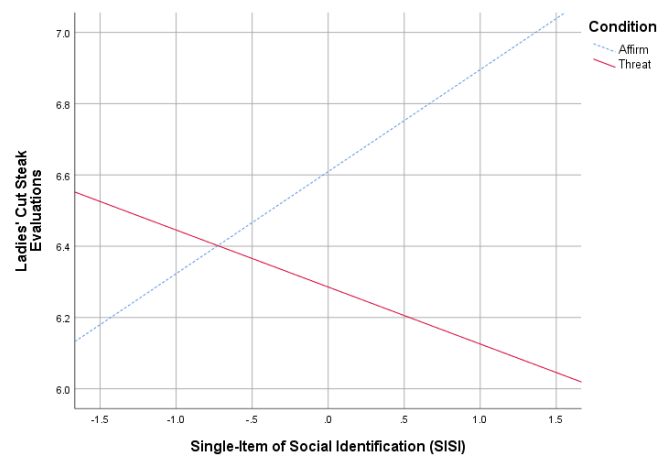
To probe the interaction, simple slopes ("pick-a-point"; Rogosa, 1980) analysis was conducted[42]. The analysis revealed the interaction was significant for participants with relatively high gender social identification (+1 SD), b = -0.92, SE = 0.43, 95% CI [-1.76, -0.07], p = .034, such that evaluations of *Ladies' Cut Steak* were significantly more positive in the Affirmation condition than the Threat condition. However, differences in evaluations between the two conditions was not significantly different when strength of identification was moderate, b = -0.47, SE = -0.30, 95% CI [-1.06, 0.11], p = .117, or relatively low (-1SD) (-1 SD), b = 0.42, SE = 0.49, 95% CI [-0.55, 1.38], p = .391.[43]

7.4.3 Discussion

The objective of Study 4 was to advance Studies 2 – 3 by investigating the effects of affirmation (vs. threat) on the dissociation effect as observed in the Menu Selection (MST). To that end, the results revealed no significant difference in evaluations of the *Ladies' Cut Steak* by experimental condition (affirmation vs. threat). Furthermore, the results somewhat conclusively demonstrated that gender-derived social identity as represented by gender-specific Collective Self-Esteem (CSE) and the Three-Factor Model (TFM), did not significantly moderate evaluations of the *Ladies' Cut Steak* between the two conditions. Indeed, no evidence was found to suggest that gender threat had any effect on evaluations of the *Ladies' Cut Steak*.

However, in terms of affirmation, strength of gender social identification as represented by the Single-Item of Social Identification (SISI) was found to differentially influence evaluations of the

---

[42] Following the advice of Hayes (2018), the values of the moderator ("SISI") at which the conditional effect of the focal predictor ("Condition") on the criterion ("Steak Evaluations") were evaluated, were determined by taking the 16th, 50th, and 84th percentile of the moderator. This is opposed to the -1 and +1 SD (of the mean) recommended by Cohen and Cohen (1983), which risks probing the interaction at values outside the range of data (where the data is not normally distributed). Where the data *is* normally distributed, the 16th and 84th percentile will represent -1 and +1 SD, respectively. This method is used throughout the thesis, including in those instances where Hayes' PROCESS Macro is not employed.

[43] To provide alternative analysis, given the symmetry of moderation (i.e. that if the relationship between the focal predictor ("Condition") and criterion ("Steak Evaluations") depends on the moderator ("SISI"), then the relationship between the moderator and criterion also depends on the focal predictor), then the interaction may alternatively be analysed using "Condition" as the moderator. In this instance, the values of the moderator ("Condition") at which the conditional effect of the focal predictor ("SISI") on the criterion ("Steak Evaluations") were evaluated, were determined by the values used to dummy code the moderator (0 = Affirm, I = Threat). To that end, the results revealed that in the Affirmation (0) condition, SISI had a positive effect on evaluations of the *Ladies' Cut Steak* that approached significance, b = 0.29, SE = 0.16, 95% CI [-0.04, 0.61], p = .082, while the Threat (I) condition failed to reach significance, b = -0.16, SE = 0.17, 95% CI [-0.50, 0.18], p = .355. That is, as SISI increased within the Affirm condition, positive evaluations of the *Ladies' Cut Steak* increased, also.

Ladies' Cut Steak, such that participants in the affirmation condition provided more positive evaluations when gender identification was high, relative to the participants in the gender threat condition. But when strength of identification was moderate to low, no significant differences in evaluations were observed. Therefore, Study 4 provides an indication that the dissociation effect (as observed in the MST) may be mitigated via gender-affirmation amongst those participants with high gender-group identification, as represented by the Single-Item of Social Identity.

CHAPTER 8
STREAM I GENERAL DISCUSSION AND CONCLUSIONS

"I have not failed. I have just found 10,000 ways that won't work."

(Thomas Edison cited in Sarett, 1983, p4572)

8.1 Introduction

Stream I represents the first of two perspectives taken in this thesis to investigate the influence of social identity on consumer behaviour. This first perspective, titled *Dissociation as Outgroup Derogation*, attempted to apply the Social Identity Approach to White and Dahl's (2006) Menu Selection Task (MST). The aim being to establish whether the dissociation effect was an act of outgroup-related derogation, such that male consumers *derogated* the *Ladies' Cut Steak* owing to its label and subsequent association with the outgroup of women. To understand if this were so, four survey experiments were conducted, titled Studies I – 4.

This chapter summarises the findings of these four studies, discussing how their findings both complement and contradict the existing literature. The chapter also highlights the Theoretical Implications of Stream I and what these implications might mean for future research of the dissociation effect. With Stream I being unsuccessful, the Limitations of Stream I are discussed alongside the Future Directions, as overcoming these limitations provides a basis for future research. This chapter concludes Stream I of the thesis.

8.2 Dissociation as Outgroup Derogation

To determine whether the dissociation effect was influenced by social identity, and to understand what effect affirmation may have on dissociation, the following hypotheses were tested:

H$_1$.   The dissociation of male consumers from an outgroup-associated product (the *Ladies' Cut Steak*) is influenced by male gender-derived social identity.

H$_2$.   The dissociation effect will be moderated by strength of ingroup identification, with high identifiers exhibiting greater dissociation than low identifiers.

H$_3$.   The dissociation effect will be reduced where the consumer is provided the opportunity to self-affirm.

Stream I failed to support H$_1$ and H$_2$. Studies 2 and 3 found no evidence of male social identity influencing the dissociation effect within the MST, whether male social identity was primed or not. This is both at odds and in line with the literature.

Where it is at odds, White and Dahl (2007, Study 3, p530) hypothesised that "*as in-group identification increases, consumers will be more likely to rate a product associated with a dissociative reference group more negatively*". They subsequently reported support for their hypothesis. However, as Study 2 of Stream I reveals, greater identification with one's gender-derived social identity had no significant impact on evaluations of the outgroup product (the *Ladies' Cut Steak*). Instead, evaluations remained comparatively negative irrespective of gender identification, whether high or low. Furthermore, White and Dahl (2007, Study 2, p528-529) also hypothesised that "*Canadians* [the ingroup] *will rate a product that is associated with a dissociative reference group… more negatively than a… neutral product, particularly when their own national identity is primed*". Again, the authors reported support for their hypothesis. However, Study 3 of Stream I primed male-specific social identity prior to engagement in the MST, yet the results of Study 3 did not significantly differ to the results of Study 2 (no prime). This suggests that priming gender-specific social identity had no more of an effect on the dissociation effect than not priming it. Further still, gender is described as being "*one of the most important, salient, and pervasive social categories*" (Maas *et al.*, 2004, p854), so the fact that male social identity was not found to influence evaluations of the outgroup-associated product is surprising. Thus, the results of Stream I are at odds with the literature.

Yet Stream I is also consistent with the literature. McGowan, Hassan, and Shiu (2020) report the results of a series of experiments aimed at mitigating the dissociation effect by employing Construal-Level Theory (Trope and Liberman, 2010). While successful in doing so, the authors also report the results of a study employing the MST (*ibid.*, p227-228). Their findings revealed that although their manipulation of construal-level was successful, it did not affect gender identification. Thus, gender identification was dropped from the analysis. What the results of Stream I suggest, is that in the case of McGowan, Hassan, and Shiu (2020), it may not have been the failing of their construal-level manipulation to affect gender identity, but the failing of gender identity to affect the MST at all.

What is important to recognise is that Stream I represents the dissociation effect only so far as the MST is concerned. The findings may not generalise beyond this paradigm, and likewise, the findings of alternative paradigms may not generalise to the MST. This may help explain why the results are at odds with the literature, as what is observed in the MST may not be representative of the dissociation effect more generally. It may be its own form of dissociation. Simpson, Dunn, and White (2019) propose three reasons for the dissociation effect (referred to by them as the *dissociation principle*). They are: I. Consistency Threat (the threat caused by consuming a product that is inconsistent with one's self-concept), II. Avoidance of Negative Identity Information (individual mobility), and III. Avoiding Misidentification (with the dissociative group). To this taxonomy, Stream I attempted to add IV. Outgroup Derogation (from a SIT perspective). Unfortunately, Stream I failed to provide evidence to support this. However, the findings do offer some theoretical implications and directions for future research employing the MST.

Finally, Stream I neither conclusively supported nor rejected H$_3$. Employing an *ease-of-retrieval* technique to affirm (vs. threaten) male social identity, Study 4 found evidence that when strength of male social identity was measured using the Single-Item of Social Identification (SISI), gender-affirmation reduced the dissociation effect amongst those with high identification. However, there were limitations associated with obtaining this result. This is discussed in greater detail below (Chapter 8.4.2: Investigating the Effects of Affirmation and Threat).

8.3 Theoretical Implications

There is growing interest to understand the influence that each dimension of social identity has on consumer behaviour (e.g. McGowan, Shiu, and Hassan, 2017). While Stream I was unsuccessful in demonstrating the influence of male social identity within the MST, it also provides strong evidence that male social identity is *not* at play. To echo Thomas Edison in the epigraph, Stream I demonstrates what *won't* work. But the findings do not rule out gender-related social identity altogether, they simply support this position.

From its initial conceptualisation, social identity was understood to be a multidimensional construct. Tajfel (1978, p63) himself defined it as "*that part of an individual's self-concept which derives from his [or her] **knowledge** of his [or her] membership of a social group (or groups) together with the **value** and **emotional** significance attached to that membership*" [bold added]. From Tajfel's definition emerge three dimensions: I. a cognitive dimension, or one's knowledge

of one's ingroup membership, II. an evaluative dimension, or an evaluation of one's ingroup, and III. an emotional dimension, or one's emotional or affective connection to the ingroup. In using Cameron's (2004) Three-Factor Model (TFM) and Luhtanen and Crocker's (1992) Collective Self-Esteem Scale (CSES), each of these three dimensions as they relate to male social identity were captured and analysed for their moderating effects on gender-related dissociation. Therefore, Stream I provides strong evidence to suggest that male social identity (as captured by these three dimensions) is not at play within the MST, at least so far as moderation is concerned. This allows for further investigation of the MST using alternative dimensions, as is discussed in the Limitations and Future Directions.

8.4 Limitations and Future Directions

8.4.1   Investigating the Effects of Social Identity

The fact that Stream I was unsuccessful in demonstrating a link between male social identity and dissociation within the MST, leaves unanswered: *which identity motivates dissociation within the MST, if any? And if male social identity is at play, which dimension?*

Leach *et al.* (2008) advance several multicomponent measures of social identity, including the CSES and TFM. Their hierarchical multicomponent model of ingroup identification identifies additional dimensions of social identity, including *Individual Self-Stereotyping* (the depersonalisation of the individual as an ingroup member; the perception that one is similar to the ingroup prototype) and *In-Group Homogeneity* (the perception of one's ingroup as homogenous; distinct from relevant outgroups). They also reconceptualise the evaluative dimension of social identity (termed *Private CSE* in the CSES) by arguing that previous measures included negative affect, which is independent of positive affect (e.g. Watson, Clark, and Tellegen, 1988), and so do not capture "*unambiguous feelings of satisfaction*" (Leach *et al.*, 2008, p147). They propose an alternative measure, *Satisfaction*. Leach *et al.*'s (2008) reconceptualization of ingroup identification provides alternative dimensions of male social identity to be investigated as potential predictors, moderators, or mediators of the dissociation effect within the MST.

Future research may indicate that no dimension of male social identity is involved in the MST, in which case the Social Identity Approach is an inappropriate framework. But until these additional dimensions are explored, social identity cannot be altogether ruled out. In particular, Leach *et*

al.'s (2008) *Individual Self-Stereotyping* and *Group Homogeneity* dimensions would be of interest to the MST and the dissociation effect observed within it. Schmitt and Branscombe (2001, p511) explain that "*any event, interaction, or outcome that suggests that one is not prototypical of a salient in-group category will be threatening for an individual who is highly identified with that category*". They go on to support this assertion by revealing that men who receive feedback that they are non-prototypical, experience threat and derogate non-prototypical men – asserting their own prototypicality. With the inclusion of Leach *et al.*'s (2008) *Individual Self-Stereotyping*, the MST could be adapted to force the selection of the *Ladies' Cut Steak*, thereby threatening prototypicality. This may even increase preferences for "masculine" food options (Cheryan *et al.*, 2015). Alternatively, the MST may be used to examine the influence that ingroup endorsement has on the selection of a dissociative product. Evidence suggests that injunctive group norms (what ingroups approve of) influence the ingroup members attitudes and behaviours (Smith and Louis, 2008; Smith and Terry, 2003; Terry and Hogg, 1996). This may help reduce the dissociation effect by bringing the outgroup product "in".

8.4.2   Investigating Dissociative Concern

This project has focused primarily on strength of ingroup identification as a potential moderator. But with analysis focusing on moderation alone, alternative analyses have been left unexplored. White and Dahl's (2007) study of the dissociation effect successfully revealed that strength of ingroup identification moderated evaluations of a dissociative group product. However, their findings also revealed this effect was partially mediated by private self-disidentification[44]. Private self-disidentification is described as "*the tendency to disidentify the self with the product associated with a dissociative group*" (White and Dahl, 2007, p530). Thus, high identifiers provided more negative evaluations of a dissociative group product, partially in response to their need to differentiate themselves from the dissociative group.

McGowan, Hassan, and Shiu (2020) refer to private self-disidentification as "dissociative concern". Their findings revealed that high identifiers reported higher dissociative concern for a product associated with a dissociative group, while low identifiers reported lower dissociative

---

[44] Private Self-Disidentification is measured using eight items that are combined to create an index (White and Dahl, 2007). The items read: "I dislike the name associations of this product"[†], "I want to avoid being associated with this product"[†], "This product reflects who I do not want to be"[†], "I would avoid identifying with this product", "This product reflects who I am" (reverse scored), "I can identify with this product" (reverse scored), "I feel a personal connection to this product" (reverse scored", and "This product suits me well" (reverse scored) (ibid, p530). McGowan, Hassan, and Shiu (2020) measure Dissociative Concern using the three items marked †.

concern for the same product. This dissociative concern (private self-disidentification) again mediated the relationship between strength of ingroup identification and evaluations of a dissociative group product, as well having a direct, negative effect on evaluations of the same product.

The MST would benefit from a measure of dissociative concern. Studies 2 – 3 of Stream I reveal no significant correlation between strength of ingroup identification and evaluations of the *Ladies' Cut Steak*, and so dissociative concern would not mediate an effect. But it may provide a direct effect on evaluations, similar to those reported by McGowan, Hassan, and Shiu (2020). In the affirmation condition of Study 4 it was revealed that both Public CSE and Ingroup Ties were positively correlated with evaluations of *Ladies' Cut Steak*. This seems to suggest that gender-affirmation activated both dimensions of male social identity, and that this activation influenced positive evaluations of the dissociative group product. Thus, it would be interesting to explore gender-affirmation again but with the inclusion of dissociative concern. This may help to establish whether the activation of social identity caused by the affirmation task, is related to dissociative concern regarding the *Ladies' Cut Steak*.

8.4.3   Investigating the Effects of Affirmation and Threat

Using an *ease-of-retrieval* technique (Schwarz *et al.*, 1991), Study 4 attempted to affirm (vs. threaten) male social identity by asking participants to provide 10 (vs. 2) examples of them recently behaving like a "real man". While the TFM and CSES failed to moderate the effects, the Single-Item of Social Identification (SISI; Postmes, Haslam, and Jans, 2013) did. This single item reads: "*I identify with my gender group*", and was found to predict more positive evaluations of the *Ladies' Cut Steak* when strength of identification was high (vs. low) in the group-affirmation (vs. group-threat) condition.

It is important that this effect is investigated further. Unfortunately, due to financial constraints this was not possible during the PhD process. But it is important to investigate for several reasons. First, by not correcting for multiple comparisons, it is possible the "effect" produced by the SISI was a Type I error – the rejection of a true null hypothesis. The "effect", which approached significance ($p = .062$), would have been disqualified had a Bonferroni Correction been employed, as the p value for significance would have been $p = .017$. It is therefore possible that the result is a Type I error. But this cannot be confirmed without further investigation.

Second, the SISI is a single-item scale. Though it has been independently validated (e.g. Reysen *et al.*, 2013) and successfully employed within moderation models (e.g. Kavanagh *et al.*, 2020; Bortolini *et al.*, 2018), short-item measures such as the SISI may be limited in their ability to capture complex, multidimensional constructs. There is evidence to suggest they are as valid and reliable as multi-item measures (e.g. Gardner *et al.*, 1998) and that parametric tests are robust to their violations of distribution normality (Norman, 2010). But they are often most successful where the construct is concrete (vs. abstract) and singular (Diamantopoulos *et al.*, 2012; Rossiter, 2002), which social identification is not (Leach *et al.*, 2008; Cameron, 2004; Ellemers *et al.*, 1999[a]; Luhtanen and Crocker, 1992; Tajfel and Turner, 1979). Initially, the inclusion of the SISI was to provide a comparison between TFM and CSES, where either of these were also significant. The intention being to provide some indication of the single-items' validity. But as neither the TFM nor CSES represented significant moderators, no comparison can be made. It is therefore essential that Study 4 is repeated.

Finally, future research into the MST that employs the *ease-of-retrieval* technique, might investigate whether gender threat increases preferences for the *Ladies' Cut Steak*. Employing a similar manipulation to Study 4, Nakagawa and Hart (2019, Study 2) threatened (vs. affirmed) masculinity by asking participants to provide 8 (vs. 2) examples of when they "*felt very masculine*". Participants faced with masculinity threat showed greater preference for meat. It would be interesting to determine whether this holds true when the meat available is labelled the *Ladies' Cut Steak* in the absence of an alternative. Indeed, the MST could be adapted to remove the *House Cut Steak* and replace it with a feminine-alternative (e.g. "Nature Salad"; Gal and Wilkie, 2010) to establish whether masculinity can be re-affirmed through the consumption of the *Ladies' Cut Steak*, despite its label.

8.4.4 The MST, Masculinity, and Gender Norms

The MST provides a unique paradigm within which to study the influence of male gender on consumer behaviour. To that end, it may provide a suitable paradigm for investigating the effects of masculinity and gender norms on meat consumption, while simultaneously investigating the dissociation effect.

There is strong evidence to suggest that men (more so than women) select products that are gender-congruent (van Tilburg *et al.*, 2015; Fugate and Phillips, 2010) and masculine (Worth,

Smith, and Mackie, 1992). This is owed in no small part to the fact that men who violate gender norms face backlash from their peers (Moss-Racusin, Phelan, and Rudman, 2010). The dissociation effect as observed in the MST may be evidence of men avoiding that which is gender non-normative, as meat itself is intimately linked to gender norms. In the West for instance, meat symbolises masculinity (Rozin *et al.*, 2012; Sobal, 2005; Loo, 2001); it's associated with male identity and virility (Adams, 2015). To eat meat is gender normative (Gal and Wilkie, 2010) and is expected of men (Sobal, 2005). To be vegetarian is to be viewed as effeminate (Rothgerber, 2013) and less attractive to the opposite sex (Timeo and Suitner, 2018). It is also less of an ethical quandary for men than it is women (Beardsworth *et al.*, 2002). Indeed, when reminded that meat is sourced from animals, men will increase their attachment to it – preferring meat over animal (Dowsett *et al.*, 2018). The MST thus provides a simple paradigm within which to investigate the gender normative consumption of meat, while also investigating the strength of these norms as they relate to the consumption of a dissociative group product.

The *Ladies' Cut Steak* itself may be viewed as violating gender norms and so its consumption would be nonnormative. Taking a gender norm-perspective to the dissociation effect may yield more success than the Social Identity Approach. It may also provide a more suitable basis for predicting reductions in the dissociation effect. For instance, Bosson *et al.* (2005) reveal that non-stigmatised (heterosexual) men avoid gender-norm violations (e.g. styling someone's hair) out of concern for the reactions of others. With regard to the MST, this concern would predict the dissociation effect. However, Bosson *et al.*'s (2005) findings revealed that where heterosexual men were provided the opportunity to publicly announce their sexuality, their concerns relating to norm-violating behaviours were attenuated. Thus, if heterosexual men were provided the opportunity to disclose their sexuality prior to the MST, the dissociation effect may be reduced. It is hoped then that if the MST is not further explored from a social identity perspective, that a gender-norm perspective be employed instead. It is crucial the dissociation effect be better understood, as only once we know *why* it occurs, can we understand how best to avoid it.

8.5. Conclusion

The goals of Stream I were twofold. First was to determine whether the dissociation effect observed within the MST was influenced by male gender-derived social identity. Second, to establish what effect gender-affirmation has on the dissociation effect. In achieving these goals, Stream I was intended to answer the following Research Questions (RQ):

RQ$_1$.   To what extent is the dissociation effect as reported in the consumer reference group literature, the consequence of social identity?

RQ$_2$.   To what extent does strength of ingroup identification moderate preferences for an outgroup-associated product?

RQ$_3$.   What effect does group-affirmation have on consumer preferences for an outgroup-associated product?

Following a review of the literature it was hypothesised that the dissociation of male consumers from the *Ladies' Cut Steak*, might better be explained as a form of derogation toward the outgroup-labelled product. It was predicted that the *Ladies' Cut Steak* primed male gender-derived social identity, making conscious the consumer's belonging to a social group in opposition to the group symbolised by the product. This priming was to explain why the steak option was often negatively evaluated and avoided by male consumers. Stream I revealed these predictions were incorrect. Neither priming nor threatening male social identity had any significant effect on the dissociation effect. Thus, the dissociation effect as observed within the Menu Selection Task (MST) appears not to be influenced by male social identity, whether primed or threatened.

This raises new questions about the dissociation effect. For starters, if male social identity is not at play within the MST, then what identity is? If any at all. And if male social identity *is* at play then what dimension? What is important here is that by exploring dissociation as derogation, Stream I has begun to answer RQ$_1$ and RQ$_2$. That is, dissociation is *not* a consequence of social identity, and as such it is not moderated by strength of ingroup identification. However, as the Limitations and Future Directions section of the present chapter explain, this does not mean to say these questions are answered conclusively. Rather, they are answered in reference to the researchers interpretation of the MST paradigm, investigated using an online convenience sample, employing only three measures of male social identity. In another project the answers to these questions may be quite different.

What is most interesting of all, and which unfortunately was unable to be explored further within this project, was that some evidence was found to suggest that group-affirmation, taking the form of gender-affirmation, may have had some impact on the dissociation effect when strength of identification with the male ingroup was high. This finding, if supported in later projects, would suggest that temporarily broadening the consumer's self-integrity, reduces their tendency to engage in product dissociation. If true, the use of affirmation within marketing and advertising

may prove effective in reducing product avoidance. But for now, further research is needed to accurately answer RQ_3.

This concludes Stream I. The remainder of the thesis is dedicated to Stream II, *Science Discrediting*. Stream II explores the rejection of scientific publications by male readers. The following chapter reintroduces the topic.

CHAPTER 9

STREAM II RESULTS

9.1 Study 5 – Science Discrediting, the Influence of Social Identity, Social Dominance Orientation, and Ambivalent Sexism

Study 5 is the first of Stream II (Studies 5 – 8). Stream II explores the concept of science discrediting as it relates to male gender-derived social identity. The objectives of Study 5 were threefold. First, it was to establish whether men (the ingroup) discredit scientific publications which conclude women (the outgroup) make for better leaders than men. Second, it was to establish whether this science discrediting behaviour is moderated by the degree to which men identify with their gender-related social identities. Third, it was to establish whether alternative explanations can be provided for science discrediting, including *Social Dominance Orientation* (SDO) and *Ambivalent Sexism* (AS).

To explore the topic, two fictional publications were created. Each publication represents a condition within the experiment (treatment vs. control). Each publication was designed to replicate the Emerald Insight website[45] by presenting the participant with an overview of a recently published paper. The publication in each condition was titled *Gender Diversity, Leadership, and Performance: Evidence From a National Survey* (see Appendix J for the design of the publication, and Appendix K for the content). The 'treatment' publication was designed to threaten male gender-derived social identity by concluding that firms benefitted from increased representation of women in executive positions, a phenomenon referred to in the publication as the '*gender composition effect*'. This effect, the publication reports, is attributed to women possessing greater social intelligence, greater productivity, and a leadership style befitting the modern workplace. The 'control' publication was intended to provide a neutral comparison by concluding that firms benefited equally from male and female representation in leadership positions, and that social intelligence and leadership styles were similar for the two genders analysed.

The manipulation of male social identity threat in the 'treatment' publication, is informed by *Social Identity Theory* (SIT; Tajfel and Turner, 1979), *Social Dominance Theory* (SDT; Pratto *et al.*, 1994; Sidanius *et al.*, 2017), and *Ambivalent Sexism Theory* (Glick and Fiske, 1996). Each theory argues there is a societal, gender-based hierarchy in which men belong to the high-status

---

[45] Emerald Insight has since changed the format of its website, meaning the aesthetic of the manipulations may appear outdated.

dominant group, and women to the low-status subordinate group. Because of this, men are prone threats caused by changes to the status hierarchy (Scheepers and Ellemers, 2005; 2019). For example, progressive societal norms that would reduce gender inequality, is perceived to be threatening (Dover *et al.*, 2016; Spoor and Schmitt, 2011; Scheepers *et al.*, 2009). Thus, the manipulation of the 'treatment' publication, which sees women outperforming men on leadership ability (as well as possessing higher social intelligence, and being more productive), is expected to threaten the status hierarchy as perceived by men, causing social identity threat. It is predicted that such threatening information will consequently be discredited.

Study 5 is designed to answer RQ_4 and in part, RQ_5:

RQ_4. To what degree are evaluations of identity-threatening scientific publications influenced by male gender-derived social identity?

RQ_5. To what extent can the act of science discrediting by male's be attributed to alternative explanations, including Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Collective Narcissism (CN), and Precarious Manhood (PM)?

Study 5 is also a direct test of the following hypotheses:

H_4. The scientific publication indicating that companies benefit from increased representation of women at senior management level, owing to their greater social intelligence and productivity, and a leadership style befitting the modern workplace, will be discredited by men more so than women.

H_5. The act of science discrediting will be moderated by the degree to which male's identify with their male social identity, such that high identifiers will discredit the science to a greater extent than low identifiers.

H_6. The act of science discrediting will be moderated by Social Dominance Orientation (SDO), such that males with High SDO will discredit the science to a greater extent than males with Low SDO.

H₇.   The act of science discrediting will be moderated by Ambivalent Sexism (AS), such that males with High AS will discredit the science to a greater extent than males with Low AS.

Following Nauroth *et al.* (2014), the dependent variable of interest is *Negative Research Evaluations Total* (NRET) (answering in the affirmative to items such as: "*I think the author is not very competent*" and "*I think the methodology used by the author is fundamentally useless to investigate the topic*"). The independent variables of interest are *Gender*, *Collective Self-Esteem* (CSE)*,* the *Single-Item of Social Identification* (SISI), *Social Dominance Orientation* (SDO), and *Ambivalent Sexism* (AS). Both male and female participants were sampled.

9.1.1   Methods

9.1.1.1 Participants

Two hundred and fifty-seven (N = 257; 130 male (50.6%), 127 female (49.4%)) respondents aged between 18 and 74 years (M = 35.86, SD = 12.84) were recruited via Prolific. To reduce carryover effects, participants took part in two separate stages, herein referred to as Time I and Time II. Participants were unaware that their taking part at Times I and II were related.

Time I: Participants were informed they were taking part in a study of attitudes and opinions on modern day social issues. Each participant was paid a fee of £1.00 calculated on a completion time of 10 minutes at a rate of £6.00 per hour. **Time II:** Three-weeks later, the same participants were invited to take part in an ostensibly unrelated study on perceptions of scientific writing. It was at this point that participants were either presented with the treatment or control article. Each participant was paid £0.60, calculated on a completion time of 6 minutes at a rate of £6.00 per hour.

The retention rate for Time II was 82.5%, N = 212 (104 male, 108 female) aged between 18 and 74 years (M = 36.85, SD = 12.94). Participation was restricted to British nationals residing within the UK, with a minimum approval rating of 95% on Prolific. Participation was restricted to those who had not taken part in one of the researchers previous studies, due to historical use of deception.

9.1.1.2 Design and Procedure

Participation took place online. Informed consent was obtained at the start. To detect insufficient effort responding (IER), minimum response times of 5 minutes for Time I and 3 minutes for Time II were stipulated. Participants were informed of this prior to taking part, and again in the accompanying *Participant Information Sheet*. Participants failing to adhere to this requirement were advised their submission had been rejected and their data deleted.

Time I: Participants were informed the researchers were interested in people's attitudes and opinions on modern day social issues. In truth, the study began by priming their gender-derived social identity before measuring their gender-specific Collective Self-Esteem (CSE). Next, scores of Ambivalent Sexism (AS) and Social Dominance Orientation (SDO) were captured. To disguise the true nature of the study, filler items were included. 'Gender Centrality' of Cameron's (2004) Three-Factor Model (TFM) of social identification was counterbalanced with the Collective Self-Esteem Scale (CSES). Duckitt *et al.*'s (2010) Right-Wing Authoritarianism (RWA) scale was counterbalanced with Ambivalent Sexism and Social Dominance Orientation, the three of which were presented in random order. Finally, participants were asked to provide their gender, age, and nationality, before being thanked for their time and directed to the Prolific completion page, where payment was awarded.

Time II: Three weeks later, the same participants were recruited to take part in an ostensibly unrelated study on the public's perception of scientific writing. Instructions indicated that participants would be presented with the summary of a recently published paper that they were required to read and answer questions about. Having provided informed consent, participants then read:

> The next page features the summary of an article that was recently published in *Women in Management Review*, by Stephanie Valdez. Women in Management is "*a peer reviewed journal which publishes original, critical and scholarly papers that make theoretical and methodological contributions to our understanding of gender-based issues in management*". Please take the time to read the summary carefully, paying particular attention to the **Overview**, **Methods**, **Results**, and **Conclusion**.

The study includes two conditions. Excel's RAND function was used to allocate each row of Time I participant data a random number between 0 and 1. The data was then ordered from high to

low, and split in two halves. Those in the first half were allocated to the treatment condition, i.e. the *pro-female leadership* publication. While those in the second half were allocated to the control.

After reading the publication, participants then read "*In your own words, please summarise the article that you've just read.*" Participants were not required to adhere to a pre-set wordcount, though a summary was required; participants could not progress to the next page without writing *something* in the box provided. Following their summary, participants were asked to "*Please indicate the extent to which you agree with the following statements*", wherein they were presented with Nauroth *et al*.'s (2014) *Negative Research Evaluations Total* (NRET) scale. Finally, participants were asked to select their gender, age, and nationality, before being debriefed (Appendix L), thanked, and compensated.

9.1.1.3 Materials

Appendix M and N provide copies of the questionnaires used at Times I and II. To avoid repetition, Table 30 includes the operationalisation of the constructs unique to Study 5. The reader is referred to Study 2 for Haslam *et al*.'s (1999) *Three Things* identity prime, Luhtanen and Crocker's (1992) Collective Self-Esteem Scale (CSE Membership: α = .74; CSE Private: α = .79; CSE Public: α = .78; CSE Importance to Identity: α = .77, CSE Total: α = .87), Cameron's (2004) Gender Centrality (α = .81), Postmes *et al*.'s (2013) Single-Item of Social Identification (SISI), and the Instructional Manipulation Check.

The following were presented in counterbalanced order, with items randomised within each scale.

Social Dominance Orientation (SDO)[46]. A 16-item scale developed by Ho *et al*. (2015) to measure *Social Dominance Orientation* was included. The SDO scale (α = .92) is comprised of two subscales:

1. SDO-D – "Pro-Dominance", reflects a preference for intergroup dominance; the active oppression of groups (α = .87)
2. SDO-E – "Anti-Egalitarianism", reflects a preference for inequality, or at least the opposition to measures that would reduce inequality (α = .88).

---

[46] The scale developed by Ho *et al*. (2015) is often referred to in the SDO literature as SDO$_7$.

Participants read: "*Please indicate the extent to which you favour or oppose each idea below. You can work quickly; your first feeling is generally best.*" The 16-items were presented on a seven-point scale, weighted 1 (*Strongly Oppose*) to 7 (*Strongly Favour*). Higher scores indicated greater preference for group-based hierarchies (SDO-D) and opposition to equality between groups (SDO-E).

Ambivalent Sexism Inventory (ASI). A 22-item scale developed by Glick and Fiske (1996) measured *Ambivalent Sexism*. The ASI scale ($\alpha = .92$) is comprised of two subscales:

1. Hostile Sexism – views gender equality as an attack on masculinity and traditional values; preference for men's dominance over women; biased against women (Hack, 2017) ($\alpha = .92$)
2. Benevolent Sexism – a subtler form of sexism, expressed in a seemingly positive way; emphasises men's role in protecting and providing for women in exchange for women's compliance with traditional gender roles; paternalistic (Mastari, Spruyt, and Siongers, 2019; Good, 2017) ($\alpha = .83$).

Participants read: "*Below is a series of statements concerning men and women and their relationships in contemporary society. Please indicate the extent to which you agree or disagree with each statement*". The 22-items were presented on a six-point scale, weighted 1 (*Strongly Disagree*) to 6 (*Strongly Agree*).

Right-Wing Authoritarianism (RWA). An 18-item scale developed by Duckitt *et al*. (2010) to measure *Right-Wing Authoritarianism* was included. The RWA scale ($\alpha = .92$) is comprised of three subscales: Conservatism ($\alpha = .87$), Traditionalism ($\alpha = .79$), and Authoritarianism ($\alpha = .86$). Participants read: "*This section of the questionnaire investigates peoples' opinions and attitudes on a variety of contemporary social issues and attitudes in the United Kingdom. Please indicate your level of agreement with each.*" The 18-items were presented on a seven-point scale, weighted 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Higher scores indicated greater preference for authoritarian, conservative, and traditionalist social values and the motivational goals for achieving collective security at the expense of individual autonomy. The RWA scale was included as filler items only, and so is not analysed here.

Negative Research Evaluations Total (NRET). A 10-item scale developed by Nauroth *et al.* (2014) measured the participants negative evaluation of the research documented in the treatment and control publications (α = .90). Participants were asked to "*Please indicate the extent to which you agree with the following statements.*" The 10-items were presented on a six-point scale, weighted 1 (*Not at all True*) to 6 (*Very Much True*). Higher scores indicate more negative evaluations. For analysis, the scale was reduced to 9-items as the third item ("*I think the results of this research are unambiguous (i.e. they are not open to more than one interpretation*")) was removed, as the Corrected-Item Total Correlation was *r* = -.081.

Table 30 Table of Operationalisation

Scale	Construct	Scale Items	Source
Social Dominance Orientation (SDO)	SDO-D (Dominance)	1. Some groups of people should be kept in their place. 2. It's probably a good thing that certain groups are at the top and other groups are at the bottom. 3. An ideal society requires some groups to be on top and others to be on the bottom. 4. Some groups of people are simply inferior to other groups. 5. Groups at the bottom are just as deserving as groups at the top.* 6. No one group should dominate in society.* 7. Groups at the bottom should not have to stay in their place.* 8. Group dominance is a poor principle.*	Ho *et al.* (2015)
	SDO-E (Anti-Egalitarianism)	9. We should not push for group equality. 10. We shouldn't try to guarantee that every group has the same quality of life. 11. It is unjust to try to make groups equal. 12. Group equality should not be our primary goal. 13. We should work to give all groups an equal chance to succeed.* 14. We should do what we can to equalise conditions for different groups.* 15. No matter how much effort it takes, we ought to strive to ensure that all groups have the same chance in life.* 16. Group equality should be our ideal.*	
Ambivalent Sexism Inventory (ASI)	Hostile Sexism	1. Many women are actually seeking special favours, such as hiring policies that favour them over men, under the guise of asking for "equality". 2. Most women interpret innocent remarks or acts as being sexist. 3. Women are too easily offended. 4. Feminists are not seeking for women to have more power than men.* 5. Most women fail to appreciate fully all that men do for them. 6. Women seek to gain power by getting control over men. 7. Women exaggerate problems they have at work. 8. Once a woman gets a man to commit to her, she usually tries to put him on a tight leash. 9. When women lose to men in a fair competition, they typically complain about being discriminated against. 10. There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances.* 11. Feminists are making entirely reasonable demands of men.*	Glick and Fiske (1996)

* Reverse Scored

Table 30 Table of Operationalisation (Cont.)

	Benevolent Sexism	12. No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman. 13. In a disaster, women ought not necessarily to be rescued before men.* 14. People are often truly happy in life without being romantically involved with a member of the other sex.* 15. Many women have a quality of purity that few men possess. 16. Women should be cherished and protected by men. 17. Every man ought to have a women whom he adores. 18. Men are complete without women.* 19. A good woman should be set on a pedestal by her man. 20. Women, compared to men, tend to have a superior moral sensibility. Men should be willing to sacrifice their own wellbeing in order to provide finally for the women in their lives.	
Right-Wing Authoritarianism (RWA)	Authoritarianism	1. Strong, tough government will harm not help our country.* 2. Being kind to loafers or criminals will only encourage them to take advantage of your weakness, so it's best to use a firm, tough hand when dealing with them. 3. Our society does NOT need tougher government and stricter laws.* 4. The facts on crime and recent public disorders show we have to crack down harder on troublemakers, if we are going to preserve law and order. 5. Our prisons are a shocking disgrace. Criminals are unfortunate people who deserve much better care, instead of so much punishment.* 6. The way things are going in this country, it's going to take a lot of "strong medicine" to straighten out the troublemakers, criminals, and perverts.	Duckitt *et al.* (2010)
	Conservatism	7. It's great that many young people today are prepared to defy authority.* 8. What our country needs most is discipline, with everyone following our leaders in unity. 9. Students at high schools and university must be encouraged to challenge, criticise, and confront established authorities.* 10. Obedience and respect for authority are the most important virtues children should learn. 11. Our country will be great if we show respect for authority and obey our leaders. 12. People should be ready to protest against and challenge laws they don't agree with.*	

* Reverse Scored

Table 30 Table of Operationalisation (Cont.)

	Traditionalism	13. Nobody should stick to the "straight and narrow." Instead people should break loose and try out lots of different ideas and experiences.[*] 14. The "old-fashioned ways" and "old-fashioned values" still show the best way to live. 15. God's laws about abortion, pornography, and marriage must be strictly followed before it is too late. 16. There is absolutely nothing wrong with nudist camps.[*] 17. This country will flourish if young people stop experimenting with drugs, alcohol, and sex, and pay more attention to family values. 18. There is nothing wrong with premarital sexual intercourse.[*]	
Negative Research Evaluations Total (NRET)	Science Discrediting	1. I think the results of this research can be meaningfully applied to real-life contexts.[*] 2. I think the author is not very competent. 3. I think the results of this research are unambiguous (i.e. they are not open to more than one interpretation).[*][†] 4. I think author just finds what they want to find. 5. I think the article reports reliable results.[*] 6. I think the article reports important results.[*] 7. I think authors who report in this field are often biased. 8. I think one can draw useful conclusions for real-life from this kind of article.[*] 9. I think this kind of article is not very meaningful. 10. I think the methodology used by the author is fundamentally useless to investigate the topic.	Adapted from Nauroth *et al.* (2014).

[*] Reverse Scored
[†] Item removed.

9.1.2 Results

9.1.2.1 Preliminary Analysis

The assumptions relating to MANOVA, factorial ANOVAs[47], and Moderated Multiple Regression (MMR) were all met.

To determine whether male participants differed in terms of social identification (CSE and SISI), Social Dominance Orientation (SDO), and Ambivalent Sexism (AS), between the two conditions, two one-way MANOVAs were conducted. The results revealed no significant difference between conditions. The first MANOVA, which included only the subscales for CSE, SDO, and AS, as well as the Single-Item of Social Identification (SISI), found no significant difference between conditions for male participants, F (9, 94) = .90, p = .529, Wilks' Lambda = .92, partial η^2 = .09. Likewise, no difference was observed for the composite scales of CSE Total, SDO Total, and Sexism Total, F (3, 100) = 1.16, p = .330, Wilks' Lambda = .97, η^2 = .03. Therefore, male participants did not significantly differ in terms of CSE, SDO, ASI, and SISI between the two conditions.

There was also no significant difference for female participants between conditions. However, with regard to the composite scales (e.g. CSE Total, SDO Total, and Sexism Total), significance was approached, F (3, 104) = 2.55, p = .06, Wilks' Lambda = .93, η^2 = .07. This was owing to a difference in SDO Total scores reported by female participants in the control (M = 1.93, SD = 0.68) and treatment (M = 2.39, SD = 1.05) conditions, F (1, 106) = 7.48, p = .007, partial η^2 = .07, representing a moderate effect size (Cohen, 1988). However, as the moderating role of SDO Total is not hypothesised for female participants, the difference was not explored further. Finally, with regard to the subscales of the composites, no significant difference was observed, F (9, 98) = 1.30, p = .248, Wilks' Lambda = .89, η^2 = .11.

9.1.2.2 Descriptive Statistics and Bivariate Correlations

Tables 31 – 34 display the means and standard deviations of all relevant independent and dependent variables, as well as the bivariate correlations for each. Filler items are not included. The tables are split by gender and condition. Tables 31 and 32 display the above information as

---

[47] With regard to the 2x2 Between-Subjects ANOVA, preliminary analysis revealed homogeneity of variance had been violated, F (3, 208) = 3.05, p = .029. However, Pituch and Stevens (2016, p220) note that ANOVA is robust to such violations where sample sizes are equal or approximately equal (e.g. largest / smallest < 1.5). In this instance, n = 50, 54, 50, 58, and so were near equal.

it relates to male participants in the treatment and control conditions, respectively. Tables 33 and 34 display the same information for female participants.

Table 31 reveals that for male participants in the treatment condition, Negative Research Evaluations Total (NRET) was significantly, negatively correlated with CSE Public (r = -.318, p < .05), CSE Importance to Identity (r = -.470, p < .01), and CSE Total (r = -.343, p < .05), suggesting that as identification increased within these domains, evaluations of the research become more positive. This would suggest the manipulation of male social identity threat failed to take effect. However, in the same condition, NRET was strongly, positively correlated with Hostile Sexism (r = .476, p < .01), Sexism Total (r = .333, p < .05), SDO-E (r = .353, p < .05), and SDO Total (r = .296, p < .05), suggesting that as each increased, the evaluations of the pro-female leadership publication became more negative (Higher NRET).

Table 32 reveals that for male participants presented with the control publication, a similar pattern of results was observed. NRET was significantly, negatively correlated with CSE Private (r = -.317, p < .05), CSE Public (r = -.323, p < .05), and CSE Total (r = -.288, p < .05). Furthermore, both SDO-D (r = .427, p < .01) and SDO-E (r = .407, p < .01) (including their composite, SDO Total, r = .446, p < .01) were significantly, positively correlated with NRET. This provides the first indication that the control publication may not have been completely 'neutral' in its effect.

Table 33 reveals that for female participants presented with the pro-female leadership publication, NRET was significantly, positively associated with the three measures of Social Dominance Orientation (SDO-D, r = .377, p < .01; SDO-E, r = .375, p < .01; SDO Total, r = .401, p < .01). This suggests that as their SDO increased, their evaluations of the publication became more negative (Higher NRET). Finally, for female participants presented with the control publication, Table 34 reveals that evaluations of said publication were not significantly correlated with any of the independent variables.

Table 31 Descriptive Statistics and Bivariate Correlation of Independent and Dependent Measures, Treatment, Male Participants, N = 50

	CSE Member.	CSE Private	CSE Public	CSE Import.	CSE Total	SISI	Hostile Sexism	Benev. Sexism	Sexism Total	SDO-D	SDO-E	SDO Total	NRE
CSE Membership	1.00												
CSE Private	.716**	1.00											
CSE Public	.447**	.559**	1.00										
CSE Importance to Identity	.498**	.356*	.294*	1.00									
CSE Total	.844**	.825**	.721**	.726**	1.00								
Single Item (SISI)	.716**	.650**	.464**	.438**	.721**	1.00							
Hostile Sexism	0.09	0.20	-0.06	-0.01	0.07	0.27	1.00						
Benevolent Sexism	0.04	-0.06	0.25	-0.04	0.05	0.13	.401**	1.00					
Sexism Total	0.08	0.09	0.10	-0.03	0.07	0.24	.861**	.811**	1.00				
SDO-D	0.19	0.10	0.20	0.19	0.22	0.21	.385**	.385**	.459**	1.00			
SDO-E	0.02	0.06	0.02	0.11	0.07	0.10	.334*	0.15	.296*	.780**	1.00		
SDO Total	0.11	0.09	0.12	0.16	0.16	0.16	.381**	.282*	.400**	.942**	.945**	1.00	
Neg. Research Evaluations	-0.23	0.01	-.318*	-.470**	-.343*	-0.15	.476**	0.05	.333*	0.21	.353*	.296*	1.00
M	5.21	5.66	4.73	4.43	5.01	5.52	3.46	3.12	3.29	3.01	2.92	2.97	3.05
SD	1.04	1.04	1.05	1.29	0.86	1.25	0.93	0.81	0.73	1.13	1.15	1.07	0.89

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).

Table 32 Descriptive Statistics and Bivariate Correlation of Independent and Dependent Measures, Control, Male Participants, N = 54

	CSE Member.	CSE Private	CSE Public	CSE Import.	CSE Total	SISI	Hostile Sexism	Benev. Sexism	Sexism Total	SDO-D	SDO-E	SDO Total	NRE
CSE Membership	1.00												
CSE Private	.628**	1.00											
CSE Public	.446**	.619**	1.00										
CSE Importance to Identity	0.20	.548**	.423**	1.00									
CSE Total	.669**	.864**	.794**	.722**	1.00								
Single Item (SISI)	.313*	.347*	.425**	.471**	.483**	1.00							
Hostile Sexism	-0.21	-0.06	-0.19	0.09	-0.08	0.14	1.00						
Benevolent Sexism	0.20	0.24	0.26	.508**	.377**	.408**	.425**	1.00					
Sexism Total	-0.02	0.09	0.02	.338*	0.15	.310*	.869**	.817**	1.00				
SDO-D	-0.17	-0.05	-0.10	.288*	0.04	0.04	.613**	.335*	.573**	1.00			
SDO-E	-0.17	-0.03	-0.10	0.13	-0.02	-0.03	.555**	0.12	.422**	.751**	1.00		
SDO Total	-0.18	-0.04	-0.10	0.23	0.01	0.01	.625**	0.25	.534**	.939**	.932**	1.00	
Neg. Research Evaluations	-0.14	-.317*	-.323*	-0.20	-.288*	-0.16	0.20	0.00	0.13	.427**	.407**	.446**	1.00
M	5.29	5.58	4.71	4.15	4.96	5.57	3.04	2.97	3.01	2.77	2.81	2.79	2.63
SD	0.85	1.05	1.21	1.22	0.80	1.40	1.01	0.87	0.79	1.19	1.13	1.08	1.00

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).

Table 33 Descriptive Statistics and Bivariate Correlation of Independent and Dependent Measures, Treatment, Female Participants, N = 50

	CSE Member.	CSE Private	CSE Public	CSE Import.	CSE Total	SISI	Hostile Sexism	Benev. Sexism	Sexism Total	SDO-D	SDO-E	SDO Total	NRE
CSE Membership	1.00												
CSE Private	.541**	1.00											
CSE Public	.522**	.507**	1.00										
CSE Importance to Identity	0.27	0.18	0.25	1.00									
CSE Total	.783**	.737**	.790**	.611**	1.00								
Single Item (SISI)	.398**	.311*	0.21	.347*	.431**	1.00							
Hostile Sexism	.309*	.444**	.595**	0.07	.483**	0.13	1.00						
Benevolent Sexism	0.27	0.28	.508**	0.22	.445**	0.17	.573**	1.00					
Sexism Total	.329*	.413**	.625**	0.16	.524**	0.17	.907**	.865**	1.00				
SDO-D	.337*	.377**	.566**	0.08	.466**	0.03	.743**	.596**	.761**	1.00			
SDO-E	0.21	.310*	.502**	0.17	.412**	-0.04	.697**	.628**	.750**	.762**	1.00		
SDO Total	.292*	.366**	.568**	0.13	.468**	-0.01	.767**	.652**	.805**	.937**	.940**	1.00	
Neg. Research Evaluations	-0.07	0.19	0.00	0.02	0.04	-0.18	0.21	-0.01	0.13	.377**	.375**	.401**	1.00
M	5.67	6.07	4.88	4.79	5.35	5.98	2.52	2.85	2.69	2.46	2.32	2.39	2.35
SD	0.91	0.88	1.06	1.07	0.71	0.98	0.98	0.82	0.80	1.11	1.13	1.05	0.78

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).

Table 34 Descriptive Statistics and Bivariate Correlation of Independent and Dependent Measures, Control, Female Participants, N = 58

	CSE Member.	CSE Private	CSE Public	CSE Import.	CSE Total	SISI	Hostile Sexism	Benev. Sexism	Sexism Total	SDO-D	SDO-E	SDO Total	NRE
CSE Membership	1.00												
CSE Private	.509**	1.00											
CSE Public	.292*	.372**	1.00										
CSE Importance to Identity	.535**	.536**	0.11	1.00									
CSE Total	.776**	.793**	.607**	.767**	1.00								
Single Item (SISI)	.553**	.652**	0.15	.565**	.639**	1.00							
Hostile Sexism	-0.13	-0.22	0.06	-0.05	-0.10	-0.15	1.00						
Benevolent Sexism	0.11	0.03	-0.09	.276*	0.12	0.11	.366**	1.00					
Sexism Total	-0.02	-0.12	-0.01	0.13	0.01	-0.03	.839**	.813**	1.00				
SDO-D	-0.04	-0.08	-0.06	0.15	0.00	0.01	.525**	.469**	.602**	1.00			
SDO-E	-0.23	-0.12	0.07	0.13	-0.02	-0.12	.481**	0.22	.428**	.636**	1.00		
SDO Total	-0.15	-0.11	0.00	0.16	-0.01	-0.06	.557**	.383**	.572**	.908**	.900**	1.00	
Neg. Research Evaluations	-0.10	-0.05	-0.17	-0.04	-0.13	0.17	-0.02	-0.14	-0.09	0.08	0.19	0.15	1.00
M	5.50	6.03	4.89	4.60	5.25	5.71	2.36	2.58	2.47	1.94	1.92	1.93	2.44
SD	1.06	0.97	1.29	1.45	0.87	1.45	0.83	0.78	0.67	0.75	0.72	0.67	0.67

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).

9.1.2.3 Negative Research Evaluations Total (NRET) by Gender

To determine whether male (vs. female) participants engaged in science discrediting, a 2 (male vs. female) x 2 (treatment vs. control) between-subjects ANOVA was conducted. This allowed for the direct testing of:

H4. The scientific publication indicating that companies benefit from increased representation of women at senior management level, owing to their greater social intelligence and productivity, and a leadership style befitting the modern workplace, will be discredited by men more so than women.

The analysis revealed a significant interaction between gender and publication condition, F (1, 208) = 4.89, p = .028, partial η^2 = .02, representing a small effect (Cohen, 1988). Figure 9 illustrates the interaction. Figure 9 shows that male participants in the treatment condition provided significantly more negative research evaluations than participants in the other three groups. However, with regard to male evaluations of the control condition, it isn't immediately clear whether these significantly differed from the evaluations provided by female participants for the same publication.

Figure 9 Estimated Marginal Means of Negative Research Evaluations as a Function of Publication (Treatment vs. Control) for Male and Female Participants
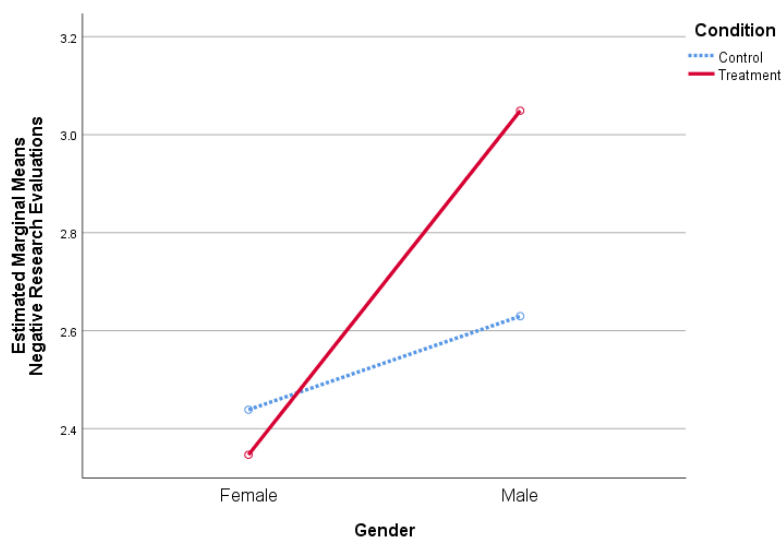
To provide further analysis, simple effects were analysed (Field, 2013). The simple effects revealed that for male (M = 2.63, SD = 1.00) and female (M = 2.44, SD = 0.67) participants, evaluations of the *control* article were not significantly different, F(1, 208) = 1.44, p = .231. Therefore, the control condition had a similar effect on male and female participants, alike. However, evaluations of the treatment condition, as illustrated by Figure 9, were significantly different for male (M = 3.05, SD = 0.89) and female (M = 2.35, SD = 0.78) participants, F (1, 208) = 17.45, p < .001, partial η^2 = .08, representing a moderate to large effect. Further still, the difference in evaluations provided by female participants for each condition, were not significantly different, F (1, 208) = .32, p = .571, while for male participants they were, F (1, 208) = 6.46, p = .012, η^2 = .03, representing a small effect.

To sum, the results indicate that when a scientific publication concludes that women make for better leaders than men, owing to greater social intelligence, increased productivity, and a management styles that befits the modern workplace (vs. research that concludes no significant difference between genders), male readers will discredit the research more so than female readers. Therefore, Study 5 provides evidence in support of H$_4$.

9.1.2.4 The Moderating Effect of Social Identity, Social Dominance Orientation, and Ambivalent Sexism on Research Evaluations

To analyse the predicted moderating effect of strength of identification (CSE, SISI), Social Dominance Orientation (SDO), and Ambivalent Sexism (AS) on the negative research evaluations provided by male participants, a series of hierarchical Moderated Multiple Regressions (MMR) were conducted. The hierarchical aspect allows for the inclusion of multiple predictor variables at Step I (e.g. Condition, CSE Membership, CSE Private, etc.), followed by their interaction terms (or products) at Step 2 (e.g. Condition x CSE Membership, Condition x CSE Private, etc.). This method allows for the analysis of main effects at Step I where interactions are non-significant at Step 2, without the need to rerun the regression minus any non-significant interactions. All continuous predictors were mean centred and the two conditions were dummy coded (I = Treatment, 0 = Control) (Aiken and West, 1991).

With interactions having been hypothesised for, both significant and non-significant interactions are reported. It is important to note that where multiple variables are included in a model, the

researcher takes for granted that when discussing the contribution of a specific variable, that ceteris paribus is assumed. Its stipulation here is to reduce repetition.

9.1.2.4.1 Testing the Moderating Effect of Collective Self-Esteem (CSE) on the Negative Research Evaluations of the Two Research Publications

The hierarchical MMR tested the four CSE subdimensions as possible moderators of the Negative Research Evaluations Total (NRET) across the two publication conditions. Publication condition ("Condition") was entered at Step I with the mean-centred CSE Membership, CSE Private, CSE Public, and CSE Importance to Identity. Their interactions (product terms or "multiplicative products") were then entered at Step 2 (e.g. Condition x CSE Membership) to determine whether their inclusion at Step 2 would provide a significant change in R^2, indicating moderation. In line with the advice of Aiken and West (1991; *see also* Hayes, 2017), unstandardised beta weights (b) are reported for interactions.

Table 35 displays the results of Steps I and 2. The results reveal that at Step I the model explained 20.4% of the variance in Negative Research Evaluation Total (NRET), $F (5, 98) = 5.03$, $p < .001$. At Step 2 this increased to 27.7% of the variance, $F (9, 94) = 4.01$, $p < .001$, owing to an additional 7.3% being explained by the interactions, which approached significance, $\Delta R^2 = .07$, F change $(4, 94) = 2.38$, $p = .058$. Table 35 reveals that at Step 2 only the Condition x CSE Private ($b = .72$, $p = .007$) and Condition x CSE Importance to Identity ($b = -.31$, $p = .057$) interactions were significant or approached significance. The Condition x CSE Private coefficient was positive, suggesting that as CSE Private increased within the treatment condition, NRET increased also, i.e. they became more negative (High NRE = greater negative evaluations). Conversely, the Condition x CSE Importance coefficient was negative, suggesting that as CSE Importance increased within the treatment condition, NRET decreased, i.e. they became more positive (Low NRE = lesser negative evaluations) (Hardy, 1993).

The lack of significance observed at Step 2 for Condition x CSE Public ($b = -0.15$, $p = .427$), indicates the main effect of CSE Public at Step I ($\beta = -0.29$, $p = .013$) held true across both conditions. That is, CSE Public had a significant, negative effect on NRET for both the pro-female leadership publication and the control. CSE Membership was not found to be a significant moderator ($b = -0.34$, $p = .192$), and nor was it a significant predictor of NRET across conditions ($\beta = -0.08$, $p = .542$).

Table 35 MMR of the Relationship Between Publication (Treatment vs. Control) and Negative Research Evaluations Total by CSE

	b	SE b	β	p
Step One				
Constant	2.61	0.12		0.000
Condition	0.46	0.18	0.24	0.010
CSE Membership	-0.08	0.13	-0.07	0.542
CSE Private	0.16	0.13	0.17	0.223
CSE Public	-0.25	0.10	-0.29	0.013
CSE Importance	-0.20	0.08	-0.26	0.012
Step Two				
Constant	2.62	0.12		0.000
Condition	0.45	0.17	-	0.009
CSE Membership	0.14	0.19	-	0.446
CSE Private	-0.26	0.19	-	0.173
CSE Public	-0.18	0.13	-	0.155
CSE Importance	0.02	0.12	-	0.893
Condition x Membership	-0.34	0.26	-	0.192
Condition x Private	0.72	0.26	-	0.007
Condition x Public	-0.15	0.19	-	0.427
Condition x Importance	-0.31	0.16	-	0.057

$R^2 = .20$ for Step 1: $\Delta R^2 = .07$ for Step 2.
N = 104.

Following the advice of Dawson (2014), all non-significant interactions were removed from the model, and it was run again. This allowed for optimal interpretation of the significant interactions. Table 36 (Step 2) displays the results of the new model. Step 2 explained 25.8% of the variance in NRET, F (7, 96) = 4.76, $p < .001$, owing to a significant increase of 5.3% explained by the interaction terms, $\Delta R^2 = .05$, F change (2, 96) = 3.46, $p = .036$. Both the Condition x CSE Private ($b = .43$, $p = .023$) and Condition x CSE Importance to Identity ($b = -.34$, $p = .036$) interactions were significant. Figures 10 and 11 illustrate the interactions.

Table 36 MMR Results of the Relationship Between Publication (Treatment vs. Control)
and Negative Research Evaluations Total by CSE, Significant Interactions

	b	*SE b*	*β*	*p*
Step One				
Constant	2.61	0.12		0.000
Condition	0.46	0.18	0.24	0.010
CSE Membership	-0.08	0.13	-0.07	0.542
CSE Private	0.16	0.13	0.17	0.223
CSE Public	-0.25	0.10	-0.29	0.013
CSE Importance	-0.20	0.08	-0.26	0.012
Step Two				
Constant	2.62	0.12		0.000
Condition	0.46	0.17	-	0.008
CSE Membership	-0.03	0.13	-	0.837
CSE Private	-0.12	0.16	-	0.484
CSE Public	-0.24	0.09	-	0.012
CSE Importance	0.00	0.12	-	0.993
Condition x Private	0.43	0.19	-	0.023
Condition x Importance	-0.34	0.16	-	0.036

R^2 = .20 for Step 1: ΔR^2 = .05 for Step 2.
N = 104.

To probe each interaction, simple slopes ("pick-a-point") analyses were conducted using Preacher, Curran, and Bauer's (2006) Quantpsy Utility[48]. For CSE Private (Figure 10), it was revealed the interaction was significant for those with moderate, b = 0.52, SE = 0.17, 95% CI [0.18, 0.86], p = .003, and relatively high (+1SD) CSE Private, b = 0.95, SE = 0.27, 95% CI [0.42, 1.48], p < .001. This suggests that where male CSE Private was moderate to relatively high, evaluations of the two publications significantly differed, with the pro-female leadership (treatment) publication receiving more negative evaluations (greater NRET) than the control publication. Indeed, as CSE Private grew in strength, so too did NRET. Where CSE Private was relatively low (-1 SD), b = 0.02, SE = 0.27, 95% CI [-0.55, 0.52], p = .950, no significant differences were observed.[49]

---

[48] For the interested reader, SPSS does not provide the variances and covariances associated with the intercept in the output for hierarchical regression, which is needed to calculate simple slopes. To obtain them, the researcher must trick SPSS. This is achieved by removing the intercept from the output (in "Options" ensure "Include Constant in Equation" is not selected), and including a new variable ("C") within the regression model. The new variable (denoted "C") is then provided a value of 1.0 for all cases (i.e. all participants / rows). C's inclusion within the model is identical to including the intercept, except SPSS will now provide the necessary Covariance Matrix needed to calculate simple slopes.

[49] Following Study 4 (Footnote 43), alternative analysis is provided here using "Condition" as the moderator, and "CSE Private" as the focal predictor on the criterion "Negative Research Evaluations". While this alternative analysis is not required, it provides a fuller picture of the interaction. The simple slopes revealed the treatment condition was significant and positive, b = 0.31, SE = 0.16, 95% CI [0.00, 0.62], p =

Figure 10 Simple Slopes of Publication Condition (Treatment vs Control) for CSE Private on Negative Research Evaluations
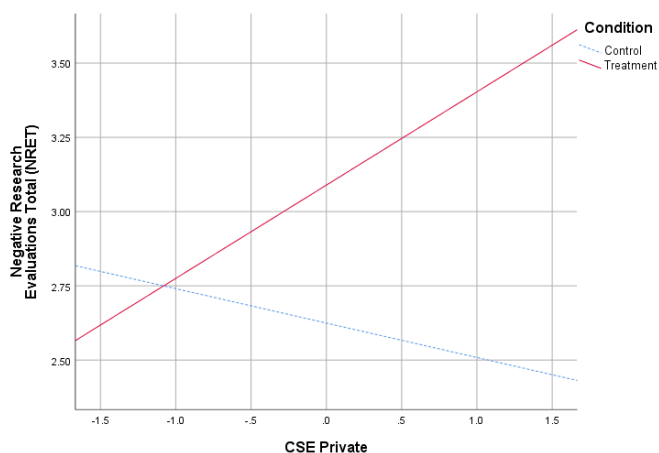
Inspection of the CSE Importance to Identity interaction, revealed a similar relationship in the opposite direction. As Figure 11 illustrates, where CSE Importance to Identity was relatively low (-1SD), $b = 0.92$, $SE = 0.28$, 95% CI [0.37, 1.47], $p = .001$, there was a large difference in evaluations of the two publications, with the treatment publication receiving more negative evaluations than the control. However, where CSE was moderate, $b = 0.47$, $SE = 0.17$, 95% CI [0.13, 0.82], $p = .007$, evaluations of the treatment publication were less negative compared to when CSE Importance was low, yet they were still more negative (Higher NRET) than evaluations of the control, which remained relatively stable across conditions. For those with relatively high (+1 SD) CSE Importance to Identity, $b = 0.03$, $SE = 0.26$, 95% CI [-0.49, 0.55], $p = .914$, no significant difference in NRET were observed.[50]

.047, suggesting that as CSE Private increased within the treatment condition, so too did NRET, i.e. the participants evaluations of the pro-female leadership (treatment) publication became increasingly more negative. The simple slope for the control publication failed to reach significance, $b = -0.16$, $SE = 0.17$, 95% CI [-0.44, 0.21] $p = .484$.

[50] Following Footnote 49, the simple slopes for "Condition" as the moderator on the effect of CSE Importance on Negative Research Evaluations, revealed a significant, negative effect for the treatment condition, $b = -0.34$, $SE = 0.11$, 95% CI [-0.56, -0.13], $p = .002$, while the control condition had a non-significant negative effect, $b = -0.00$, $SE = 0.12$, 95% CI [-0.24, 0.23], $p = .993$. The results indicate that within the treatment condition, as CSE Importance increased, NREs decreased, i.e. the participants evaluation of the publication became less negative.

Figure 11 Simple Slopes of Publication Condition (Treatment vs Control) for CSE Importance to Identity on Negative Research Evaluations
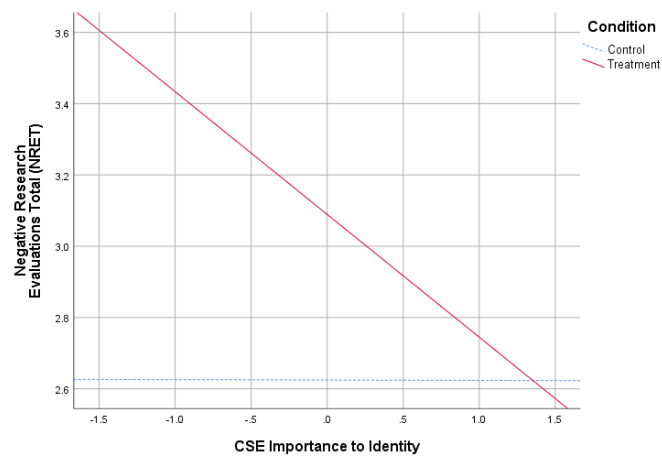
9.1.2.4.2   Testing the Moderating Effect of Social Identity Represented by the Single-Item of Social Identification (SISI) on the Negative Research Evaluations of the Two Research Publications

Table 37 displays the results as they relate to the Single-Item of Social Identification (SISI). As Table 37 reveals, SISI did not significantly differ between publication conditions (b = 0.01, p = .932), and was not a significant predictor across conditions (β = -0.15, p = .117).

Table 37 MMR Results of the Relationship Between Publication (Treatment vs. Control) and Negative Research Evaluations Total by SISI

	b	$SE\ b$	β	p
Step One				
Constant	2.63	0.13		0.000
Condition	0.41	0.18	0.21	0.027
Single-Item (SISI)	-0.11	0.07	-0.15	0.117
Step Two				
Constant	2.63	0.13		0.000
Condition	0.41	0.19	-	0.028
Single-Item (SISI)	-0.12	0.09	-	0.216
Condition x SISI	0.01	0.14	-	0.932

R^2 = .07 for Step 1 (p = .025): ΔR^2 = .00 for Step 2 (p = .932).
N = 104.

9.1.2.4.3 Testing the Moderating Effect of Social Dominance Orientation (SDO) on the Negative Research Evaluations of the Two Research Publications

Table 38 displays the results of the MMR as it relates to Social Dominance Orientation (SDO). Table 38 reveals no significant interactions, and so interpretation is limited to Step I Main Effects. At Step I the model explained 19% of the variance in NRET, F (3, 100) = 7.80, $p < .001$. All else being equal, SDO-E (Anti-Egalitarianism) was a significant, positive predictor of NRET (β = 0.30, p = .032), such that higher rates of SDO-E predicted more negative research evaluations. The lack of a significant interaction suggests this relationship held relatively true across the two publications. SDO-D was neither a significant moderator (b = -0.37, p = .116) nor a significant predictor (ceteris paribus) (β = 0.09, p = .519)

Table 38 MMR Results of the Relationship Between Publication (Treatment vs. Control) and Negative Research Evaluations Total by Social Dominance Orientation (SDO-D and SDO-E)

	b	*SE b*	*β*	*p*
Step One				
Constant	2.65	0.12		0.000
Condition	0.37	0.17	0.19	0.036
SDO-D	0.08	0.12	0.09	0.519
SDO-E	0.26	0.12	0.30	0.032
Step Two				
Constant	2.67	0.12		0.000
Condition	-0.20	0.70	-	0.775
SDO-D	0.23	0.15	-	0.131
SDO-E	0.18	0.16	-	0.280
Condition x SDO-D	-0.37	0.24	-	0.116
Condition x SDO-E	0.20	0.24	-	0.399

R^2 = .19 for Step 1 ($p < .001$): ΔR^2 = .02 for Step 2 (p = .245).
N = 104.

9.1.2.4.4 Testing the Moderating Effect of Ambivalent Sexism (AS) on the Negative Research Evaluations of the Two Research Publications

Table 39 displays the results as they relate to Ambivalent Sexism (AS). With no significant interactions observed at Step 2, interpretation is again restricted to Step I. Step I accounted for 15.9% of the variance in NRET, F (3, 100) = 6.30, p = .001. While Benevolent Sexism was a non-significant predictor (β = -0.13, p = .197), Hostile Sexism was (β = 0.37, $p < .001$). The results suggest that for both the pro-female leadership and control publications, Hostile Sexism (all else

being equal) significantly, positively predicted NRET, such that greater Hostile Sexism resulted in more negative evaluations of the two publications.

Table 39 MMR Results of the Relationship Between Publication (Treatment vs. Control) and Negative Research Evaluations Total by Ambivalent Sexism

	b	SE b	β	p
Step One				
Constant	2.69	0.12		0.000
Condition	0.29	0.18	0.15	0.115
Hostile Sexism	0.36	0.10	0.37	0.000
Benevolent Sexism	-0.15	0.12	-0.13	0.197
Step Two				
Constant	2.67	0.12		0.000
Condition	0.28	0.18	-	0.128
Hostile Sexism	0.24	0.13	-	0.073
Benevolent Sexism	-0.12	0.16	-	0.431
Condition x Hostile	0.27	0.20	-	0.183
Condition x Benevolent	-0.06	0.23	-	0.811

R^2 = .16 for Step 1 (p = .001): ΔR^2 = .02 for Step 2 (p = .388).
N = 104.

9.1.3 Discussion

The objectives of Study 5 were threefold. First, Study 5 attempted to provide evidence that male's discredit scientific findings that unfavourably compare's men (the ingroup) to women (the outgroup). To that end, the study was successful. The results indicate that male (vs. female) participants provided on average more negative evaluations of the pro-female leadership publication than the gender-neutral publication, providing support for H_4.

The second objective was to ascertain whether the science discrediting behaviour, as observed in male participants, is moderated by the participant's strength of identification. The results support this where gender identification is represented by CSE Private and CSE Importance to Identity. According to Crocker and Luhtanen (1990, p63), CSE Private "*assesses subjects' judgements of how positive their social groups are, and comes closest to how Tajfel (1982) defined social identity*". That is, the Private subdimension represents social identity defined as "*that part of the individuals' self-concept which derives from their knowledge of their membership of a social group (or groups) together with the value and emotional significance of that membership*" (Tajfel, 1981, p255). In line

with predictions, as CSE Private increased, so too did the negative evaluations of the pro-female leadership publication, providing support for H_5.

CSE Importance to Identity, which represents the importance of the ingroup to the individual's self-concept, was also revealed to be a significant moderator of science discrediting. The MMR revealed that while evaluations of the treatment publication were more negative than the control, this negativity decreased as CSE Importance increased. CSE Public, which represents how the individual believes their ingroup is evaluated by others, revealed a similar pattern, though the lack of interaction suggests this held true for both publications. Thus, Study 5 provides the first indication that science discrediting behaviour, as operationalised in the thesis, is influenced by male social identity.

The third and final objective of Study 5 was to explore alternative explanations for the observed science discrediting behaviour, with particular focus on Social Dominance Orientation (SDO) and Ambivalent Sexism (AS). First, with regard to SDO, the results indicate that evaluations of the two publications did not differ as a consequence of the participants SDO. However, SDO-E, which represents the individual's preference for social inequality and their objections to measures that would reduce it, was a significant predictor of negative evaluations for both publications, all else being equal. While unexpected, the result may indicate the "control" publication did not have its intended neutral effect on all participants, suggesting a more "neutral" control may be required. This is further supported by the results relating to Ambivalent Sexism (AS). Hostile Sexism was revealed to be a significant predictor for the negative evaluations of both publications. Hostile Sexism represents the individual's belief in the superiority of men, and the preference for male dominance over women (Mastari, Spruyt, and Siongers, 2019; Begany and Milburn, 2002). Therefore, the "neutral" control which concluded no significant difference between genders on leadership ability, social intelligence, and productivity, may have been perceived as a direct threat to ingroup distinctiveness (e.g. Wohl *et al.*, 2011). And so it may not have provided the neutral comparison that it was designed to. That aside, science discrediting, operationalised as negative research evaluations, was significantly predicted by both SDO-E and Hostile Sexism, providing partial support for H_6 and H_7.

The results of Study 5 provide support or partial support for Hypotheses 4 – 7. However, the study suffers from three fundamental flaws. First is power. Despite advocating for *a priori* power analysis in the Methodology, Study 5 employed no such analysis. This is owing to simple human error. The fact that half of the sample would be disqualified when testing H_4 – H_7 was not taken into account. The second flaw is the lack of suitable "control". Despite the Theoretical Framework having discussed loss of ingroup distinctiveness as a form of social identity threat, there is the possibility, as indicated by the results, that the control publication was perceived by some male

participants as threatening to their male social identity. This may explain why SDO-E and Hostile Sexism were near equal in their prediction of negative evaluations across both publications. Finally, the third flaw is a lack of additional dependent variables to provide a fuller account of science discrediting. To rectify flaws I and 3, Study 6 was conducted. To rectify flaw 2, Study 7 was conducted. Study 8 then investigates the effect of Group-Affirmation on science discrediting, and concludes the Stream II series.

9.2 Study 6 – The Influence of Identity Priming

The objective of Study 6 was to overcome two of the flaws identified in the design of Study 5. These include: I. increasing the sample size to allow for greater statistical power, thereby improving the generalisability of the results, and II. increasing the number of dependent variables representing science discrediting behaviour. To that end, Study 6 was conducted using an appropriately sized sample comprised of male participants only. And it included two measures of science discrediting, representing I. Negative Research Evaluations (NRE) and II. Negative Researc<u>er</u> Evaluations (NRER).

In addition, Study 6 contributes to both the social identity and science discrediting literatures, by investigating the effects of identity salience on science discrediting behaviour. According to Self-Categorisation Theory (SCT; Turner *et al.*, 1987), "*self-categorisation transforms self-conception to match the identity described by the category, and transforms one's perceptions, attitudes, feelings, and conduct to conform to the category prototype*" (Hogg and Smith, 2007, p96). This depersonalisation of self as ingroup member is dependent on the category and its associated identity becoming psychologically engaged and "*the operational basis for self-conception and behaviour*" (*ibid.*, p96), i.e. it is dependent on its 'salience'. According to Social Identity Theory (SIT; Tajfel and Turner, 1979), once salient, the individual is motivated to maintain, enhance, and protect their identity as a means of protecting their self-concept. Fischer, Haslam, and Smith (2010) provide evidence of the differential effect caused by identity salience on reactions to identity threat, by revealing that where an identity is made salient, threats to that identity are responded to with greater aggression than threats to a non-salient identity.

To test the effects of identity salience on science discrediting, Study 6 employs two priming conditions (gender vs. personal identity), while holding constant the treatment publication employed in Study 5. The benefit of each condition utilising the *pro-female leadership* publication is that where the identity prime fails to cause a differential effect on science discrediting, the main effects will provide some indication of the predictive ability of the independent variables across priming conditions (where they're significant).

Following Study 5, the independent variables of interest are strength of gender-derived social identity as represented by gender-specific Collective Self-Esteem (CSE), the Single-Item of Social Identification, and the participants Social Dominance Orientation (SDO) and Ambivalent Sexism (AS). The dependent variables are Negative Research Evaluations (NRE) and Negative Researc<u>er</u> Evaluations (NRER).

9.2.1   Methods

9.2.1.1 Power Analysis

Having hypothesised for moderation (H_5 – H_7), data was analysed using hierarchical Moderated Multiple Regression (MMR). To detect a relatively small R^2 change (ΔR^2) = .04, with α = .05 and power = .80, G*Power 3.1 (Faul *et al.*, 2007) estimated a minimum sample of N = 199. However, as the study employed two separate rounds of sampling (using the same participants twice), retention rates had to be taken into consideration. Therefore, the study conservatively oversampled for a total of N = 250.

9.2.1.2 Participants

Two hundred and fifty (N = 250) male respondents aged between 18 and 73 years (M = 35.80, *SD* = 12.57) were recruited via Prolific. To reduce carryover effects, participants took part in two separate stages, herein referred to as Time I and Time II. Once again, participants were unaware that their taking part at Times I and II were related.

Two participants (n = 2) closed their accounts with Prolific before Time II took place. Therefore, N = 248 were invited to take part at Time II. The retention rate for Time II was 77.2% (N = 193). One participant (n = 1) admitted to not being able to pay attention during the study, and so they were removed from analysis (when asked to summarise the article, they wrote: "*I had a hard time interpreting the article fully due to outside distractions*"). For three participants (n = 3) the article summary failed to load. An additional eleven (n = 11) participants failed to correctly interpret the article summary, and so were subsequently removed, and n = 1 outlier was removed. The final sample was N = 177, aged between 18 and 73 years (M = 36.79, *SD* = 12.82). Identical prescreening criteria to that used in Study 5 was employed, with the addition that participants were ineligible if they had taken part in Study 5.

9.2.1.3 Design and Procedure

Both the design and procedure were similar to Study 5. The differences are discussed below.

Time I: To prevent participants from identifying Time I as being related to Time II, Haslam *et al.*'s (1999) "Three Things" identity prime (which was used at Time II) was replaced with an *ad hoc* gender identity prime. The prime read:

> *"We note that you selected MALE as your gender on the previous page. The next few pages require you to answer questions about you and your MALE identity.*
>
> *With that in mind, we'd like you to briefly reflect on what you have in common with other men. Please enter five things that you have in common with other men."*

The *ad hoc* gender prime[51] was loosely based on Haslam *et al.*'s (1999) gender prime, as well as evidence that suggests that stating one's ingroup (e.g. Steele and Aronson, 1995) and answering questions about it, increases its salience (e.g. Kelley, 2020; Wang and Dovidio, 2017; McLeish and Oxoby, 2011; Shih *et al.*, 1999; Ford *et al.*, 2012). By including the *ad hoc* prime, Haslam *et al.*'s (1999) prime was able to be used at Time II. In addition, the Right-Wing Authoritarianism scale was removed as filler items and replaced with Cameron's (2004) Three-Factor Model (TFM) of social identification, adapted to male social identity (this scale was previously employed in Studies 2 – 4). The TFM was presented on a seven-point scale, weighted 1 (*Strongly Oppose*) to 7 (*Strongly Favour*), and was included as a filler.

Time II: The study included two conditions: I. Gender Identity Prime (Treatment) and 2. Personal Identity Prime (Control). Allocation to each group was determined using Excel's RAND function. To prime identity, the participant was presented with Haslam *et al.*'s (1999) "Three Things" identity prime. In the Gender Prime condition, participants were asked to "*List up to three things that you and most other men… do relatively often… do relatively rarely… do well…* [and] *do badly*." For participants in the Personal Identity condition, substitute "*and most other men*" for "*personally*". The participant debrief (Appendix O) also differed to Study 5.

9.2.1.4 Materials

Appendix P and Q provide copies of the questionnaires used at Times I and II. Table 40 lists the measures used and their corresponding Cronbach's alpha (α), representing each scales internal

---

[51] To provide some indication of the *ad hoc* prime's effectiveness, a series of independent samples *t*-tests were conducted on the CSE scores (subdimensions and Total) and SISI scores obtained at Time I Study 5 (male's only) and Time I Study 6. No significant differences were observed (*p* > .05). This suggests the *ad hoc* prime used in Study 6 was similarly effective as the Three Things prime used in Study 5.

consistency (reliability). Each measure exceeds .70, suggesting an acceptable level of reliability (Taber, 2018).

In a departure from Study 5, the scale for Negative Research Evaluations Total (NRET) was separated into two subscales, representing Negative Research Evaluations (NRE) (e.g. "*I think this kind of article is not very meaningful*", "*I think the article reports reliable results*" (reverse scores), etc.) and Negative Research<u>er</u> Evaluations (NRER) (e.g. "*I think researchers who report in this field are often biased*", "*I think the researcher just finds what they want to find*"). Together, the two subdimensions represent Negative Research Evaluations Total (NRET), as reported in Study 5. Nauroth *et al*. (2017) used a similar approach in their investigation of science discrediting, using variations of the scales employed here. Table 41 presents the items for each subdimension.

As Table 41 illustrates, the wording of the Negative Research<u>er</u> Evaluations (NRER) scale was changed to reflect evaluations of the "researcher" as opposed to "author" as in Study 5. Finally, as with Study 5, the item reading "*I think the results of this research are unambiguous (i.e. they are not open to more than one interpretation)*" was removed, as the Corrected-Item Total Correlation was *r* = -.001 for Negative Research Evaluations Total; indicating almost no correlation between the composite scale and item.

Table 40 Internal Consistency of Measures Used at Times I and II

Scale	No. of Items	α
CSE: Membership	4	.80
CSE: Private	4	.85
CSE: Public	4	.72
CSE: Importance to Identity	4	.73
Total CSE	16	.88
SDO-D (Pro-Dominance)	8	.82
SDO-E (Antiegalitarianism)	8	.89
Total SDO	16	.92
Hostile Sexism	11	.92
Benevolent Sexism	11	.82
Total Sexism (ASI)	22	.90
Single-Item (SISI)	1	-
Negative Research Evaluation	6	.89
Negative Researcher Evaluation	3	.83
Negative Research Evaluation Total	9	.92

Table 41 Negative Research Evaluations Total (NRET), Separated by Two Dimensions: Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER)

Scale	Construct	Scale Items	Source
Negative Research Evaluations Total (NRET)	Science Discrediting	**Negative Research Evaluations (NRE)** 1. I think the results of this research can be meaningfully applied to real-life contexts. [*] 2. I think the article reports reliable results. [*] 3. I think the article reports important results. [*] 4. I think one can draw useful conclusions for real-life from this kind of article. [*] 5. I think this kind of article is not very meaningful. 6. I think the methodology used by the author is fundamentally useless to investigate the topic. 7. I think the results of this research are unambiguous (i.e. they are not open to more than one interpretation). [*†] **Negative Researcher Evaluations (NRER)** 8. I think the researcher is not very competent. 9. I think these researchers just find what they want to find. 10. I think researchers who report in this field are often biased.	Adapted from Nauroth *et al.* (2014).

[*] Reverse Scored
[†] Item removed.

9.2.2 Results

9.2.2.1 Preliminary Analysis

The assumptions relating to MANOVA and Moderated Multiple Regression (MMR) were all met.

To determine whether participants differed in terms of their gender-derived social identification (CSE and SISI), Social Dominance Orientation (SDO), and Ambivalent Sexism (AS), between the two priming conditions (Gender Identity vs Personal Identity), two one-way MANOVAs were conducted. The results revealed no significant difference between conditions. The first MANOVA, which included only the subscales for CSE, SDO, and AS, as well as the Single-Item of Social Identification (SISI), found no significant difference between conditions, $F(9, 167) = .60$, $p = .794$, Wilks' Lambda = .97, partial $\eta^2 = .03$. Likewise, no difference was observed for the composite scales of Total CSE, Total SDO, and Total Sexism, $F(3, 173) = 0.56$, $p = .645$, Wilks' Lambda = .99, $\eta^2 = .01$. Therefore, it may reasonably be concluded that participants did not significantly differ in terms of CSE, SDO, ASI, and SISI between the two conditions.

9.2.2.2 Descriptive Statistics and Bivariate Correlations

Table 42 displays the means and standard deviations of all relevant independent and dependent variables. Tables 43 and 44 display the bivariate correlations for all variables. The tables are split by priming condition. Table 43 displays the correlations as they relate to participants in the Gender Identity (Treatment) condition, and Table 44 as they relate to the Personal Identity (Control) condition.

Table 42 Descriptive Statistics for Independent and Dependent Variables by Condition

	Treatment (*n* = 93)		Control (*n* = 84)	
	M	*SD*	*M*	*SD*
CSE: Membership	5.20	1.10	5.23	1.08
CSE: Private	5.61	1.18	5.57	1.17
CSE: Public	4.85	1.09	4.80	1.07
CSE: Importance to Identity	4.37	1.23	3.99	1.40
Total CSE	5.00	0.86	4.88	0.97
Single-Item of Social Identification (SISI)	5.71	1.42	5.52	1.56
SDO-D (Pro-Dominance)	2.68	1.16	2.50	1.03
SDO-E (Anti-Egalitarianism)	2.68	1.24	2.48	1.15
Total SDO	2.67	1.10	2.50	1.04
Hostile Sexism	3.14	1.13	3.05	1.03
Benevolent Sexism	3.19	0.81	3.02	0.87
Total Sexism (ASI)	3.17	0.78	3.04	0.82
Negative Research Evaluation (NRE)	2.89	1.04	2.79	1.02
Negative Researcher Evaluation (NRER)	2.97	1.19	2.78	1.15
Negative Research Evaluation Total (NRET)	2.92	1.03	2.78	0.98

9.2.2.2.1 Discussion of Bivariate Correlations

Table 43 indicates that for participants provided the gender identity prime, their gender-specific social identity (strength of) as represented by CSE (incl. subscales) and SISI, was not significantly correlated with the three dependent measures (I. Negative Research Evaluations (NRE), 2. Negative Researcher Evaluations (NRER), and their composite, 3. Negative Research Evaluations

Total (NRET), *p* > .05). However, for participants provided the personal identity prime, CSE Public shared an unexpected significant, negative relationship with NRE ($r_{control}$ = -.243, *p* < .05), suggesting that as CSE Public increased, evaluations of the publication became less negative (Low NRE = less negative research evaluations). However, the effect was small (Cohen, 1988).

Table's 43 and 44 together provide partial support for H_6, as Social Dominance Orientation (SDO; D and E) was positively correlated with the dependent measures, *p* < .05. Further still, SDO was more strongly correlated with NRE, NRER, and NRET when gender identity had been primed, than when personal identity had been primed. However, with regard to H_7 and Ambivalent Sexism (AS), while Hostile Sexism was significantly correlated with NRE, NRER, and NRET for both conditions, representing large effects in the gender prime condition, and moderate in the control. Benevolent Sexism was not significantly correlated with any of the dependent measures for either condition (*p* > .05).

Therefore, the bivariate correlations indicate that despite priming the participants male social identity prior to their reading the pro-female leadership publication, gender identity as measured by CSE and SISI was not significantly related to the negative evaluations of the research or its author. That said, the evaluations were strongly related to the participants SDO-D and SDO-E, suggesting that in both conditions the participants preference for intergroup dominance (SDO-D) and inequality (SDO-E) was related to their negative evaluations of both the publication and its author. Likewise, in both conditions the participants Hostile Sexism was also strongly related to their negative evaluations.

Table 43 Bivariate Correlation of Independent and Dependent Measures, Gender Identity Prime (Treatment) , N = 93

	CSE Member.	CSE Private	CSE Public	CSE Import.	CSE Total	SISI	SDO-D	SDO-E	Total SDO	Hostile Sexism	Benev. Sexism	Total Sexism	Neg. Res. Eval.	Neg. Reser. Eval.	Neg. Res. Total
CSE Membership	1														
CSE Private	.677**	1													
CSE Public	.292**	.363**	1												
CSE Importance to Identity	.425**	.441**	.259*	1											
CSE Total	.801**	.831**	.625**	.725**	1										
Single-Item (SISI)	.531**	.573**	.358**	.497**	.657**	1									
SDO-D	.206*	.231*	0.069	.357**	.299**	0.114	1								
SDO-E	0.056	0.127	-0.039	.272**	0.150	0.010	.786**	1							
Total SDO	0.122	0.179	-0.008	.317**	.216*	0.055	.934**	.946**	1						
Hostile Sexism	0.111	0.204	-0.201	0.160	0.101	0.078	.514**	.517**	.543**	1					
Benev. Sexism	.233*	.251*	.219*	.475**	.402**	.334**	.386**	.262*	.326**	.261*	1				
Total Sexism	0.203	.280**	-0.032	.365**	.284**	.231*	.575**	.513**	.565**	.863**	.713**	1			
Neg. Research Evaluations	-0.020	0.086	-0.179	0.086	0.001	-0.062	.339**	.480**	.416**	.543**	0.082	.437**	1		
Neg. Researcher Evaluations	0.085	0.144	-0.158	0.108	0.067	-0.037	.414**	.500**	.471**	.632**	0.187	.557**	.779**	1	
Neg. Research. Eval. Total	0.019	0.113	-0.180	0.099	0.027	-0.056	.387**	.514**	.460**	.607**	0.127	.508**	.971**	.907**	1

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).

Table 44 Bivariate Correlation of Independent and Dependent Measures, Personal Identity Prime (Control), N = 84

	CSE Member.	CSE Private	CSE Public	CSE Import.	CSE Total	SISI	SDO-D	SDO-E	Total SDO	Hostile Sexism	Benev. Sexism	Total Sexism	Neg. Res. Eval.	Neg. Reser. Eval.	Neg. Res. Total
CSE Membership	1														
CSE Private	.679**	1													
CSE Public	.672**	.642**	1												
CSE Importance to Identity	.278*	.481**	.427**	1											
CSE Total	.800**	.863**	.837**	.704**	1										
Single-Item (SISI)	.697**	.740**	.545**	.409**	.749**	1									
SDO-D	0.109	.334**	0.200	.338**	.307**	0.166	1								
SDO-E	0.186	.445**	0.211	.319**	.363**	.216*	.775**	1							
Total SDO	0.152	.416**	.217*	.343**	.354**	0.191	.927**	.953**	1						
Hostile Sexism	.240*	.410**	0.129	.228*	.311**	0.173	.612**	.551**	.621**	1					
Benev. Sexism	.267*	.236*	.278*	.458**	.393**	.251*	.420**	.321**	.378**	.434**	1				
Total Sexism	.283**	.390**	.217*	.392**	.401**	.242*	.625**	.532**	.608**	.874**	.815**	1			
Neg. Research Evaluations	-0.143	0.054	-.243*	-0.008	-0.094	-0.106	.218*	.345**	.322**	.373**	-0.164	0.153	1		
Neg. Researcher Evaluations	0.045	0.213	-0.077	0.156	0.114	0.100	.331**	.379**	.390**	.472**	-0.039	.289**	.697**	1	
Neg. Research. Eval. Total	-0.081	0.120	-0.197	0.055	-0.021	-0.034	.279*	.385**	.374**	.441**	-0.128	.218*	.960**	.869**	1

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).

9.2.2.3 Research Evaluations by Condition

Table 42 (above) indicates that Negative Research Evaluations (NRE), Negative Researcher Evaluations (NRER), and Negative Research Evaluations Total (NRET), were higher (more negative) in the Gender Identity Prime (Treatment) condition ($NRE_{Treatment}$: M = 2.89, SD = 1.04; $NRER_{Treatment}$: M = 2.97, SD = 1.19; $NRET_{Treatment}$: M = 2.92, SD = 1.03) than in the Personal Identity Prime (Control) condition ($NRE_{Control}$: M = 2.79, SD = 1.02; $NRER_{Control}$: M = 2.78, SD = 1.15; $NRET_{Control}$: M = 2.78, SD = 0.98). To determine whether these differences were significant, a series of independent sample's t-tests were conducted. Effect sizes are reported as eta squared (η^2): .01 = small, .05 = moderate, and .14 = large (Cohen, 1988, p284-287).

The results indicate the difference in mean scores for Negative Research Evaluations (NRE) provided by participants in the two conditions, was not statistically significant, t (175) = -0.69, p = .491 (two-tailed). The magnitude of the difference in the means (mean difference = -.11, 95% CI: -.41 to .20) was very small (η^2 = .003). Likewise, the difference in mean scores for Negative Researcher Evaluations (NRER) were also non-significant, t (175) = -1.08, p = .282 (two-tailed), representing a very small effect (η^2 = .007) (mean difference = -.19, 95% CI: -.54 to .16). And finally, differences in Negative Research Evaluations Total (NRET) between groups was also non-significant, t (175) = -0.89, p = .377 (two-tailed) (mean difference = -.13, 95% CI: -.43 to .17), representing a very small effect, η^2 = .005).

This suggests that priming male gender-derived social identity (vs. personal identity) using Haslam *et al.*'s (1999) "Three Things" identity prime, had no significant effect on between-group science discrediting behaviour, as represented by NRE, NRER, and NRET.

9.2.2.4 The Moderating Effect of Social Identity, Social Dominance Orientation, and Ambivalent Sexism on Research Evaluations by Priming Condition

To analyse the predicted moderating effect of social identification, social dominance orientation, and ambivalent sexism on the evaluations provided by participants in the two priming conditions (gender vs. personal identity), a series of hierarchical Moderated Multiple Regressions (MMR) were conducted. All continuous predictors were mean centred and the two conditions were dummy coded (1 = *Gender Identity Prime*, 0 = *Personal Identity Prime*) (Aiken and West, 1991).

With interactions having been hypothesised for, both significant and non-significant interactions are reported.

9.2.2.4.1 Testing Collective Self-Esteem as a Moderator of Negative Research Evaluations (NRE) and Negative Research<u>er</u> Evaluations (NRER) by Priming Condition

The analysis revealed that Collective Self-Esteem (CSE) as represented by each of its four subdimensions, was not a significant moderator in the relationship between priming conditions and NRE and NRER. Table 45 displays the results. With no significant interactions observed at Step 2, analysis is restricted to Step I for both Negative Research Evaluations (NRE) and Negative Research<u>er</u> Evaluations (NRER).

Table 45 A. reveals that for NRE, Step I accounted for 10.2% of the variance, F (5, 171) = 3.87, p = .002. All else being equal, CSE Private (β = 0.30, p = .005) was a significant positive predictor of Negative Research Evaluations. The non-significant interaction at Step 2 suggests the effect at Step I remained somewhat constant across both priming conditions. That is, as CSE Private increased, so too did NRE. CSE Public was also revealed to be a significant predictor of NRE, though in the opposite direction (β = -0.30, p = .001), suggesting that as CSE Public increased, NRE decreased.

Table 45 B. displays the results for Negative Research<u>er</u> Evaluations (NRER), revealing a similar pattern as reported in Table 45 A. Step I accounted for 10.3% of the variance in the negative evaluations of the author, F (5, 171) = 3.94, p = .002. CSE Private (β = 0.29, p = .007) had a significant, positive effect on NRER, suggesting that as the participants CSE Private increased, so too did their negative evaluations of the author. However, as CSE Public (β = -0.28, p = .001) had a significant, negative effect, this suggests that where CSE Public increased, evaluations of the author became more positive.

Therefore, despite the identity prime manipulation, the influence of the CSE Private and Public subdimensions remained somewhat constant across conditions.

Table 45 Moderation Results of Collective Self-Esteem (CSE) Subscales on the Relationship Between Priming Conditions and A. Negative Research Evaluations (NRE) and B. Negative Researcher Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	2.79	0.11		0.000	2.80	0.12		0.000
Condition	0.09	0.15	0.04	0.552	0.16	0.17	0.07	0.363
CSE Membership	-0.15	0.10	-0.16	0.114	-0.04	0.11	-0.03	0.733
CSE Private	0.26	0.09	0.30	0.005	0.29	0.11	0.29	0.007
CSE Public	-0.29	0.08	-0.30	0.001	-0.31	0.09	-0.28	0.001
CSE Importance	0.05	0.06	0.06	0.475	0.10	0.07	0.11	0.196
Step Two					**Step Two**			
Constant	2.79	0.11		0.000	2.80	0.13		0.000
Condition	0.09	0.15	-	0.554	0.16	0.17	-	0.361
CSE Membership	-0.14	0.15	-	0.357	0.00	0.18	-	0.988
CSE Private	0.36	0.14	-	0.012	0.39	0.16	-	0.017
CSE Public	-0.39	0.15	-	0.010	-0.42	0.17	-	0.016
CSE Importance	0.01	0.09	-	0.941	0.11	0.10	-	0.311
Condition x Mem	0.00	0.20	-	0.995	-0.02	0.23	-	0.924
Condition x Pri	-0.16	0.19	-	0.394	-0.18	0.22	-	0.406
Condition x Pub	0.16	0.18	-	0.383	0.14	0.21	-	0.488
Condition x Imp	0.09	0.13	-	0.504	-0.02	0.15	-	0.900

$R^2 = .10$ for Step 1 ($p = .002$); $\Delta R^2 = .01$ for Step 2 ($p = .800$). N = 177.   *$R^2 = .10$ for Step 1 ($p = .002$); $\Delta R^2 = .01$ for Step 2 ($p = .862$). N = 177.*

9.2.2.4.2 Testing the Single-Item of Social Identification (SISI) as a Moderator of Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by Priming Condition

Table 46 (A. and B.) reveals that gender identity as represented by the Single-Item of Social Identification (SISI) was not a significant predictor of either Negative Research Evaluations (NRE) or Negative Researcher Evaluations (NRER) for either priming condition.

Table 46 Moderation Results of SISI on the Relationship Between Priming Conditions and
A. Negative Research Evaluations (NRE) and B. Negative Researcher Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	2.78	0.11		0.000	2.78	0.13		0.000
Condition	0.12	0.15	0.06	0.449	0.19	0.18	0.08	0.296
Single-Item (SISI)	-0.06	0.05	-0.08	0.268	0.02	0.06	0.03	0.692
Step Two					**Step Two**			
Constant	2.78	0.11		0.000	2.79	0.13		0.000
Condition	0.12	0.16	-	0.450	0.19	0.18	-	0.296
Single-Item (SISI)	-0.07	0.07	-	0.339	0.07	0.08	-	0.372
Condition x SISI	0.02	0.10	-	0.819	-0.10	0.12	-	0.380

Step 1 R^2 = .01, F (2, 174) = 0.86, p = .427
ΔR² = .00 for Step 2, F change (1, 173) = 0.05, p = .819.
N = 177.

Step 1 R^2 = .01, F (2, 174) = 0.66, p = .520
ΔR² = .00 for Step 2, F change (1, 173) = 0.77, p = .380. N = 177.

9.2.2.4.3 Testing Social Dominance Orientation as a Moderator of Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by Priming Condition

Table 47 (A. and B.) displays the results of the MMRs as they relate to Social Dominance Orientation (SDO). Table 47 A. and B. reveals that at Step 2 neither Negative Research Evaluations (NRE) nor Negative Researcher Evaluations (NRER) were significantly moderated. Therefore, interpretation is limited to Steps I of A and B.

For Negative Research Evaluations (NRE), Table 47 A. reveals that Step I accounted for 18.2% of the variance, F (3, 173) = 12.83, p < .001. SDO-E, which represents the individual's preference for social inequality and their objection to measures that might reduce it, was a significant positive predictor of NRE (β = 0.50, p < .001). SDO-D, which is the individual's preference for the dominance of high status groups, was a non-significant predictor of NRE (β = -0.11, p = .331).

For Negative Researcher Evaluations (NRER), Table 47 B. reveals that Step I accounted for 20.6% of the variance, F (3, 173) = 14.98, p < .001. SDO-E was again a significant positive predictor (β = 0.39, p = .001), such that higher SDO-E scores predicted more negative evaluations of the author (all else being equal). SDO-D was not significant in either of the two priming conditions.

Therefore, irrespective of whether gender identity was primed or not, SDO-E remained a significant positive predictor of the negative evaluations of both the publication itself, and its author.

Table 47 Moderation Results of Social Dominance Orientation (SDO) Subscales on the Relationship Between Priming Conditions and A. Negative Research Evaluations (NRE) and B. Negative Researcher Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	2.82	0.10		0.000	2.83	0.11		0.000
Condition	0.04	0.14	0.02	0.802	0.10	0.16	0.04	0.541
SDO-D	-0.10	0.10	-0.11	0.331	0.08	0.12	0.08	0.484
SDO-E	0.43	0.09	0.50	0.000	0.38	0.11	0.39	0.001
Step Two					**Step Two**			
Constant	2.82	0.10		0.000	2.83	0.12		0.000
Condition	0.04	0.14	-	0.788	0.10	0.16	-	0.535
SDO-D	-0.12	0.16	-	0.444	0.10	0.18	-	0.558
SDO-E	0.39	0.14	-	0.007	0.31	0.16	-	0.056
Condition x SDO-D	0.03	0.21	-	0.884	-0.05	0.24	-	0.841
Condition x SDO-E	0.08	0.19	-	0.672	0.13	0.21	-	0.542

R^2 = .18 for Step 1 (p < .000); ΔR^2 = .00 for Step 2 (p = .684). N = 177.

R^2 = .21 for Step 1 (p < .001); ΔR^2 = .00 for Step 2 (p = .754).

9.2.2.4.4 Testing Ambivalent Sexism (AS) as a Moderator of Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by Priming Condition

Table 48 (A. and B.) displays the results of the MMRs as they relate to Ambivalent Sexism. Table 48 reveals significant interactions at Step 2 for both Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER).

Table 48 Moderation Results of Ambivalent Sexism (AS) Subscales on the Relationship Between Priming Conditions and A. Negative Research Evaluations (NRE) and B. Negative Researcher Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	2.79	0.10		0.000	2.80	0.11		0.000
Condition	0.11	0.13	0.05	0.425	0.16	0.15	0.07	0.267
Hostile Sexism	0.51	0.07	0.54	0.000	0.65	0.07	0.60	0.000
Benevolent Sexism	-0.27	0.08	-0.22	0.002	-0.18	0.09	-0.13	0.055
Step Two					**Step Two**			
Constant	2.77	0.10		0.000	2.78	0.10		0.000
Condition	0.11	0.13	-	0.414	0.16	0.14	-	0.257
Hostile Sexism	0.54	0.10	-	0.000	0.67	0.11	-	0.000
Benevolent Sexism	-0.47	0.12	-	0.000	-0.40	0.13	-	0.003
Condition x Hostile	-0.03	0.13	-	0.824	-0.02	0.14	-	0.912
Condition x Benev.	0.39	0.17	-	0.023	0.43	0.18	-	0.020

R^2 = .26 for Step 1: ΔR^2 = .02 for Step 2.
N = 177.

R^2 = .33 for Step 1: ΔR^2 = .02 for Step 2.
N = 177.

9.2.2.4.4.1 Negative Research Evaluations (NRE)

For Negative Research Evaluations (NRE), Step I accounted for 26.3% of the variance, $F_{(3, 173)}$ = 20.63, $p < .001$. This increased to 28.7% at Step 2, $F_{(5, 171)}$ = 13.78, $p < .001$, owing to an additional 2.4% being explained by the interaction terms, which approached significance, ΔR^2 = .02, F change $(2, 171) = 2.84$, $p = .061$. As Table 49 A. reveals, the Condition x Benevolent Sexism was the only significant interaction ($b = 0.39$, $p = .023$). With no significant interaction observed for Condition x Hostile Sexism ($b = -0.03$, $p = .824$) at Step 2, Hostile Sexism is interpreted at Step I across both conditions (all else equal). At Step I Hostile Sexism was a significant positive predictor of Negative Research Evaluations ($\beta = 0.54$, $p < 001$), an effect that held relatively constant across the two priming conditions.

To better analyse the contribution of the significant Condition x Benevolent Sexism interaction, the non-significant Condition x Hostile Sexism interaction was removed from Step 2, and the regression was run again (Dawson, 2014). Table 49 displays the results. In the new model, Step 2 explained 28.7% of the variance in Negative Research Evaluations, $F_{(4, 172)}$ = 17.31, $p < .001$, owing to a significant increase of 2.3% explained by the interaction term, ΔR^2 = .02, F change $(1, 172) = 5.67$, $p = .018$. The Condition x Benevolent Sexism interaction was found to increase in significance ($b = 0.38$, $p = .018$). Figure 12 displays the interaction.

Table 49 Moderation Results of Benevolent Sexism on the Relationship Between Priming Conditions and Negative Research Evaluations (NRE)

	b	*SE b*	*β*	*p*
Step One				
Constant	2.79	0.10		0.000
Condition	0.11	0.13	0.05	0.425
Hostile Sexism	0.51	0.07	0.54	0.000
Benevolent Sexism	-0.27	0.08	-0.22	0.002
Step Two				
Constant	2.77	0.10		0.000
Condition	0.11	0.13	-	0.413
Hostile Sexism	0.52	0.07	-	0.000
Benevolent Sexism	-0.46	0.12	-	0.000
Condition x Benevolent	0.38	0.16	-	0.018

R^2 = .26 for Step 1: ΔR^2 = .02 for Step 2.
N = 177.

Figure 12 Simple Slopes of Priming Condition (Gender vs Personal) for Benevolent Sexism on Negative Research Evaluations
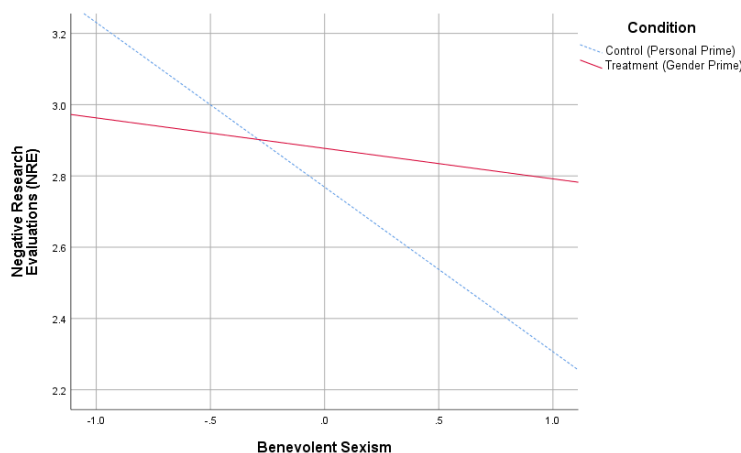
As Figure 12 illustrates, where Benevolent Sexism was relatively low (-1SD), evaluations of the publication were similarly negative (High NRE) (b = -0.24, SE = 0.20, 95% CI [-0.63, 0.15], p = .225). Where Benevolent Sexism was moderate, evaluations of the publication became slightly more positive (Lower NRE), though differences between priming conditions were non-significant (b = 0.14, SE = 0.13, 95% CI [-0.13, 0.40], p = .312). It was only once Benevolent Sexism increased to +1SD, that differences in evaluations became significant (b = 0.43, SE = 0.19, 95% CI [0.05,

0.80], p = .025), such that participants in the gender prime condition provided more negative evaluations (Higher NRE) of the publication, than participants in the personal prime condition.

9.2.2.4.4.2 Negative Researcher Evaluations (NRER)

For Negative Researcher Evaluations (NRER), Table 48 B. (above) reveals that Step I accounted for 33.3% of the variance, F (3, 173) = 28.85, p < .001, which increased by a significant 2.3% at Step 2, F (5, 171) = 18.94, p < .001, with the inclusion of the interaction terms (ΔR^2 = .02, F change (2, 171) = 3.06, p = .049). The Condition x Hostile Sexism interaction (b = -0.02, p = .912) was non-significant at Step 2. At Step I Hostile Sexism was revealed to be a significant positive predictor (β = 0.60, p < 001) of Negative Researcher Evaluations (NRER), which held relatively constant across both conditions, all else being equal. To better inspect the contribution of the significant Condition x Benevolent Sexism interaction (b = 0.43, p = .020), the Condition x Hostile Sexism interaction was removed, and the model run again. Table 50 displays the results.

Table 50 reveals that Step 2 (F (4, 172) = 23.82, p < .001) continued to explain an additional 2.3% of the variance in NRER, ΔR^2 = .02, F change (1, 172) = 6.15, p = .014, owing to the significant Condition x Benevolent Sexism interaction (b = 0.42, p = .014). Figure 13 displays the interaction.

Table 50 Moderation Results of Benevolent Sexism on the Relationship Between Priming Conditions and Negative Researcher Evaluations (NRER)

	b	$SE\ b$	β	p
Step One				
Constant	2.80	0.11		0.000
Condition	0.16	0.15	0.07	0.267
Hostile Sexism	0.65	0.07	0.60	0.000
Benevolent Sexism	-0.18	0.09	-0.13	0.055
Step Two				
Constant	2.78	0.10		0.000
Condition	0.16	0.14	-	0.256
Hostile Sexism	0.66	0.07	-	0.000
Benevolent Sexism	-0.39	0.12	-	0.002
Condition x Benevolent	0.42	0.17	-	0.014

R^2 = .33 for Step 1: ΔR^2 = .02 for Step 2.
N = 177.

Figure 13 Simple Slopes of Priming Condition (Gender vs Personal) for
Benevolent Sexism on Negative Researcher Evaluations
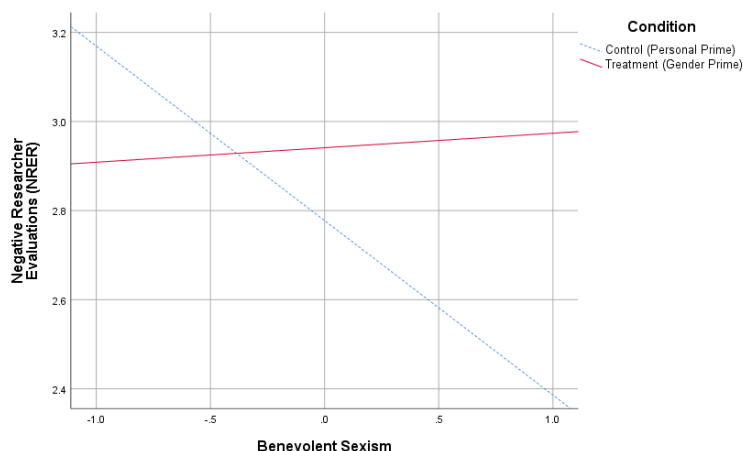
Figure 13 reveals that as Benevolent Sexism increased, the differential effect of priming became significant. Inspection of the interaction using simple slopes revealed it was only when Benevolent Sexism was relatively high (+1SD) that differences between conditions were significant (b = 0.52, SE = 0.13, 95% CI [0.27, 0.78], p < .001), such that evaluations of the author were more negative (Higher NRER) following the gender identity prime than the personal identity prime. When Benevolent Sexism was relatively low (b = -0.23, SE = 0.27, 95% CI [-0.76, 0.30], p = .396) or moderate (b = 0.19, SE = 0.14, 95% CI [-0.08, 0.46], p = .159), differences in evaluations of the author did not significantly differ.

9.2.3   Discussion

The objective of Study 6 was to improve upon Study 5 by increasing the sample size to allow for greater statistical power, and increasing the number of dependent measures of science discrediting behaviour. To that end, Study 5 was successful. However, Study 5 also attempted to contribute to the social identity literature by exploring the differential effect of identity salience on science discrediting. The results for that were somewhat mixed.

In terms of group differences alone, the effect of priming gender identity had no more impact on evaluations of the publication and its author, than did priming personal identity. Furthermore, from a social identity perspective, priming gender identity (vs. personal identity) had no significant impact on the influence of ingroup identification (CSE, SISI) in predicting evaluations. That said, the analysis did reveal that despite no significant group differences, CSE Private continued to significantly predict science discrediting behaviour, such that higher rates of CSE Private predicted greater discrediting. This finding is in line with the results of Study 5.

In addition, the results also revealed that SDO-E was a significant predictor of both publication and author evaluations, such that increasing SDO-E increased negative evaluations of each. This is also in line with the results of Study 5. Finally, where the identity prime appears to have taken effect, is with regard to Benevolent Sexism. Here, Benevolent Sexism refers to the individual's paternalistic, well-intentioned yet misogynist beliefs about the protecting and providing roles of men toward women, in return for their compliance with traditional gender roles. The findings indicate that low rates of Benevolent Sexism predicted greater discrediting of the pro-female leadership publication and its author. However, as BS increased, evaluations of both publication and author became less negative following the personal identity prime. The gender prime appeared not to significantly affect evaluations. Hostile Sexism was also a significant predictor of science discrediting, though it did not significantly differ as a consequence of priming.

Having improved upon two fundamental flaws of Study 5 (increased statistical power, increased dependent measures), the positive predictive nature of CSE Private, SDO-E, Benevolent Sexism, and Hostile Sexism on science discrediting behaviour, is further supported. However, Study 5 also suffered a flaw regarding its use of a non-neutral "control" publication. Study 7 advances the thesis further by providing an alternative control publication, further increasing the number of dependent measures, and providing alternative individual differences to help explain science discrediting behaviour.

9.3 Study 7 – A New Control and The Influence of Precarious Manhood and Collective Narcissism

The objectives of Study 7 were threefold: I. introduce a new "control" publication that makes no mention of gender, II. introduce alternative moderators of male gender-related science discrediting, and III. introduce an additional dependent measure representing hostility toward the author of each publication (treatment and new control).

First, the introduction of a new control publication. Study 5 revealed that male participants discredited research findings that concluded women make for better leaders than men, owing to their increased social intelligence, productivity, and a leadership style befitting the modern workplace (referred to hereafter as the "pro-female leadership" publication). Study 5 also revealed the pro-female leadership publication was more negatively evaluated by male's than a similar publication that concluded no significant difference between genders. This latter publication operated as the "control", despite the Theoretical Framework identifying a lack of distinctiveness as a possible source of social identity threat. Study 5 failed to take this into account. To remedy this, a new control publication was developed. The content of the new control is found in Appendix K. To summarise its content, it reports an investigation similar to the pro-female leadership publication, though whereas the original control focused on gender as the point of comparison (male vs. female leaders), the new control focused on the numerical composition of leadership teams (large vs. small teams), with no reference to gender. The aim of the new control is to provide a truly neutral comparison so far as gender-identity is concerned, thereby allowing a more accurate and generalisable understanding of what moderates the discrediting of the pro-female leadership publication.

Second, two alternative moderators were introduced. Hypotheses 8 and 9 state:

H_8. The act of science discrediting will be moderated by Collective Narcissism (CN), such that males with High Male CN will discredit the science to a greater extent than males with Low Male CN.

H_9. The act of science discrediting will be moderated by Precarious Manhood (PM), such that males with High PM will discredit the science to a greater extent than males with Low PM.

Thus, Study 7 includes measures of male-specific Collective Narcissism (CN) and Precarious Manhood (PM). To reiterate the Literature Review, Collective Narcissism (CN) is a measure of the participants belief that men are exceptional and entitled to privileged treatment, but that this exceptionality is not recognised by others (Golec de Zavala *et al.*, 2020). Those high in CN are likely to react to group-related threats with hostility, which in the context of the present study is captured by science discrediting and Hostile Behavioural Intentions (HBI). Similarly, Precarious Manhood (PM) represents the belief that "manhood" is a precarious social status that is hard won and easily lost (Vandello and Bosson, 2013). For that reason, threats to manhood in the form of an unfavourable comparison of men to women (the pro-female leadership publication) are expected to be responded to with hostility, also.

The third objective was to include an additional dependent measure: Hostile Behavioural Intentions (HBI). The HBI scale has previously been employed to represent retaliatory outgroup hostility in situations of intergroup conflict (Mackie, Devos, and Smith, 2000) and ingroup image threat (Golec de Zavala *et al.*, 2020), such that HBI increases in each situation. HBI is a measure of the individuals desire to oppose, confront, and argue with an outgroup member. In the present study, HBI were aimed toward the author of each publication, with the expectation that HBI would be greater in the pro-female leadership (treatment) condition, than in the control. Furthermore, it was predicted that HBI would be moderated by the same male-specific science discrediting moderators (e.g. strength of male ingroup identification, social dominance orientation, ambivalent sexism, precarious manhood, and collective narcissism).

Study 7 is therefore a direct test of the following hypotheses:

H5. The act of science discrediting will be moderated by the degree to which male's identify with their male social identity, such that high identifiers will discredit the science to a greater extent than low identifiers.

H6. The act of science discrediting will be moderated by Social Dominance Orientation (SDO), such that males with High SDO will discredit the science to a greater extent than males with Low SDO.

H7. The act of science discrediting will be moderated by Ambivalent Sexism (AS), such that males with High AS will discredit the science to a greater extent than males with Low AS.

H8.   The act of science discrediting will be moderated by Collective Narcissism (CN), such that males with High Male CN will discredit the science to a greater extent than males with Low Male CN.

H9.   The act of science discrediting will be moderated by Precarious Manhood (PM), such that males with High PM will discredit the science to a greater extent than males with Low PM.

Hypotheses for Hostile Behavioural Intentions (HBI) are not included here, as their analysis is for exploratory purposes only.

9.3.1   Methods

9.3.1.1 Power Analysis

To detect a relatively small R^2 change (ΔR^2) = .04, with α = .05 and power = .80, G*Power 3.1 (Faul *et al.*, 2007) within a Moderated Multiple Regression (MMR), an estimated minimum sample of N = 199. This is in line with Study 6. However, as the retention rates for Studies 5 and 6 were 82.5% and 77.2%, respectively, a sample of N = 270 was sought.

9.3.1.2 Participants

Two hundred and seventy (N = 270) male respondents aged between 18 and 74 years (M = 38.44, SD = 14.92) were recruited via Prolific. To reduce carryover effects, participants took part in two separate stages, herein referred to as Time I and Time II. Once again, participants were unaware that their taking part at Times I and II were related.

The retention rate for Time II was 88.9% (N = 240). However, one participant (n = 1) was removed after revealing they found the publication difficult to understand (they wrote: "*I found the content boring and hard to actually fully understand what the details were and/or the benefits*"). Another participant (n = 1) answered all questions: "*Not At All True*", and so were subsequently removed

from the sample. Two (*n* = 2) participants failed to accurately interpret the publication, thirteen (*n* = 13) failed the Instructional Manipulation Check (IMC), and one (*n* = 1) consistently appeared as an outlier amongst multiple variables, and so was subsequently removed. The final sample was *N* = 222, aged between 18 and 74 years (*M* = 39.25, *SD* = 15.30). Identical prescreening criteria to that used in Studies 5 and 6 was employed.

9.3.1.3 Design and Procedure

Time I: Participation took place online. Participants were not made aware of the fact that only males were recruited. Participants were invited to take part in a study titled "Gender in Contemporary Society", described on Prolific as an investigation into "*gender-specific attitudes and opinions on modern-day social issues.*" To disguise the fact that only male participants were recruited, the study began (after having obtained informed consent) by asking participants to select their gender. Each question that followed then appeared to have been informed by the participants gender selection.[52] Following their gender selection, the participants gender-derived social identity was primed, after which their gender-specific Collective Self-Esteem (CSE) and Collective Narcissism (CN) were captured, alongside their Social Dominance Orientation (SDO), Ambivalent Sexism (AS), and Precarious Manhood (PM). Participants were paid a fee of £1.10 calculated on a completion time of 10mins at a rate of £6.60 per hour.

Time II: Time II took place one week after Time I. As with Studies 5 – 6, the Time I participants were invited to take part at Time II, though their participation at Time II was ostensibly unrelated to Time I. Time II was titled "How We Perceive Science", and was described on Prolific as an investigation into the public's perception of scientific writing. Time II included two conditions: Treatment vs. Control, allocation to which was determined by Excel's RAND function. In the Treatment condition, participants were presented with the Treatment publication from Studies 5 and 6. Though in a departure from Study 6, the participants gender-derived social identity was not primed prior to their reading of the publication. In the Control condition a new "control"

---

[52] This additional deception may at first seem unnecessary. However, in previous studies when employing Haslam *et al*.'s (1999) "Three Things" gender identity prime (e.g. "*List up to three things that you and most other men do relatively often*"), there has been a tendency for some male participants to view the question as being 'in opposition to women', i.e. '... *that you and most other men do relatively often that women don't*', which isn't the case. (This is reflected in the emails received by the researcher from participants.) Therefore, if the outgroup is made salient by questions relating to the ingroup, it was decided to make the study appear as though it were interested in both gender groups' attitudes and opinions on modern-day social issues, so that it wasn't viewed as a study of one gender vs. another.

publication was introduced. The new "control" made no reference to gender (see Appendix K for the content). Participants were instructed to I. read the publication presented to them, II. summarise it, III. select the sentence (from a possible 3) that best represented its conclusion (this operated as a manipulation check), and IV. answer Likert-style questions relating to it. The answers to the Likert-tyle questions operated as the dependent measures of the present study. Participants were paid a fee of £1.10 calculated on a completion time of 10mins at a rate of £6.60. Participants were then debriefed (see Appendix R).

9.3.1.4 Materials

Appendix S and T provide copies of the questionnaires used at Times I and II. Study 7 questionnaire content differed to Studies 5 and 6 in the following ways.

Time I included no filler items. The Three-Factor Model of Social Identification (TFM; Cameron, 2004) was removed. In its stead, Kroeper, Sanchez, and Himmelstein's (2014) adaptation of Vandello *et al*.'s (2008) Precarious Manhood scale was included, alongside Golec de Zavala *et al*.'s (2013) Collective Narcissism (CN) scale, adapted to male gender. Ambivalent Sexism (AS) was presented on a 7-point scale instead of 6, weighted 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Therefore, all measures at Time I appeared on 7-point scales.

Time II dependent measures (Negative Research Evaluations (NRE), Negative Researcher Evaluations (NRER)) differed in their content to Studies 5 and 6. Table 52 displays the items for each scale, including additional items to compensate for the removal of item 2: "*I think that the results of the study are unambiguous (i.e. they are not open to more than one interpretation)*". Time II also included an additional measure representing Hostile Behavioural Intentions (HBI; Mackie, Devos, and Smith, 2000). Participants were asked: "*To what extent does the research make you want to…*", and was then followed by the three statements listed in Table 52, weighted 1 (*Not at All*) to 7 (*Very Much*).

Table 51 lists each measure and their corresponding Cronbach's alpha (α), representing each scales internal consistency (reliability). Each measure exceeds .70, suggesting an acceptable level of reliability (Taber, 2018). The Single-Item of Social Identification (SISI) (Postmes *et al*., 2013) was not included in Study 7.

Table 51 Internal Consistency of Measures Used at Times I and II

Scale	No. of Items	α
CSE: Membership	4	.75
CSE: Private	4	.81
CSE: Public	4	.73
CSE: Importance to Identity	4	.78
Total CSE (CSE)	16	.86
SDO-D (Pro-Dominance)	8	.82
SDO-E (Antiegalitarianism)	8	.88
Total SDO (SDO)	16	.92
Hostile Sexism	11	.91
Benevolent Sexism	11	.83
Total Sexism (ASI)	22	.90
Precarious Manhood (PM)	6	.85
Collective Narcissism (CN)	5	.76
Negative Research Evaluations (NRE)	7	.92
Negative Researcher Evaluations (NRER)	4	.83
Negative Research Evaluations Total (NRET)	11	.94
Hostile Behavioural Intentions (HBI)	3	.88

Table 52 Additional Measures Introduced at Study 7 Time I and II

Scale	Construct	Scale Items	Source
Precarious Manhood (PM)	Precarious Manhood	1. It's fairly easy for a man to lose his status as a man. 2. A male's status as a real man sometimes depends on how other people view him. 3. A man needs to prove his masculinity. 4. A boy needs to become a man; it doesn't just happen. 5. The title of "manhood" needs to be reserved for those who deserve it. 6. You're not a man if you don't like masculine things.	Kroeper, Sanchez, and Himmelstein's (2014) adaptation of Vandello *et al.* (2008)
Collective Narcissism (CN)	Male Collective Narcissism	1. Men deserve special treatment. 2. I will not be satisfied until men get the respect they deserve. 3. It really makes me angry when others criticise men. 4. If men had a major say in the world, the world would be a much better place. 5. The true worth of men is often misunderstood.	Adapted from Golec de Zavala *et al.* (2013)
Science Discrediting	Negative Research Evaluations (NRE) *Additional Items* Negative Research Evaluations (NRER)	1. I think that this study was a waste of public money. 2. I think that the results of the study are unambiguous (i.e. they are not open to more than one interpretation).[*][†] 3. I think that this study yielded important results.[*] 4. I think that one can draw useful conclusions for real-life from this study.[*] 5. I think that the methodology is fundamentally useless to investigate leadership styles and organisational success. 6. I think that the results of the study are implausible. 7. I was convinced by the findings of the study.[*] 8. Overall, I think the findings of the research are believable.[*] 1. I think the researcher knows a lot about leadership styles and work-place performance.[*] 2. I think the researcher is not very competent. 3. I think the researcher just finds what they want to find. 4. I think the researcher has no idea about what leadership styles work and how they influence organisational success.	Adapted from Nauroth *et al.* (2017) Adapted from Dietz-Uhler (1999) Adapted from Nauroth *et al.* (2017)
Hostile Behavioural Intentions (HBI)	Hostility Toward the Researcher	1. Argue with the researcher about their findings. 2. Oppose the researcher about their findings. 3. Confront the researcher about their findings.	Mackie, Devos, and Smith (2000)

[*] Item reversed.
[†] Item removed.

9.3.2 Results

9.3.2.1 Preliminary Analysis

The assumptions relating to MANOVA and Moderated Multiple Regression (MMR) were all met, except in the case of Social Dominance Orientation (SDO) within the MMRs reported below. The issue was of collinearity, which is discussed later.

To determine whether participants differed in terms of their Collective Self-Esteem (CSE), Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Precarious Manhood, and Collective Narcissism at Time I between the two conditions (Treatment vs Control), two one-way MANOVAs were conducted. The results revealed no significant difference between conditions. The first MANOVA, which included only the subscales for CSE, SDO, and AS, found no significant difference between conditions, F (8, 213) = .68, p = .705, Wilks' Lambda = .98, partial η^2 = .03. Likewise, no difference was observed for the composite scales of Total CSE, Total SDO, and Total Sexism, and Precarious Manhood and Collective Narcissism, F (5, 216) = 0.55, p = .738, Wilks' Lambda = .99, η^2 = .01. Therefore, it may reasonably be concluded that participants did not significantly differ in terms of CSE, SDO, ASI, PM, and CN at Time I between the two conditions.

9.3.2.2 Descriptive Statistics and Bivariate Correlations

Table 53 displays the means and standard deviations of all relevant independent and dependent variables. Tables 54 – 55 display the bivariate correlations for all variables. The tables are split by condition. Table 54 displays the correlations for participants in the Treatment condition, and Table 55 for participants in the Control condition.

Table 53 Descriptive Statistics for Independent and Dependent Variables by Publication Condition

	Treatment (*n* = 114)		Control (*n* = 108)	
	M	*SD*	*M*	*SD*
CSE: Membership	5.13	1.06	5.22	0.98
CSE: Private	5.50	1.14	5.58	1.06
CSE: Public	4.91	1.05	5.02	0.93
CSE: Importance to Identity	4.09	1.38	4.05	1.41
Total CSE	4.90	0.90	4.96	0.82
SDO-D (Pro-Dominance)	2.46	1.05	2.70	1.06
SDO-E (Anti-Egalitarianism)	2.50	1.17	2.67	1.06
Total SDO (SDO)	2.48	1.06	2.69	0.99
Hostile Sexism	3.34	1.30	3.48	1.13
Benevolent Sexism	3.42	1.02	3.59	1.01
Total Sexism (ASI)	3.38	0.98	3.53	0.91
Precarious Manhood (PM)	2.84	1.16	3.03	1.26
Collective Narcissism (CN)	2.88	1.06	3.06	0.99
Negative Research Evaluation (NRE)	2.92	1.30	3.06	1.06
Negative Researcher Evaluation (NRER)	2.85	1.38	2.62	1.05
Negative Research Evaluation Total (NRET)	2.91	1.24	2.96	0.97
Hostile Behavioural Intentions (HBI)	2.35	1.36	2.38	1.17

Discussion here is restricted to the correlations observed between the independent variables (IV) and dependent variables (DV). Discussion does not include the correlations between IVs.

9.3.2.2.1   Treatment Publication: Pro-Female Leadership

The "Treatment" publication concluded that women make for better leaders than men, owing to their increased social intelligence, greater productivity, and a leadership style that befits the modern workplace. Table 54 reveals that none of the four CSE subdimensions (CSE Membership, Private, Public, and Importance to Identity) were significantly related to any of the three science discrediting measures (I. Negative Research Evaluations (NRE), II. Negative Researcher Evaluations (NRER), and Negative Research Evaluations Total (NRET)). This is in line with the correlations reported in Study 6 (Gender Prime Condition).

Likewise, the significant, positive correlations between SDO-D and SDO-E and the two NRET subscales were also in line with the correlations observed in Study 6 (gender prime). This suggests the discrediting the pro-female leadership publication was linked to the participants preference for pro-dominance and anti-egalitarianism, such that greater preference for each was

related to greater science discrediting (and vice versa). In addition, as was also observed in Study 6 (gender prime), greater Hostile Sexism was related to greater science discrediting.

Unique to Study 7 was the inclusion of Precarious Manhood (PM), Collective Narcissism (CN), and Hostile Behavioural Intentions (HBI). Table 54 reveals that Precarious Manhood (PM) was positively, significantly related to both Negative Research Evaluations (NRE) (r = .305, p < .01) and Negative Research*er* Evaluations (NRER) (r = .264, p < .01). Thus, discrediting of the pro-female leadership publication was related to the participants belief that "Manhood" is a precarious status that is hard earned and easily lost. The effects were small to moderate (Cohen, 1988). Precarious Manhood (PM) was also positively related to Hostile Behavioural Intentions (HBI) (r = .266, p < .01) aimed toward the author of the publication. This effect was also small.

Collective Narcissism (CN) revealed a similar pattern. Table 54 reveals that CN was significantly, positively related to NRE (r = .432, p < .01), NRER (r = .432, p < .01), and HBI (r = .418, p < .01). Therefore, beliefs in the extraordinary greatness of "men" were correlated with the negative evaluations of both the publication and its author, as well as the readers hostility toward the author. Though importantly, causation is not inferred here.

9.3.2.2.2 Control Publication: Gender Neutral

The control publication made no reference to gender, and focused instead on the numerical composition of executive teams. Table 55 reveals that CSE Membership was significantly, negatively related to NRE (r = -.220, p < .05) and NRER (r = -.215, p < .05), and CSE Private was significantly, negatively related to NRE (r = -.227, p < .05), though not NRER (r = -.172, p > .05). CSE Public was significantly, negatively related to NRE (r = -.304, p < .01), NRER (r = -.305, p < .01), *and* HBI (r = -.279, p < 01). The effects were small to moderate (Cohen, 1988). This provides the first indication that the new control publication was not perceived to be threatening to social identity.

Table 55 also indicates that none of the dependent measures (NRE, NRER, NRET, and HBI) were significantly related to Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Precarious Manhood, nor Collective Narcissism (CN), again, suggesting the control operated as intended.

Table 54 Bivariate Correlation of Independent and Dependent Measures, Treatment , N = 114

	CSE Member.	CSE Private	CSE Public	CSE Import.	CSE Total	SDO-D	SDO-E	Total SDO	Hostile Sexism	Benev. Sexism	Total Sexism	Prec. MH	Coll. Narc.	Neg. Res. Eval.	Neg. Reser. Eval.	Neg. Res. Total	Hostile Be. Int.
CSE Mem.	1																
CSE Private	.657**	1															
CSE Public	.476**	.518**	1														
CSE Import.	.392**	.432**	.189*	1													
CSE Total	.811**	.849**	.678**	.705**	1												
SDO-D	0.048	0.067	-0.092	.189*	0.086	1											
SDO-E	-0.047	0.037	-0.107	0.142	0.022	.817**	1										
Total SDO	-0.002	0.054	-0.105	0.173	0.054	.948**	.958**	1									
Hostile Sexism	0.129	.242**	-0.056	.409**	.259**	.674**	.658**	.698**	1								
Benev. Sexism	0.174	0.136	-0.033	.362**	.234*	.358**	.271**	.327**	.425**	1							
Total Sexism	0.176	.231*	-0.054	.459**	.293**	.632**	.577**	.633**	.883**	.800**	1						
Precarious Manhood	-0.114	-0.107	-.299**	.193*	-0.083	.494**	.500**	.522**	.528**	.395**	.555**	1					
Collective Narcissism	0.121	0.146	-0.129	.288**	0.161	.575**	.553**	.591**	.682**	.296**	.606**	.517**	1				
Neg. Res. E.	-0.144	0.063	-0.167	0.016	-0.067	.416**	.508**	.487**	.528**	-0.039	.329**	.305**	.432**	1			
Neg. Reser. E.	-0.054	0.033	-0.128	0.041	-0.030	.387**	.436**	.433**	.481**	-0.012	.312**	.264**	.432**	.824**	1		
Neg. Res. Total	-0.128	0.060	-0.163	0.027	-0.058	.419**	.502**	.486**	.529**	-0.029	.335**	.302**	.451**	.982**	.907**	1	
Hostile Be. Int.	-0.078	-0.006	-0.125	0.144	-0.002	.394**	.426**	.431**	.471**	-0.029	.297**	.266**	.418**	.639**	.628**	.650**	1

Table 55 Bivariate Correlation of Independent and Dependent Measures, Control, N = 108

	CSE Member.	CSE Private	CSE Public	CSE Import.	CSE Total	SDO-D	SDO-E	Total SDO	Hostile Sexism	Benev. Sexism	Total Sexism	Prec. MH	Coll. Narc.	Neg. Res. Eval.	Neg. Reser. Eval.	Neg. Res. Total	Hostile Be. Int.
CSE Mem.	1																
CSE Private	.501**	1															
CSE Public	.434**	.565**	1														
CSE Import.	.190*	.391**	.232*	1													
CSE Total	.697**	.826**	.688**	.694**	1												
SDO-D	0.028	.210*	0.107	.377**	.294**	1											
SDO-E	0.063	.198*	0.097	.228*	.236*	.798**	1										
Total SDO	0.046	.213*	0.104	.317**	.277**	.947**	.948**	1									
Hostile Sexism	0.171	.276**	-0.035	.371**	.317**	.549**	.591**	.603**	1								
Benev. Sexism	0.126	.335**	.201*	.486**	.427**	.395**	.318**	.371**	.443**	1							
Total Sexism	0.176	.358**	0.090	.501**	.434**	.560**	.543**	.580**	.867**	.831**	1						
Precarious Manhood	-0.026	0.020	-0.035	.281**	0.132	.463**	.441**	.485**	.521**	.528**	.617**	1					
Collective Narcissism	0.006	0.081	-0.134	.255**	0.107	.360**	.430**	.419**	.641**	.242*	.532**	.364**	1				
Neg. Res. E.	-.220*	-.227*	-.304**	-0.136	-.275**	-0.049	0.025	-0.011	-0.014	-0.167	-0.102	-0.055	0.103	1			
Neg. Reser. E.	-.215*	-0.172	-.305**	-0.108	-.238*	-0.005	0.066	0.037	0.052	-0.066	-0.004	0.067	0.092	.698**	1		
Neg. Res. Total	-.235*	-.227*	-.331**	-0.150	-.291**	-0.052	0.033	-0.007	0.000	-0.167	-0.093	-0.034	0.114	.970**	.832**	1	
Hostile Be. Int.	-0.125	-0.135	-.279**	-0.082	-0.184	-0.039	0.038	0.003	-0.007	-0.049	-0.032	0.012	0.041	.598**	.607**	.648**	1

9.3.2.3 Science Discrediting and Hostile Behavioural Intentions by Condition

Table 53 (above) reveals that Negative Research Evaluations (NRE), Negative Researcher Evaluations (NRER), Negative Research Evaluations Total (NRET), and Hostile Behavioural Intentions (HBI) each differed between experimental conditions. For instance, NRE were *higher* in the Control condition (NRE$_{Control}$: M = 3.06, SD = 1.06) than in the Treatment condition (NRE$_{Treatment}$: M = 2.92, SD = 1.30), while NRER were *lower* in the Control condition (NRER$_{Control}$: M = 2.62, SD = 1.05) than in the Treatment (NRER$_{Treatment}$: M = 2.85, SD = 1.38). Likewise, HBI were marginally lower in the Control (HBI$_{Control}$: M = 2.38, SD = 1.17) compared to the Treatment (HBI$_{Treatment}$: M = 3.06, SD = 1.06). To establish whether these differences were significant, a series of independent samples *t*-tests were conducted.

Table 56 displays the results. As Table 56 reveals, the mean differences in NRE, NRER, NRET, and HBI between the Treatment and Control conditions were non-significant. That is to say, evaluations of the two publications and their authors did not differ between the two experimental groups. Likewise, readers were just as likely to want to argue with, confront, and oppose the author of the treatment publication, as they were the author of the control publication. No significant differences were observed.

Table 56 Results of Independent Samples t-Tests on the Dependent Measures by Publication Condition

	Treatment		Control			
	M	*SD*	*M*	*SD*	*t*	*p*
NRE	2.92	1.30	3.06	1.06	0.91	.365
NRER	2.85	1.38	2.62	1.05	-1.40	.162
NRET	2.91	1.24	2.96	0.97	0.37	.711
HBI	2.35	1.36	2.38	1.17	0.17	.866

NRE = Negative Research Evaluations; NRER = Negative Researcher Evaluations;
NRET = Negative Research Evaluations Total; HBI = Hostile Behavioural Intentions
N = 222

9.3.2.4 The Moderating Effect of Collective Self-Esteem (CSE), Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Precarious Manhood (PM), and Collective Narcissism (CN) on Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by Experimental Condition

Hypotheses 5 – 9 predict that strength of social identification (represented by CSE) (H$_5$), social dominance orientation (H$_6$), ambivalent sexism (H$_7$), collective narcissism (H$_8$), and precarious

manhood (H_9) will each moderate science discrediting, such that higher rates of each will result in increased discrediting behaviour of the pro-female leadership publication (relative to the control). To test these hypotheses, a series of hierarchical Moderated Multiple Regressions (MMR) were conducted. All continuous predictors were mean centred and the two conditions were dummy coded (1 = *Treatment*, 0 = *Control*) (Aiken and West, 1991).

With interactions having been hypothesised for, both significant and non-significant interactions are reported. Discussion begins first with each of the hypothesised interactions for Negative Research Evaluations (NRE) and Negative Research*er* Evaluations (NRER), followed by similar analyses for Hostile Behavioural Intentions (HBI). HBI are not reported in full in the main body of the thesis as they were not formally hypothesised for, and are instead summarised below. Appendix U contains a full account of the MMRs for HBI.

9.3.2.4.1 Testing Collective Self-Esteem (CSE) as a Moderator of Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by Experimental Condition

Analysis first looked at the four CSE subdimensions as potential moderators in the relationship between experimental condition and Negative Research Evaluations (NRE) *and* Negative Research*er* Evaluations (NRER). Table 57 displays the results.

Table 57 Moderation Results of Collective Self-Esteem (CSE) Subscales on the Relationship Between Publication Condition and A. Negative Research Evaluations (NRE) and B. Negative Researcher Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	3.08	0.11		0.000	2.63	0.12		0.000
Condition	-0.18	0.16	-0.07	0.256	0.20	0.16	0.08	0.218
CSE Membership	-0.19	0.10	-0.16	0.051	-0.11	0.10	-0.09	0.294
CSE Private	0.19	0.10	0.18	0.055	0.14	0.10	0.12	0.188
CSE Public	-0.28	0.10	-0.24	0.003	-0.28	0.10	-0.22	0.006
CSE Importance	-0.02	0.06	-0.03	0.724	0.00	0.06	0.00	0.997
Step Two								
Constant	3.08	0.11		0.000	2.64	0.12		0.000
Condition	-0.18	0.15	-	0.246	0.20	0.16	-	0.225
CSE Membership	-0.10	0.13	-	0.443	-0.12	0.14	-	0.382
CSE Private	-0.02	0.14	-	0.862	0.06	0.15	-	0.689
CSE Public	-0.27	0.15	-	0.071	-0.31	0.16	-	0.047
CSE Importance	-0.04	0.09	-	0.637	-0.03	0.09	-	0.709
Condition x Mem	-0.24	0.19	-	0.221	0.00	0.21	-	0.984
Condition x Pri	0.43	0.20	-	0.031	0.15	0.21	-	0.476
Condition x Pub	-0.01	0.19	-	0.976	0.08	0.20	-	0.702
Condition x Imp	0.05	0.12	-	0.663	0.07	0.13	-	0.581

R^2 = .08 for Step 1 (p = .004); ΔR^2 = .03 for Step 2 (p = .146). N = 222.

R^2 = .06 for Step 1 (p = .028); ΔR^2 = .01 for Step 2 (p = .622). N = 222.

9.3.2.4.1.1 Negative Research Evaluations (NRE)

Table 57 A. reveals that evaluations of the two publications differed as a consequence of CSE. Step I explained a statistically significant 7.6% of the variance in NRE, F (5, 216) = 3.55, p = .004. This increased to 10.5% at Step 2, F (9, 212) = 2.77, p = .004, owing to an additional non-significant 2.9%, ΔR^2 = .03, F change (4, 212) = 1.73, p = .146. At Step 2, the Condition x CSE Private interaction was significant (b = 0.43, p = .031). However, the interactions for Condition x CSE Membership (b = -0.24, p = .221), CSE Public (b = -0.01, p = .976), and CSE Importance to Identity (b = 0.05, p .663) were all non-significant, requiring interpretation of their main effects at Step I. Step I indicates that all else being equal, CSE Public ($β$ = -0.24, p = .003) and CSE Membership ($β$ = -0.16, p = .051) were significant, negative predictors of Negative Research Evaluations (NRE).

The contribution of the significant Condition x CSE Private interaction at Step 2 was re-analysed following the removal of the non-significant interactions (Dawson, 2014). Table 58 displays the results.

*Table 58 Moderation Results of CSE Private on the Relationship Between
Publication Condition and Negative Research Evaluations (NRE)*

	b	*SE b*	*β*	*p*
Step Two				
Constant	3.08	0.11		0.000
Condition	-0.18	0.15	-	0.246
CSE Membership	-0.21	0.10	-	0.028
CSE Private	0.02	0.12	-	0.871
CSE Public	-0.28	0.09	-	0.004
CSE Importance	-0.02	0.06	-	0.734
Condition x CSE Private	0.32	0.14	-	0.023

$R^2 = .08$ for Step 1 ($p = .004$); $\Delta R^2 = .02$ for Step 2 ($p = .023$).
$N = 222$.

Table 58 shows that within the new model, Step 2 explained 9.8% of the variance in NRE, F (6, 215) = 3.89, p = .001, owing to a significant increase of 2.2% on Step I, explained by the Condition x CSE Private interaction term, ΔR^2 = .02, F change (1, 215) = 5.22, p = .023. The Condition x CSE Private interaction was found to increase in significance (b = 0.32, p = .023). Figure 14 displays the interaction.

As illustrated by Figure 14, simple slopes revealed that when CSE Private was relatively low (-1SD), differences in NRE significantly differed between the two conditions (b = -0.51, SE = 0.21, 95% CI [-0.93, -0.10], p = .017), as the treatment publication received more positive evaluations (Lower NRE) than the control. However, for those participants with moderate (b = -0.19, SE = 0.15, 95% CI [-0.49, 0.10], p = .214) to relatively high (+1SD) CSE Private (b = 0.21, SE = 0.23, 95% CI [-0.24, 0.67], p = .355), evaluations of the two publications failed to significantly differ. In fact, evaluations of the control publication remained similarly negative irrespective of CSE Private, whereas the treatment publication received more negative evaluations as CSE Private increased. Thus, so far as gender-derived social identity is concerned, increases in CSE Private predicted more negative evaluations of the treatment publication. But unfortunately, the control publication was similarly negatively evaluated.

Figure 14 Simple Slopes of Publication Condition (Treatment vs. New Control) for CSE Private on Negative Research Evaluations
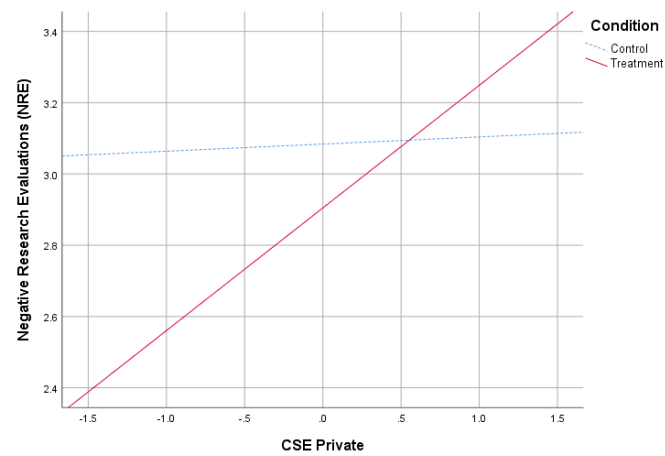
9.3.2.4.1.2 Negative Research<u>er</u> Evaluations (NRER)

Table 57 B. (above) reveals no significant interactions. Therefore, interpretation is restricted to Step I. Step I accounted for 5.6% of the variance in NRER, F (5, 216) = 2.57, p = .028. CSE Public was the only significant predictor of NRER (β = -0.22, p = .006), all else equal. Therefore, as the individual's perception of how others viewed their gender identity increased in positivity, their evaluations of the two author became less negative in both conditions.

9.3.2.4.2 Testing Social Dominance Orientation as a Moderator of Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by Experimental Condition

Analysis of the two SDO subdimensions on the relationship between experimental condition and NREs *and* NRER, resulted in significant changes to the models at Step 2 with the inclusion of the interaction terms, yet no significant interactions. This outcome is typically attributed to

collinearity[53], such that the two independent variables (e.g. SDO-D and SDO-E) are highly correlated. Evidence of collinearity was provided by relatively low tolerance scores (SDO-D = .344, SDO-E = .347), which suggest that 65 – 66% of the variance explained by one variable was also explained by the other. Collinearity was also evidenced by relatively high VIFs (Variance Inflation Factors) of 2.91 for SDO-D (1 / .344) and 2.88 for SDO-E (1 / .347) (for a cut-off at 3; Hair *et al.*, 2014). However, while the values aren't extreme (VIF cut-off may be as high as 10), the models reported in Table 59 suggests collinearity may be an issue. To remedy this, separate regressions were run, whereby Condition and SDO-D were entered at Step I, and their product (Condition x SDO-D) at Step 2 (Table 60), and then again for SDO-E (Table 61). The issue with this approach is the potential for specification error, i.e. the models being used (omitting SDO-E from a model with SDO-D, and vice versa) may not be representative or true to life, as SDO Total is intended to be captured using both dimensions. Therefore, it is important to note that while Table's 60 and 61 represent MMRs for SDO-D and SDO-E, respectively, as moderators on the relationship between experimental condition and Negative Research Evaluations (NRE) *and* Negative Research<u>er</u> Evaluations (NRER), there is likely to be considerable overlap between SDO-D and SDO-E in determining each dependent measure.

Before progressing to the two separate MMRs, Table 59 displays the results of the two SDO measures on the relationship between experimental condition and NRE (A.) *and* NRER (B.), including both interaction terms. Note, Step 2 of A. (NRE) explained an additional 6.4% of the variance on NREs, ΔR^2 = .06, F change (2, 216) = 8.25, p < .001, despite the non-significant interactions (Condition x SDO-D: b = 0.19, p = .416; Condition x SDO-E: b = 0.38, p = .091). Likewise, at Step 2 of Table 59 B. (NRER), an additional 4.5% of the variance in NRER was explained by the inclusion of the interactions, ΔR^2 = .05, F change (2, 216) = 5.63, p = .004, despite non-significant interactions (Condition x SDO-D: b = 0.28, p = .271; SDO-E: b = 0.24, p = .325).

---

[53] Hair *et al.* (2014) make the distinction between 'collinearity' and 'multicollinearity', noting the former refers to high correlation between two independent variables, and the latter between three or more. Though the two are often used interchangeably.

Table 59 Moderation Results of Social Dominance Orientation (SDO) Subscales on the Relationship Between Publication Condition and A. Negative Research Evaluations (NRE) and B. Negative Researcher Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	3.04	0.11		0.000	2.60	0.11		0.000
Condition	-0.10	0.15	-0.04	0.506	0.28	0.16		0.082
SDO-D	-0.12	0.12	-0.11	0.321	-0.04	0.13		0.733
SDO-E	0.42	0.12	0.40	0.000	0.35	0.12		0.004
Step Two					**Step Two**			
Constant	3.07	0.11		0.000	2.62	0.11		0.000
Condition	-0.10	0.15	-	0.482	0.28	0.16		0.078
SDO-D	-0.19	0.17	-	0.255	-0.16	0.18		0.373
SDO-E	0.18	0.17	-	0.289	0.19	0.18		0.279
Condition x SDO-D	0.19	0.24	-	0.416	0.28	0.25		0.271
Condition x SDO-E	0.38	0.23	-	0.091	0.24	0.24		0.325

R^2 = .17 for Step 1 (p < .000); ΔR^2 = .06 for Step 2 (p < .001). N = 222.

R^2 = .09 for Step 1 (p < .001); ΔR^2 = .05 for Step 2 (p = .004). N = 222.

9.3.2.4.2.1 Social Dominance Orientation – Pro-Dominance (SDO-D)

Table 60 displays the results of the MMR for SDO-D on the relationship between experimental condition and Negative Research Evaluations (NRE) *and* Negative Researcher Evaluations (NRER).

For Negative Research Evaluations (NRE), at Step I the model explained 4% of the variance in NRE, F (2, 219) = 5.58, p = .004, which increased to 11% at Step 2, F (3, 218) = 9.02, p < .001. The increase from Step I to 2 was significant, ΔR^2 = .06, F change (1, 218) = 15.19, p < .001, and the interaction between Condition x SDO-D was significant, also (b = 0.56, p < .001). Figure 15 displays the interaction. From simple slopes analysis, it was revealed that evaluations of the two publications differed as a consequence of low (-1SD) SDO-D (b = -0.77, SE = 0.23, 95% CI [-1.23, -0.31], p = .001), where the treatment publication received less negative evaluations than the control, and high (+1SD) SDO-D (b = 0.57, SE = 0.23, 95% CI [0.12, 1.01], p = .013), where the treatment publication received more negative evaluations. No differences were observed when SDO-D was moderate (b = -0.14, SE = 0.15, 95% CI [-0.44, 0.16], p = .373.

Table 60 Moderation Results of Social Dominance Orientation (SDO) Pro-Dominance (SDO-D) on the Relationship Between Publication Condition and A. Negative Research Evaluations (NRE) and B. Negative Researcher Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	3.03	0.11		0.000	2.59	0.12		0.000
Condition	-0.09	0.16	-0.04	0.579	0.29	0.16	0.12	0.074
SDO-D	0.24	0.07	0.21	0.002	0.26	0.08	0.22	0.001
Step Two					**Step Two**			
Constant	3.07	0.11		0.000	2.62	0.11		0.000
Condition	-0.09	0.15	-	0.548	0.29	0.16	-	0.071
SDO-D	-0.05	0.10	-	0.637	0.00	0.11	-	0.965
Condition x SDO-D	0.56	0.14	-	0.000	0.51	0.15	-	0.001

R^2 = .05 for Step 1 (p = .004); ΔR^2 = .06 for Step 2 (p < .001). N = 222. *R^2 = .06 for Step 1 (p = .002); ΔR^2 = .05 for Step 2 (p = .001). N = 222.*

For Negative Researcher Evaluations (NRER), Table 60 B. reveals that at Step I the model explained 6% of the variance in NRER, $F_{(2, 219)}$ = 6.62, p = .002. Step 2 explained 10.5%, $F_{(3, 218)}$ = 8.51, p < .001, owing to an increase of 4.8% explained by the interaction of Condition x SDO-D (b = 0.51, p = .001), ΔR^2 = .05, F change $_{(1, 218)}$ = 11.64, p < .001. Figure 16 illustrates the interaction. Using simple slopes it was revealed that evaluations of each publications author differed where SDO-D was relatively high (+1SD), at which point the author of the treatment publication was more negatively evaluated than the author of the control publication (b = 0.89, SE = 0.24, 95% CI [0.42, 1.36], p = .013). Evaluations were not significantly different where SDO-D was relatively low (-1SD; p = .174) or moderate (p = .113).

Figure 15 Simple Slopes of Publication Condition (Treatment vs. New Control) for SDO-D on Negative Research Evaluations
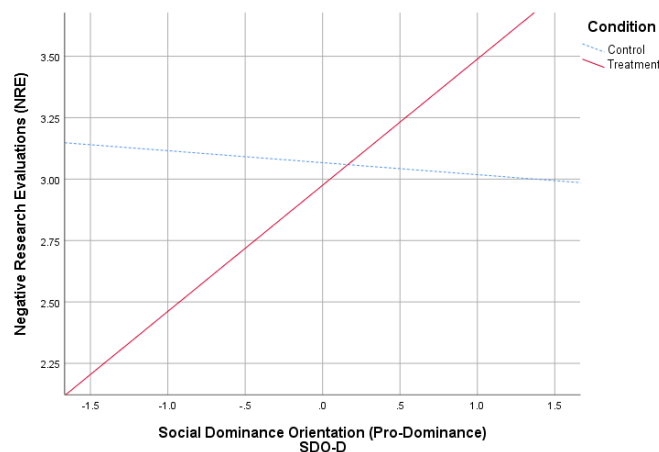
Figure 16 Simple Slopes of Publication Condition (Treatment vs. New Control) for SDO-D on Negative Researcher Evaluations
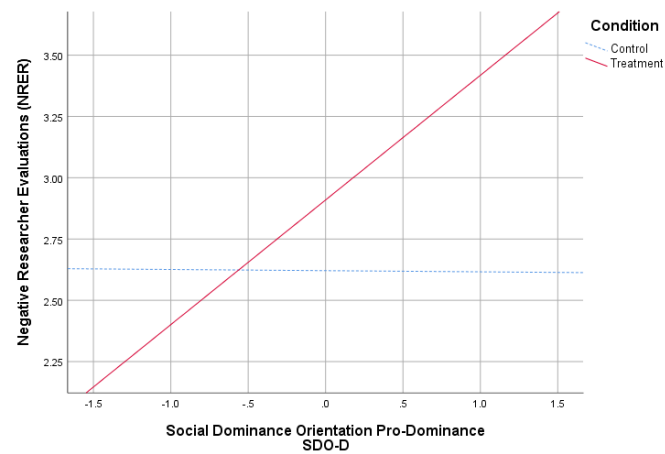
9.3.2.4.2.2 Social Dominance Orientation – Anti-Egalitarianism (SDO-E)

Table 61 displays the results of the MMR for SDO-E on the relationship between experimental condition and Negative Research Evaluations (NRE) *and* Negative Research<u>er</u> Evaluations (NRER). For both NRE and NRER, significant interactions were observed. Table 61 A. reveals the Condition x SDO-E interaction was significant and positive for NRE (b = 0.54, p < .001), and Table 61 B. reveals a similar outcome for NRER (b = 0.45, p = .002). Figure's 17 and 18 display the interactions as they relate to NRE and NRER, respectively.

Table 61 Moderation Results of Social Dominance Orientation (SDO) Anti-Egalitarianism (SDO-E) on the Relationship Between Publication Condition and A. Negative Research Evaluations (NRE) and B. Negative Researcher Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	3.03	0.11		0.000	2.59	0.11		0.000
Condition	-0.09	0.15	-0.04	0.562	0.29	0.16	0.12	0.075
SDO-E	0.33	0.07	0.31	0.000	0.32	0.07	0.29	0.000
Step Two					**Step Two**			
Constant	3.06	0.11		0.000	2.61	0.11		0.000
Condition	-0.09	0.15	-	0.526	0.28	0.16	-	0.073
SDO-E	0.03	0.10	-	0.800	0.07	0.11	-	0.536
Condition x SDO-E	0.54	0.13	-	0.000	0.45	0.14	-	0.002

Step 1 R^2 = .10, F (2, 219) = 12.04, p < .001.
ΔR^2 = .06 for Step 2, F change (1, 218) = 16.29, p < .001.
N = 222.

Step 1 R^2 = .09, F (2, 219) = 11.08, p < .001. ΔR^2 = .04 for Step 2, F change (1, 218) = 10.18, p = .002. N = 222.

Figure 17 indicates that evaluations of the two publications differed as a consequence of the participants SDO-E. Probing the interaction revealed that publication evaluations differed when SDO-E was both relatively low (-1SD) (*b* = -0.82, *SE* = 0.23, 95% CI [-1.27, -0.36], *p* < .001) and relatively high (+1SD) (*b* = 0.60, *SE* = 0.23, 95% CI [0.15, 1.04], *p* = .009). When SDO-E was low, evaluations of the pro-female leadership publication were more positive (Lower NRE) than evaluations of the control publication. However, when SDO-E was high, evaluations of the pro-female leadership publication became significantly more negative (Higher NRE) by comparison to evaluations of the control. For evaluations of the author (NRER) (Figure 18), a difference in evaluations differed between publications only when SDO-E was high (+1SD) (*b* = 0.86, *SE* = 0.24, 95% CI [0.39, 1.32], *p* < .001), which resulted in more negative (Higher NRER) evaluations of the author of the pro-female leadership publication compared to the control.

Figure 17 Simple Slopes of Publication Condition (Treatment vs. New Control) for SDO-E on Negative Research Evaluations

Figure 18 Simple Slopes of Publication Condition (Treatment vs. New Control) for SDO-E on Negative Research<u>er</u> Evaluations
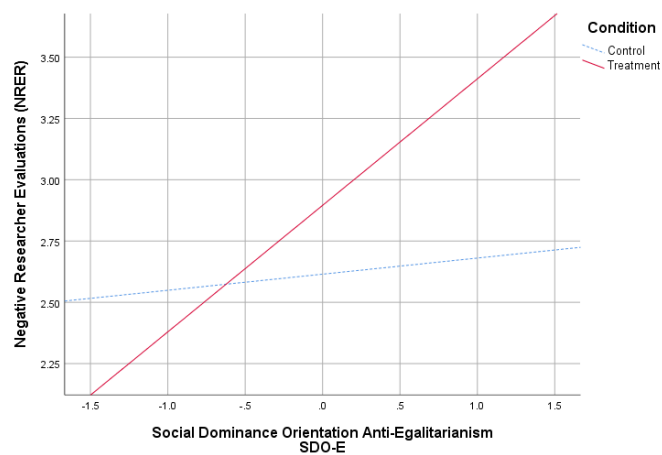
9.3.2.4.3 Testing Ambivalent Sexism as a Moderator of Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by Experimental Condition

The results reported in Table 62 (A. and B.) reveal that at Step 2 of both models, Benevolent Sexism was *not* a significant moderator. Therefore, interpretation of Benevolent Sexism is

restricted to Steps I. For Negative Research Evaluations (NRE), Benevolent Sexism was a significant, negative predictor of Negative Research Evaluations (NRE) (β = -0.28, p < .001). This pattern was observed for Negative Research<u>er</u> Evaluations, also (β = -0.21, p = .003). Therefore, all else being equal, as Benevolent Sexism increased, the participants evaluations of both publications and their authors became more positive (Lower NRER). The non-significant interactions relating to NRE (Condition x Benevolent Sexism: b = -0.20, p = .194) and NRER (Condition x Benevolent Sexism: b = -0.25, p = .138) suggest this held true for both publications.

For Hostile Sexism, Table 62 A. and B. display significant Condition x Hostile Sexism interactions for NRE (b = 0.59, p < .001) and NRER (b = 0.54, p < .001). To reiterate, Hostile Sexism refers to the male participants misogynistic prejudices toward women. This includes their perception of gender equality as being an attack on masculinity and traditional values (Grubbs, 2017), and their belief in the inferiority of women (Hack, 2017). The significant interactions prompted the re-running of the regression models, with the non-significant Condition x Benevolent Sexism interactions removed. Table 63 displays the results.

Table 62 Moderation Results of Ambivalent Sexism (AS) Subscales on the Relationship Between Publication Condition and A. Negative Research Evaluations (NRE) and B. Negative Research<u>er</u> Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	3.06	0.11		0.000	2.61	0.11		0.000
Condition	-0.14	0.15	-0.06	0.352	0.25	0.16	0.10	0.111
Hostile Sexism	0.42	0.07	0.43	0.000	0.41	0.07	0.40	0.000
Benevolent Sexism	-0.33	0.08	-0.28	0.000	-0.25	0.08	-0.21	0.003
Step Two					**Step Two**			
Constant	3.07	0.10		0.000	2.62	0.11		0.000
Condition	-0.14	0.14	-	0.323	0.25	0.15	-	0.103
Hostile Sexism	0.07	0.10	-	0.481	0.09	0.11	-	0.383
Benevolent Sexism	-0.21	0.11	-	0.062	-0.11	0.12	-	0.339
Condition x Hostile	0.59	0.13	-	0.000	0.54	0.14	-	0.000
Condition x Benev.	-0.20	0.15	-	0.194	-0.25	0.17	-	0.138

Step 1 R^2 = .16, F (3, 218) = 14.20, p < .001.
ΔR^2 = .08 for Step 2, F change (2, 216) = 10.63, p < .001.
N = 222.

Step 1 R^2 = .14, F (3, 218) = 12.07, p < .001. ΔR^2 = .06 for Step 2, F change (2, 216) = 7.49, p = .001. N = 222.

Table 63 (A. and B.) displays the results of regressing the interaction of Condition x Hostile Sexism on NRE (A.) and NRER (B.), while controlling for Condition and Benevolent Sexism. For both NRE (b = 0.52, p < .001) and NRER (b = 0.45, p < .001), the interactions were significant and positive. Figure's 19 and 20 display the interactions. With regard to Figure 19, simple slopes revealed that

evaluations of the two publications significantly differed when the participants Hostile Sexism was relatively low (-1SD) (b = -0.82, SE = 0.21, 95% CI [-1.24, -0.42], $p < .001$), resulting in the pro-female leadership publication receiving less negative evaluations (Low NREs) than the control publication. Likewise, when Hostile Sexism was relatively high (+1SD) (b = 0.50, SE = 0.20, 95% CI [0.11, 0.89], p = .014), the pro-female leadership publication received more negative evaluations (High NRE) than the control. No significant difference was observed when Hostile Sexism was moderate (p = .396).

In terms of author evaluations, Figure 20 and simple slopes reveal NRER significantly differed when Hostile Sexism was relatively high (+1SD) (b = 0.80, SE = 0.22, 95% CI [0.37, 1.22], $p < .001$), causing the author of the treatment publication to receive more negative evaluations than the author of the control. No significant difference was observed when Hostile Sexism was relatively low (-1SD) (p = .125). When moderate, the difference in evaluations approached significance (b = 0.26, SE = 0.15, 95% CI [-0.04, 0.56], p = .083).

Table 63 Moderation Results of Hostile Sexism on the Relationship Between Publication Condition and
A. Negative Research Evaluations (NRE) and B. Negative Researcher Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	$SE\ b$	β	p	b	$SE\ b$	β	p
Step One					**Step One**			
Constant	3.06	0.11		0.000	2.61	0.11		0.000
Condition	-0.14	0.15	-0.06	0.352	0.25	0.16	0.10	0.111
Hostile Sexism	0.42	0.07	0.43	0.000	0.41	0.07	0.40	0.000
Benevolent Sexism	-0.33	0.08	-0.28	0.000	-0.25	0.08	-0.21	0.003
Step Two					**Step Two**			
Constant	3.08	0.10		0.000	2.63	0.11		0.000
Condition	-0.14	0.14	-	0.319	0.25	0.15	-	0.106
Hostile Sexism	0.11	0.10	-	0.238	0.14	0.10	-	0.157
Benevolent Sexism	-0.31	0.08	-	0.000	-0.24	0.08	-	0.004
Condition x Hostile	0.52	0.12	-	0.000	0.45	0.13	-	0.000

R^2 = .16 for Step 1 (p < .001): ΔR^2 = .07 for Step 2 (p < .001).
N = 222.

R^2 = .14 for Step 1 (p < .001): ΔR^2 = .05 for Step 2 (p = .001). N = 222.

Figure 19 Simple Slopes of Publication Condition (Treatment vs. New Control) for Hostile Sexism on Negative Research Evaluations
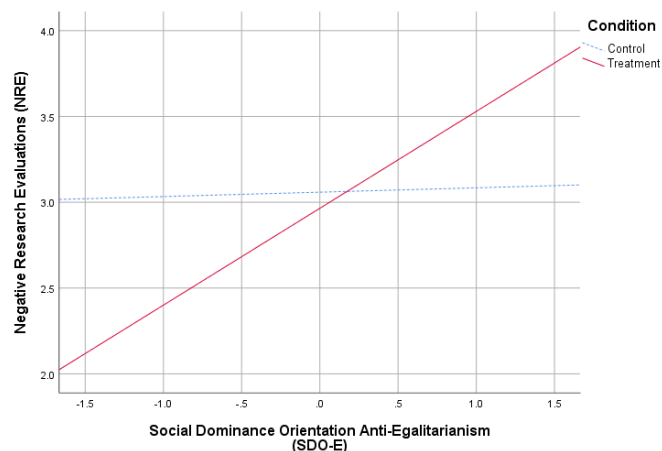

Figure 20 Simple Slopes of Publication Condition (Treatment vs. New Control) for Hostile Sexism on Negative Research<u>er</u> Evaluations
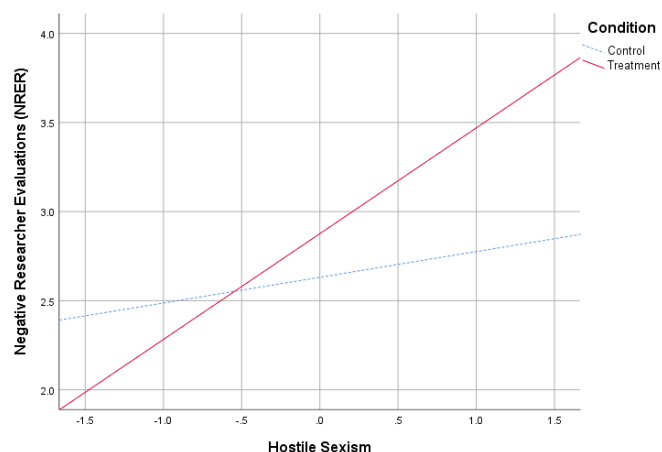
9.3.2.4.4 Testing Precarious Manhood (PM) as a Moderator of Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by Experimental Condition

Table 64 displays the results of the MMRs for Precarious Manhood (PM). As Table 64 (A. and B.) reveals, significant interactions were observed for evaluations of both the publications (NRE) and

their authors (NRER). For NRE, Step I was found to account for a near significant 2.3% of the variance in publication evaluations, $F(2, 219) = 2.59$, $p = .078$. This increased to a significant 6.2% at Step 2, $F(3, 218) = 4.79$, $p = .003$, owing to $\Delta R^2 = .04$, F change $(1, 218) = 9.02$, $p = .003$. The significant, positive Condition x PM interaction ($b = 0.39$, $p = .003$) is illustrated by Figure 21. Figure 21 and simple slopes revealed that it was only when PM was relatively low (-1SD) that evaluations of the publications differed ($b = -0.67$, $SE = 0.24$, 95% CI [-1.15, -0.20], $p = .006$), such that evaluations of the pro-female leadership publication were less negative (Low NRE) than evaluations of the control publication. Differences in publication evaluation failed to reach significance when PM was moderate ($p = .564$) and relatively high (+1SD) ($p = .106$), though evaluations were in the expected direction such that High PM resulted in negative evaluations of the pro-female leadership publication.

Table 64 B. presents the results for NRER. At Step I, the model explained 3.9% of the variance, $F(2, 219) = 4.47$, $p = .013$. This increased to 5.5% at Step 2, $F(3, 218) = 4.25$, $p = .006$, owing to $\Delta R^2 = .02$, F change $(1, 218) = 3.70$, $p = .056$. The near-significant Condition x PM interaction ($b = 0.26$, $p = .056$) is illustrated by Figure 22, which indicates that evaluations of the two authors differed when PM was relatively high (+1SD), with the treatment publication's author receiving more negative evaluations (High NRER) than the author of the control. This was confirmed by simple slopes, which revealed a significant difference only at +1SD of PM ($b = 0.59$, $SE = 0.23$, 95% CI [0.13, 1.05], $p = .013$), and a difference that approached significance at moderate PM ($b = 0.28$, $SE = 0.16$, 95% CI [-0.04, 0.61], $p = .083$). No significant difference was observed when PM was relatively low (-1SD) ($p = .676$).

Table 64 Moderation Results of Precarious Manhood (PM) on the Relationship Between Publication Condition and A. Negative Research Evaluations (NRE) and B. Negative Researcher Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	3.05	0.11		0.000	2.60	0.12		0.000
Condition	-0.12	0.16	-0.05	0.460	0.27	0.16	0.11	0.106
Precarious Manhood	0.14	0.07	0.14	0.038	0.18	0.07	0.18	0.009
Step Two								
Constant	3.07	0.11		0.000	2.61	0.12		0.000
Condition	-0.12	0.16	-	0.452	0.27	0.16	-	0.104
Precarious Manhood	-0.05	0.09	-	0.602	0.06	0.09	-	0.546
Condition x PM	0.39	0.13	-	0.003	0.26	0.14	-	0.056

$R^2 = .02$ for Step 1 ($p = .078$); $\Delta R^2 = .04$ for Step 2 ($p = .003$). N = 222.

$R^2 = .04$ for Step 1 ($p = .013$); $\Delta R^2 = .02$ for Step 2 ($p = .056$). N = 222.

Figure 21 Simple Slopes of Publication Condition (Treatment vs. New Control) for Precarious Manhood on Negative Research Evaluations
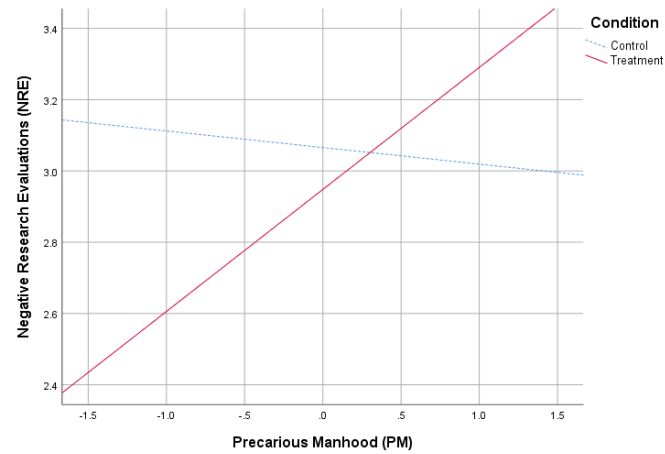
Figure 22 Simple Slopes of Publication Condition (Treatment vs. New Control) for Precarious Manhood on Negative Research<u>er</u> Evaluations
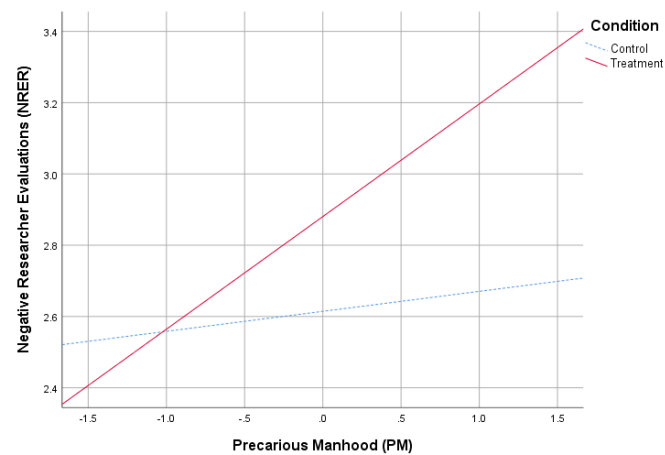
9.3.2.4.5 Testing Collective Narcissism (CN) as a Moderator of Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by Experimental Condition

Collective Narcissism (CN) was the final moderator to be tested in the relationship between experimental condition and Negative Research Evaluations (NRE) *and* Negative Research<u>er</u>

Evaluations (NRER). As Table 65 (A. and B.) indicate, significant interactions were observed for both. Figure 23 displays the interaction for Condition x CN for NRE (b = 0.42, p = .005) and Figure 24 for NRER (b = 0.47, p = .003).

Table 65 Moderation Results of Collective Narcissism (CN) on the Relationship Between Publication Condition and A. Negative Research Evaluations (NRE) and B. Negative Researcher Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	3.03	0.11		0.000	2.59	0.11		0.000
Condition	-0.08	0.15	-0.04	0.587	0.29	0.16	0.12	0.066
Collective Narcissism	0.34	0.07	0.29	0.000	0.35	0.08	0.29	0.000
Step Two								
Constant	3.05	0.11		0.000	2.61	0.11		0.000
Condition	-0.09	0.15	-	0.560	0.29	0.16	-	0.066
Collective Narcissism	0.11	0.11	-	0.315	0.10	0.11	-	0.391
Condition x CN	0.42	0.15	-	0.005	0.47	0.15	-	0.003

Step 1 R^2 = .09, F (2, 219) = 10.76, p < .001. $ΔR^2$ = .03 for Step 2, F change (1, 218) = 8.09, p = .005. N = 222.

Step 1 R^2 = .09, F (2, 219) = 11.37, p < .001. $ΔR^2$ = .04 for Step 2, F change (1, 218) = 9.34, p = .003. N = 222.

Figure 23 reveals that evaluations of the treatment publication were less negative (Low NRE) than evaluations of the control publication, when CN was relatively low (-1SD) (b = -0.58, *SE* = 0.23, 95% CI [-1.04, -0.13], p = .013). Differences failed to reach significance at moderate (p = .618) and high (p = .107) CN. However, the relationship was in the expected direction such that increases in CN saw increases in NRE for the pro-female leadership publication. For NRER, Figure 24 shows that differences in evaluations were significant when CN was moderate (b = 0.30, *SE* = 0.16, 95% CI [-0.01, 0.61], p = .054) to high (b = 0.77, *SE* = 0.22, 95% CI [0.34, 1.21], p = .001), with the author of the treatment publication receiving more negative evaluations than the author of the control.

Figure 23 Simple Slopes of Publication Condition (Treatment vs. New
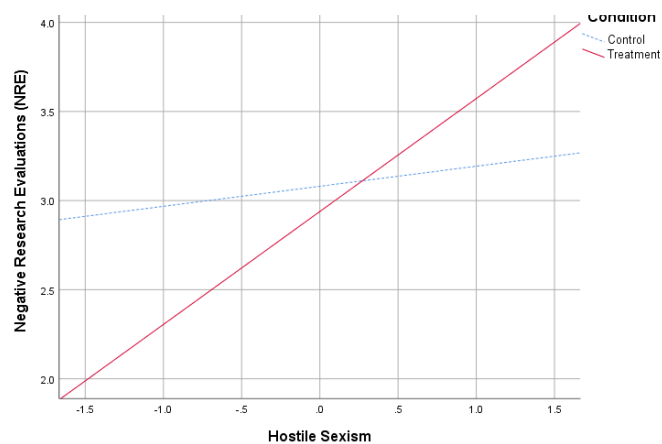Control) for Collective Narcissism on Negative Research Evaluations
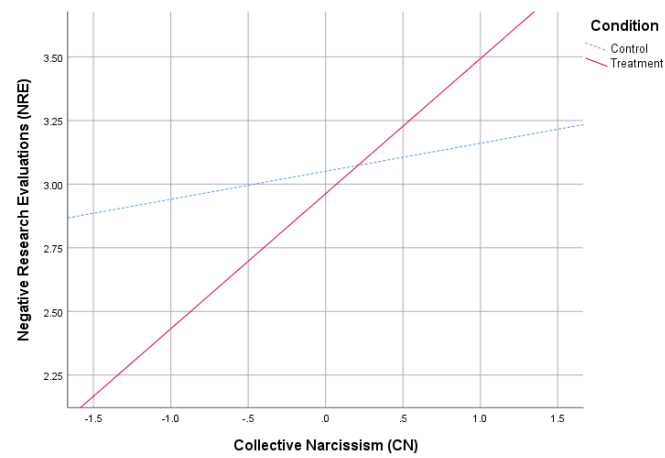
Figure 24 Simple Slopes of Publication Condition (Treatment vs. New
Control) for Collective Narcissism on Negative Researcher Evaluations
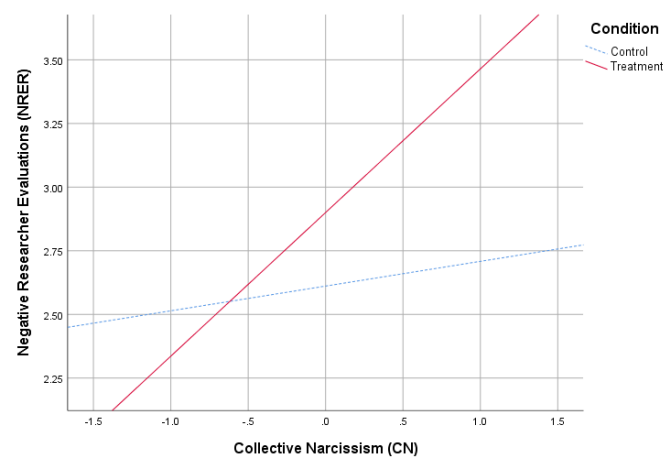
9.3.2.4.6   Summary

To summarise, when CSE Private was low, evaluations of the two publications differed, with the pro-female leadership publication receiving more positive evaluations relative to the new control. However, where CSE Private was moderate-to-high, no significant difference was observed. This suggests the control failed to provide a neutral comparison for those with

moderate-to-high CSE Private. That said, for the pro-female leadership publication, evaluations were in the expected direction – they increased in negativity as CSE Private increased.

In line with predictions, when SDO-D, SDO-E, and Hostile Sexism were high, the pro-female leadership publication and its author were more negatively evaluated relative to the new control. Likewise, when Precarious Manhood and Collective Narcissism were high, the author of the pro-female leadership publication was more negatively evaluated. Importantly, for all significant interactions, negative evaluations were in the expected direction – becoming more negative as each moderator increased.

9.3.2.5 The Moderating Effect of Collective Self-Esteem (CSE), Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Precarious Manhood (PM), and Collective Narcissism (CN) on Hostile Behavioural Intentions (HBI) by Experimental Condition

Having analysed the results of the MMRs as they relate to Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER), attention turns to Hostile Behavioural Intentions as the dependent measure. HBI represents the participants intentions to confront, argue with, and oppose the author of the publication presented to them. It was therefore predicted that the more threatening the publication, the greater the HBI. However, as previous analysis revealed (see Table 56 above), HBI did not significantly vary between publications. To ascertain whether HBI varied at all between conditions as a consequence of CSE, SDO, AS, PM, and CN, a series of MMRs were conducted. The MMRs followed the same order as reported for NRE and NRER. However, as Hostile Behavioural Intentions (HBI) were not hypothesised for, a full write-up of the results is found in Appendix U, while a summary of those results appears here. This is to reduce repetition for the reader, and to highlight only what is of interest to the present study.

To that end, Figure's 25 to 29 illustrate the interactions of Condition x SDO-D (Pro-Dominance), SDO-E (Anti-Egalitarianism), Hostile Sexism, Precarious Manhood (PM), and Collective Narcissism (CN) on Hostile Behavioural Intentions (HBI). Benevolent Sexism (p = .077) and Collective Self-Esteem (CSE) (Condition x CSE Membership: p = .475; CSE Private: p = .914; CSE Public: p = .349; CSE Importance to Identity: p = .110) were each revealed to be non-significant moderators

Figure's 25 to 29 reveal interactions in the expected direction. With each moderator increasing, Hostile Behavioural Intentions (HBI) increased, also. Furthermore, when each moderator was relatively high, the author of the pro-female leadership publication was the focus of greater hostility than the author of the control publication. That is to say, men who have a preference for the active oppression of groups (SDO-D), held more HBI toward the author of the pro-female leadership publication, than those men who read the gender-neutral publication. This held true for those men who prefer societal inequality (SDO-E), for those harbouring misogynistic, hostile views of women (Hostile Sexism), and for those who believe that "manhood" is a precarious status that is hard won and easily lost (Precarious Manhood)[54]. And finally, it holds true also for those men who believe in the exceptionality of men, and who believe that their exceptionality is unrecognised by others (Collective Narcissism). Where each of these traits was high, hostility was found to increase toward the author of the pro-female leadership publication.

Figure 25 Simple Slopes of Publication Condition (Treatment vs. New Control) for Social Dominance Orientation Pro-Dominance (SDO-D) on Hostile Behavioural Intentions

---
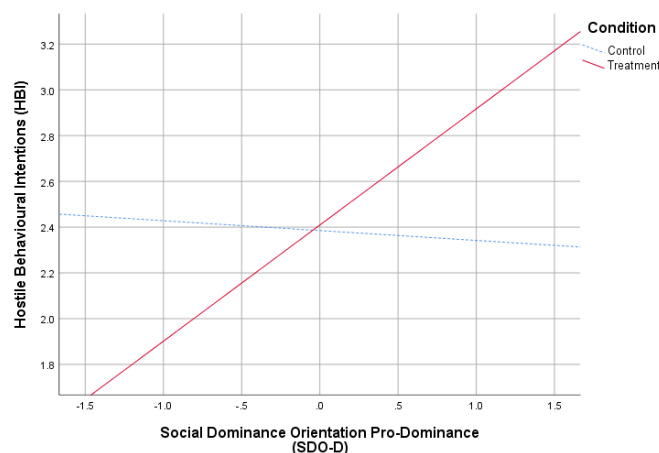
[54] Though the interaction was significant for Condition x Precarious Manhood (PM), and in the direction as described. The difference in Hostile Behavioural Intentions (HBI) between the two publications was not statistically significantly different when PM was 'relatively' high, i.e. +1SD. Instead, it only approached significance when PM was *very* high (i.e. for those in the 95th percentile). This result is discussed in Appendix U but is not immediately relevant to the present discussion, as discussion here is not with regard to the specific percentile at which moderation was observed. Rather, it is with regard to whether moderation exists or not, and in what direction.

Figure 26 Simple Slopes of Publication Condition (Treatment vs. New Control) for Social Dominance Orientation Anti-Egalitarianism (SDO-E) on Hostile Behavioural Intentions
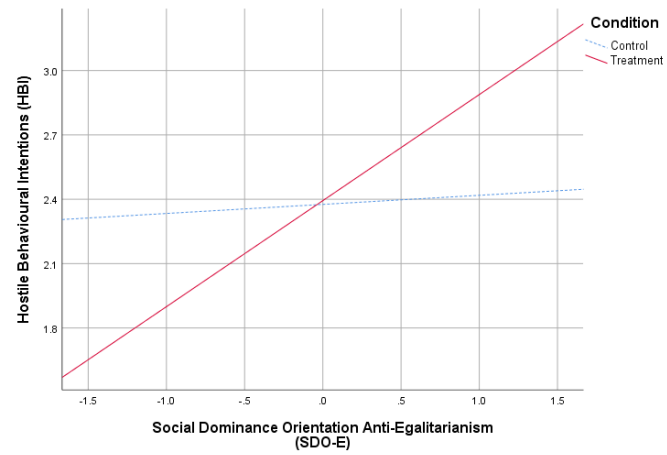
Figure 27 Simple Slopes of Publication Condition (Treatment vs. New Control) for Hostile Sexism on Hostile Behavioural Intentions
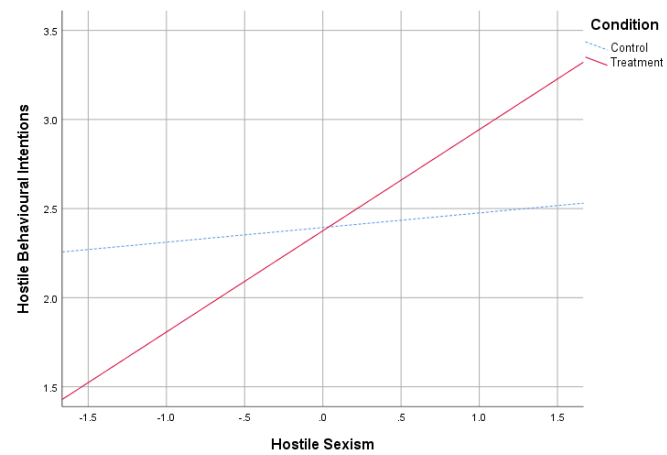
Figure 28 Simple Slopes of Publication Condition (Treatment vs. New Control) for Precarious Manhood on Hostile Behavioural Intentions at 5% and 95%
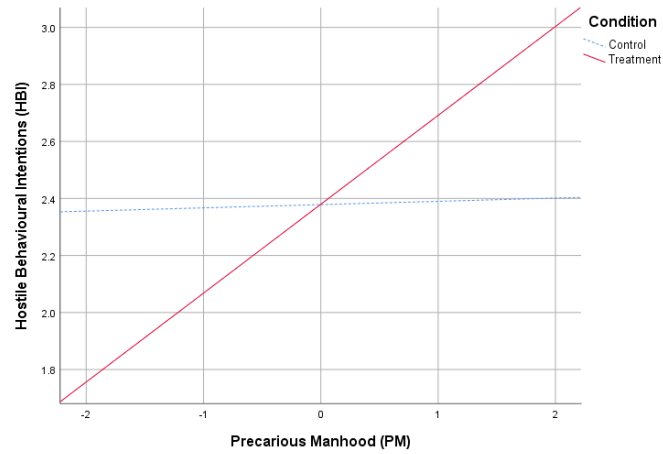
Figure 29 Simple Slopes of Publication Condition (Treatment vs. New Control) for Collective Narcissism on Hostile Behavioural Intentions
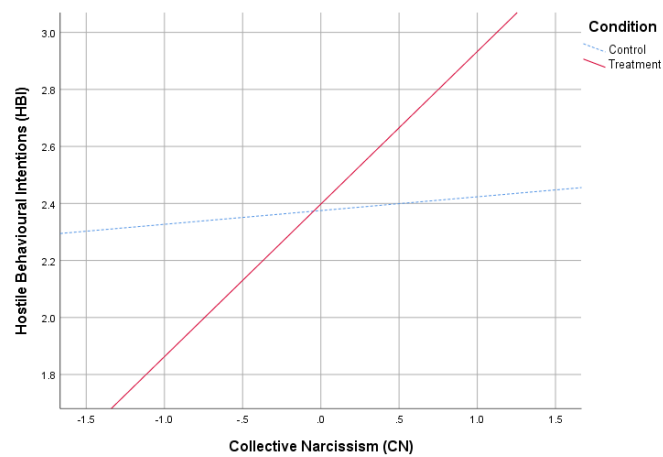
9.3.3 Discussion

The objectives Study 7 were threefold. First, it was to develop and test a new "control" publication that provided a neutral basis for comparison with the pro-female leadership publication. To that

end, the study was somewhat successful. Unfortunately, so far as gender-derived social identity was concerned, the new control failed to provide a truly neutral basis for comparison. CSE Private, which in Studies 5 – 6 was revealed to be a significant predictor of science discrediting, such that higher rates equated greater discrediting behaviour, was in Study 7 revealed to also predict the negative evaluations of the new control. Importantly though, High CSE Private did continue to predict greater discrediting of the pro-female leadership publication compared to Low CSE Private.

The new control was able to provide a more neutral comparison for Hostile Sexism. In Study 5, Hostile Sexism was revealed to have a significant main effect across conditions, and in Study 6 that effect was revealed to be unaffected by gender priming. In Study 7, Hostile Sexism had a differential effect on the negative evaluations of both the publications and their authors, such that High Hostile Sexism predicted greater discrediting of the pro-female leadership publication *and* its author, by comparison to the new control. The new control failed to provide a neutral comparison for Benevolent Sexism, which was revealed to be a significant negative predictor across conditions.

The second objective was to introduce additional moderators of science discrediting. These included Collective Narcissism (CN) and Precarious Manhood (PM). To reiterate the definitions of each, Collective Narcissism (as it relates to male gender) is the "*belief that the in-group is exceptional, entitled to privileged treatment but not sufficiently recognized by others*" (Golec de Zavala *et al.*, 2019, p27). It is robustly associated with outgroup hate (Golec de Zavala and Lantos, 2020). Precarious Manhood (PM), on the other hand, is a belief that "*manhood is a precarious social status that leaves men susceptible to signals threatening their status and position in society. The potential loss of manhood triggers negative emotions and compensatory behavioral reactions from men such as aggressive behavior or demonstrations of prototypical masculine traits*" (Valved *et al.*, 2021, p267). It was therefore predicted that both Collective Narcissism (H_8) and Precarious Manhood (H_9) would predict greater science discrediting of the pro-female leadership publication. The results support these predictions.

Higher rates of both CN and PM were revealed to predict greater negative evaluations of the pro-female leadership publication and its author, by comparison to those participants with equally High CN and PM presented with the gender-neutral publication. Furthermore, those with Low CN and PM provided on average, less negative evaluations. That is to say, when presented with evidence that suggests women (the outgroup) make for better leaders than men (the ingroup), those men sampled who believe in the exceptionality of their gender group, and who believe their manhood is hard earned and easily lost, discredited the evidence before them, including its author for whom no information was provided except their name, title (Dr), and place of employment

(London School of Economics). Therefore, Study 7 provides additional moderators of male-specific science discrediting.

Finally, the third objective of Study 7 was to include additional dependent measures. This included a change to the content of the Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) scales, and the inclusion of Hostile Behavioural Intentions (HBI). Though not hypothesised for, the HBI of the participant toward the author of the two publications, were found to be greater amongst those participants who read the treatment publication and were High in Pro-Dominance (SDO-D), Anti-Egalitarianism (SDO-E), Hostile Sexism, Precarious Manhood, and Collective Narcissism. This suggests that inclusive of their tendency to discredit the research and its author, higher rates of each trait predicted intentions to argue with, confront, and oppose the author of the publication. Though not representative of science discrediting, it does provide some evidence that discrediting may be linked to hostility. Further research is needed to establish a connection.

To conclude Stream II, Study 8 investigates whether the tendency to discredit identity-threatening science is mitigated by group-affirmation, such that affirming an important male value reduces the tendency to discredit an identity-threatening scientific publication.

9.4 Study 8 – The Influence of Group Affirmation

The objective of Study 8 was to test the effect of group-affirmation on science discrediting. According to Self-Affirmation Theory (Steele, 1988), when a specific domain is under threat, the effects of that threat may be mitigated by affirming competence or adequacy in an unrelated domain (Sherman, 2013; McQueen and Klein, 2006). In the present study, the domain of "male leadership ability" is threatened by the pro-female leadership publication. However the effects of this group-level threat are expected to be ameliorated by a group-level affirmation task.

Typically, studies investigating self-affirmation employ one of two paradigms. The first is the "value scale" paradigm, whereby a list of values – often sourced from Allport, Vernon, and Lindzey (1960) – are presented to the participant for them to rank in order of personal importance. The participant then answers several Likert-type questions relating to their highest ranked value (e.g. Tesser and Cornell, 1991). The second paradigm is the "value essay". This method also includes a list of values that the participant is required to rank in order of personal importance, but instead of answering Likert-type questions relating to the highest ranked value, they write an essay on it (often three paragraphs in length) (McQueen and Klein, 2006).

Study 8 employed a manipulation similar to the second, though with less demand on participants, and with a focus on social identity. Initially developed by Sherman *et al.* (2007), the manipulation presents participants with 10 values that they must rank in order of importance to their ingroup. The participant then writes three reasons as to why the top-ranked value was ranked as most important, followed by an example of the group demonstrating its importance. This manipulation has proven successful elsewhere (Spencer-Rodgers *et al.*, 2016; Čehajić-Clancy *et al.*, 2011; Gunn and Wilson, 2011; Glasford, Dovidio, Pratto, 2009; Sherman *et al.*, 2007). However, as the list of values used in previous research is somewhat generic (e.g. politics, creativity, originality, fashion; Gunn and Wilson, 2011), they may not relate specifically to male social identity, and so a pilot study was conducted to generate a list of male-relevant values.

Regarding contribution, Study 8 advances the affirmation literature in several ways. First, in their review of the literature, McQueen and Klein (2006) revealed that with the exception of 2 out of a possible 69 studies, each had employed student samples. For Study 8, the method of sampling is identical to Studies 1 – 7, whereby participants are sampled via Prolific and range in age from 18 – 70+ years old. Second, the average sample size of affirmation studies reviewed by McQueen and Klein (2006) was N = 79. And 74% of which took place in the United States. In Study 8 the sample is 200+ UK residents. Finally, McQueen and Klein (2006) note that many of the studies reviewed employed participant selection criteria that significantly restricted the sample. This included

selecting those who already held strong beliefs on the topic used to elicit threat, to selecting participants based on their self-esteem scores, handedness (left vs. right), SAT and/or ACT scores, ethnicity, religion, and so forth. And of the 4 studies they reviewed that employed male-only participants, gender was not investigated. Instead, for the male-only samples the source of self-threat included losing a sports game (Sherman and Kim, 2005; Studies 1 and 2), mortality salience (Schmeichel and Martens, 2005), and losing a performance task to a friend (Tesser and Cornell, 1991). Here, the sample consists of male's only, with the only additional prescreening criteria being that participants are UK nationals with 95% approval on Prolific. They were also ineligible if they had previously taken part in one of the studies reported in the thesis.

Study 8 was a direct test of the tenth and final hypothesis of the thesis:

> H_{10}. Engaging in group-affirmation will reduce the tendency to discredit an identity-threatening scientific publication.

The independent variables of interest were Group-Affirmation (vs. Self-Affirmation), Collective Self-Esteem (CSE), Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Precarious Manhood (PM), and Collective Narcissism (CN). The dependent variables were Negative Research Evaluations (NRE), Negative Research<u>er</u> Evaluations (NRER), and Hostile Behavioural Intentions (HBI).

9.4.1 Pilot Study

While self-affirmation experiments typically employ some variation of the Allport, Vernon, Lindzey (1960) values scale – opting for broad generalised values that relate to Spranger's (1914) personality types, including: *theoretical*, *aesthetic*, *economic*, *social*, *political*, and *religious* (McQueen and Klein, 2006) – it was decided that values relevant to the sample would be better suited and less vague. The present study therefore included a pilot study to generate a list of values that are important to men. The study included $N = 100$ British males born and residing in the UK. The study description on Prolific read:

> *We are in the process of developing a scale of values that apply to modern-day men. We ask that you provide a list of 10 values (minimum 5) that are important to you and/or men in general. These do not have to be values that are unique to men, simply values that are important to you as a man. Examples are provided.*

> *This study is part of a series that explores male identity, and will be used in the final submission of a PhD thesis.*

The study subsequently included 3 pages: I. Informed Consent, including the Participant Information Sheet, II. the entering of the participants Prolific ID, and III. the pilot study content, as displayed in Figure 30.

Figure 30 Pilot Study Content

Values are defined as "*abstract, desirable end states that people strive for or aim to uphold*." They're generalised beliefs about what is and is not important in life. In this study, we're interested in the values that are important to men.

Using the boxes below, we'd like you to list a minimum of 5 values that you consider to be important. These may be values that apply to you personally or that you consider to be important to men in general. How you define "men" or "man" is entirely up to you. We're interested in the values that you associate with your own definition.

To help, we've included 8 values or terms (listed alphabetically) that are often used in the research of values. Please feel free to use some of these if you believe they apply, along with your own.

1. Achievement
2. Dependability
3. Independence
4. Relations with Family and Friends
5. Religious Values (Unity with the World, Spiritual Development)
6. Respect
7. Spontaneity or 'Living Life in the Moment'
8. Understanding

Please list the values that you consider to be important to you and/or men in general.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Please put an asterisk (*) next to the value that you consider to be the most important.

To reduce the demand on participants, 8 example values were provided. The examples were sourced from Allport and Vernon (1931), Schwartz (1992), and Schwartz *et al.* (2012), and were listed in alphabetical order. This was stated to the participants to reduce the likelihood of them believing the order represented importance. Table 66 displays the Top 4 values listed by participants that were included in the 8 examples provided, and the Top 4 "New" values that were provided by participants that did not feature in the list of examples.

The top four most selected values of the 8 provided were: I. Respect, II. Dependability, III. Relations with Family and Friends, and IV. Understanding. The four most entered values provided by the participants themselves, were V. Honesty, VI. Loyalty, VII. Reliability, and VIII. Empathy. The 8 values identified were subsequently used in Study 8[55].

Table 66 Top 4 Values Selected and Ranked # 1 in the Original
List of Values, and Values Provided by Participants, N = 100

Value (Original)	Total Selected	Total Ranked #1	Value (New)	Total Selected	Total Ranked #1
Respect	71	15	Honesty	23	2
Dependability	53	2	Loyalty	17	1
Relationships	52	7	Reliability	17	1
Understanding	48	3	Empathy	15	5

9.4.2   Methods

9.4.2.1 Participants

Identical Power Analysis was employed to that of Study 7 Time I. Two hundred and seventy (N = 270) male respondents aged between 18 and 79 years (M = 37.83, SD = 15.06) were recruited via Prolific. To reduce carryover effects, participants took part in two separate stages, herein referred

---

[55] The inclusion of 8 values may seem limiting. However, Schwartz and Cieciuch (2016, p110) note that "*any catalogue of values is liable to be incomplete, regardless of its theoretical bases or the procedures used to build it.*" And so the number of values included will always be somewhat limiting and arbitrary.

to as Time I and Time II. Participants were unaware that their taking part at Times I and II were related.

The retention rate for Time II was 86.94% (N = 233). Following the removal of n = 9 participants who misunderstood the content of the pro-female leadership publication, n = 1 participant for whom the publication failed to load, n = 1 participant who failed an attention check, and n = 5 outliers, the sample consisted of N = 217 aged 18 – 77 years (M = 39.01, SD = 15.47).

9.4.2.2 Design and Procedure

Time II: One week after Time I, the same participants were invited to take part in two ostensibly unrelated studies: I. Values in Contemporary Society, and II. Perceptions of Scientific Writing. The invitation on Prolific read:

> *Please note, this is a reading task. We are investigating the public's perception of scientific writing.*
>
> *You will be presented with the summary of a recently published paper, that we ask you to read. You will then be asked several questions relating to what you've read, measured using Likert Scales (e.g. 1 = Strongly Disagree, 7 = Strongly Agree). Demographic information is collected.*
>
> *We also include a pilot study at the start. This is part of a series exploring values in contemporary society. This is factored into the 12 minutes completion time.*

The "Values in Contemporary Society" pilot study operated as the affirmation manipulation. Figure 31 provides a copy of the instructions used in the group-affirmation condition. Following a similar method to that used by Sherman *et al.* (2007) and Glasford, Dovidio, and Pratto (2009), participants in this condition were instructed to rank the list of values in order of importance to men. By contrast, those in the self-affirmation condition were instructed to rank the same list of values in order of importance to themselves, personally. In line with Studies 2 – 7, allocation to the two conditions was determined using Excel's RAND function.

Figure 31 Group Affirmation Instructions

In this section, we're interested in the values that you consider to be important or central to men.

Values are defined as "abstract, desirable end states that people strive for or aim to uphold." They're generalised beliefs about what is and is not important in life.

Below is a list of 8 values. Using the boxes provided, please rank the values from most to least important to men. How you define "men" or "man" is entirely up to you. The values are (in alphabetical order):

- Dependability
- Empathy
- Honesty
- Loyalty
- Relationships (with Family and Friends)
- Reliability
- Respect
- Understanding

Please rank the values:

1 = Most Important to Men

8 = Least Important to Men.

You can copy and paste the values or type them in.

For participants in the self-affirmation condition, the ranking of values in order of personal importance was the end of the affirmation manipulation. They then progressed to the next study, Perceptions of Scientific Writing. For participants in the group-affirmation condition, the ranking of values important to men was then followed by the instructions displayed in Figure 32.

Figure 32 Group Affirmation Instructions (Cont.)

You ranked [TOP VALUE] as #1. Using the boxes below, please provide 3 reasons why you chose this value as being most important to men.

Reason 1. _____

Reason 2. _____

Reason 3. _____

Finally, we'd like you provide an example of when men have demonstrated the importance of [TOP VALUE].

Having provided an example of when men demonstrated the importance of their top value, the group-affirmation participants progressed to the next study, Perceptions of Scientific Writing.[56] The study then progressed identically to the treatment condition of Study 7 Time II. Participants were then thanked, debriefed (Appendix V), and compensated.

9.4.2.3 Materials

Appendix S and W include copies of the questionnaires used at Times I and II. Table 67 displays the measures used at Times I and II and their corresponding Cronbach's alpha (α), representing scale reliability. Each measure exceeds .70, suggesting an acceptable level of reliability (Taber, 2018).

Table 67 Internal Consistency of Measures Used at Times I and II

Scale	No. of Items	α
CSE: Membership	4	.77
CSE: Private	4	.79
CSE: Public	4	.72
CSE: Importance to Identity	4	.84
Total CSE	16	.87
SDO-D (Pro-Dominance)	7[57]	.86
SDO-E (Antiegalitarianism)	8	.88
Total SDO (SDO)	15	.92
Hostile Sexism	11	.93
Benevolent Sexism	11	.82
Total Sexism (ASI)	22	.90
Precarious Manhood (PM)	6	.78
Collective Narcissism (CN)	5	.81
Negative Research Evaluations (NRE)	7	.90
Negative Researcher Evaluations (NRER)	4	.81
Negative Research Evaluations Total (NRET)	11	.92
Hostile Behavioural Intentions (HBI)	3	.89

---

[56] McQueen and Klein (2006) note in their systematic review of the experimental methods used in self-affirmation studies, that no significant difference in effect sizes was observed for studies that included the affirmation manipulation *before* (n = 27) or *after* (n = 38) the threat manipulation.

[57] The 7th item of the SDO-D scale was removed due a Corrected Item-Total Correlation of .081. The item reads: "*Groups at the bottom should not have to stay in their place*." It is unclear why this item was poorly correlated with the others. Initially, it was assumed to be a data entry error, but upon re-entering the data into a new SPSS file, the low correlation persisted. The item was subsequently removed from the scale. This is to be taken into consideration when comparing the results of Study 8 with those of Studies 5 – 7.

9.4.3   Results

9.4.3.1 Preliminary Analysis

The assumptions relating to MANOVA and hierarchical Moderated Multiple Regression (MMR) were all met.

Two One-Way MANOVAs were conducted to determine whether Collective Self-Esteem (CSE), Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Precarious Manhood (PM), and Collective Narcissism (CN) differed between the two affirmation groups. The results revealed no significant difference. The first MANOVA included the four CSE subdimensions, SDO-D, SDO-E, Hostile Sexism, Benevolent Sexism, PM, and CN, $F(10, 206) = 1.11$, $p = .356$, Wilks' Lambda = .95, partial $\eta^2 = .05$. The second MANOVA included Total CSE, Total SDO, and Total Sexism, $F(3, 213) = 1.00$, $p = .393$, Wilks' Lambda = .99, $\eta^2 = .01$. Therefore, the above measures did not significantly differ between conditions.

9.4.3.2 Descriptive Statistics and Bivariate Correlations

Table 68 displays the means and standard deviations of all relevant independent and dependent variables, reported by affirmation condition. Table's 69 and 70 display the bivariate correlations for all measures, with Table 69 representing participants in the Group-Affirmation condition, and Table 70 the Self-Affirmation condition.

Table 68 Descriptive Statistics for Independent and Dependent Variables by Affirmation Condition

	Group Affirm (*n* = 109)		Self-Affirm (*n* = 108)	
	M	*SD*	*M*	*SD*
CSE: Membership	5.19	1.11	5.25	1.01
CSE: Private	5.50	1.10	5.71	0.98
CSE: Public	4.95	0.97	4.90	0.98
CSE: Importance to Identity	4.03	1.47	3.94	1.42
Total CSE	4.91	0.93	4.94	0.80
SDO-D (Pro-Dominance)	2.70	1.23	2.40	1.13
SDO-E (Anti-Egalitarianism)	2.58	1.17	2.44	1.08
Total SDO (SDO)	2.79	1.21	2.56	1.11
Hostile Sexism	3.40	1.29	3.45	1.24
Benevolent Sexism	3.52	0.94	3.48	1.00
Total Sexism (ASI)	3.46	0.92	3.46	0.93
Precarious Manhood (PM)	3.03	1.15	2.99	1.10
Collective Narcissism (CN)	2.87	1.19	2.98	1.09
Negative Research Evaluation (NRE)	2.89	1.08	3.07	1.11
Negative Researcher Evaluation (NRER)	2.91	1.18	2.96	1.03
Negative Research Evaluation Total (NRET)	2.88	1.03	3.03	1.03
Hostile Behavioural Intentions (HBI)	2.43	1.57	2.48	1.34

Discussion here is restricted to the correlations observed between the independent variables (IV) and dependent variables (DV). Discussion does not include the correlations between IVs and IVs.

9.4.3.2.1   Group-Affirmation

Table 69 displays the correlations as they relate to participants in the group-affirmation condition. Table 69 reveals that CSE Membership was significantly, negatively correlated with Negative Research Evaluations (NRE) (r = -.228, p < .05), and as a consequence Negative Research Evaluations Total (NRET) (r = -.201, p < .05). Likewise, CSE Public was significantly, negatively correlated with NRE (r = -.225, p < .05), Negative Researcher Evaluations (NRER) (r = -.193, p < .05), and as a consequence, NRET (r = -.220, p < .05). Only CSE Importance was significantly related to Hostile Behavioural Intentions (HBI) (r = .208, p < .05), suggesting that as CSE Importance rose, so too did the participants hostility toward the author of the pro-female leadership publication. Interestingly, SDO-D and SDO-E (including Total SDO), Hostile Sexism (including Total Sexism), Precarious Manhood (PM), and Collective Narcissism (CN) were all significantly, positively correlated with NRE, NRER, NRET, and HBI. The correlations suggest that

despite the group affirmation task, both science discrediting and hostility toward the author were significantly related to each measure, so that as each increased, so too did science discrediting and hostility. This provides the first indication of the affirmation manipulation not having the intended effect.

9.4.3.2.2   Self-Affirmation

Table 70 displays the correlations for participants in the self-affirmation condition. No significant correlations were observed for the four CSE subdimensions, though SDO-D, SDO-E (including Total SDO), Hostile Sexism, and CN were each positively, significantly related to NRE, NRER, NRET, and HBI. This also suggests that as each measure increased, so too did the participants tendency to engage in science discrediting. Indeed, so too did their hostility toward the author. Total Sexism was the only measure significantly related to HBI ($r = .260$, $p < .01$). The relationships between Precarious Manhood (PM) and all dependent measures were non-significant, despite being significant in the Group Affirmation condition.

Table 69 Bivariate Correlation of Independent and Dependent Measures, Group Affirmation, N = 109

	CSE Member.	CSE Private	CSE Public	CSE Import.	CSE Total	SDO-D	SDO-E	Total SDO	Hostile Sexism	Benev. Sexism	Total Sexism	Prec. MH	Coll. Narc.	Neg. Res. Eval.	Neg. Reser. Eval.	Neg. Res. Total	Hostile Be. Int.
CSE Mem.	1																
CSE Private	.596**	1															
CSE Public	.469**	.622**	1														
CSE Import.	.421**	.531**	.456**	1													
CSE Total	.776**	.845**	.767**	.795**	1												
SDO-D	0.119	.274**	.317**	.297**	.318**	1											
SDO-E	0.034	.298**	.229*	0.155	.222*	.791**	1										
Total SDO	0.107	.294**	.290**	.256**	.298**	.955**	.917**	1									
Hostile Sexism	0.048	.328**	0.075	.338**	.259**	.505**	.442**	.497**	1								
Benev. Sexism	.198*	.275**	.241*	.388**	.355**	.283**	0.129	.237*	.342**	1							
Total Sexism	0.135	.371**	0.176	.436**	.364**	.499**	.376**	.470**	.876**	.753**	1						
Precarious Manhood	0.090	.216*	0.120	.241*	.211*	.270**	0.146	.219*	.477**	.525**	.603**	1					
Collective Narcissism	0.032	.262**	0.029	.317**	.214*	.442**	.359**	.424**	.707**	.238*	.618**	.401**	1				
Neg. Res. E.	-.228*	-0.020	-.225*	-0.058	-0.161	.276**	.314**	.294**	.521**	0.098	.415**	.327**	.435**	1			
Neg. Reser. E.	-0.095	0.044	-.193*	0.022	-0.062	.226*	.226*	.226*	.532**	0.062	.404**	.314**	.456**	.828**	1		
Neg. Res. Total	-.201*	-0.003	-.220*	-0.015	-0.130	.269**	.289**	.279**	.547**	0.100	.435**	.337**	.461**	.974**	.926**	1	
Hostile Be. Int.	0.001	0.127	0.021	.208*	0.118	.278**	.268**	.282**	.513**	.304**	.516**	.416**	.479**	.646**	.679**	.688**	1

Table 70 Bivariate Correlation of Independent and Dependent Measures, Self-Affirmation, N = 108

	CSE Member.	CSE Private	CSE Public	CSE Import.	CSE Total	SDO-D	SDO-E	Total SDO	Hostile Sexism	Benev. Sexism	Total Sexism	Prec. MH	Coll. Narc.	Neg. Res. Eval.	Neg. Reser. Eval.	Neg. Res. Total	Hostile Be. Int.
CSE Mem.	1																
CSE Private	.667**	1															
CSE Public	.415**	.393**	1														
CSE Import.	.348**	.320**	0.174	1													
CSE Total	.787**	.767**	.648**	.712**	1												
SDO-D	0.146	.198*	-0.012	.286**	.230*	1											
SDO-E	0.083	.194*	0.076	0.186	0.188	.764**	1										
Total SDO	0.165	.244*	0.049	.258**	.254**	.940**	.914**	1									
Hostile Sexism	0.169	.287**	-0.071	.353**	.259**	.540**	.498**	.532**	1								
Benev. Sexism	0.108	0.148	-0.034	.351**	.230*	.248**	.237*	.257**	.376**	1							
Total Sexism	0.171	.271**	-0.066	.424**	.296**	.493**	.459**	.492**	.868**	.787**	1						
Precarious Manhood	-0.115	-0.005	-.221*	.254**	0.007	.242*	.295**	.267**	.536**	.452**	.600**	1					
Collective Narcissism	0.033	0.173	-0.156	.294**	0.137	.346**	.327**	.332**	.688**	.292**	.615**	.466**	1				
Neg. Res. E.	0.050	0.133	-0.102	0.053	0.035	.220*	.271**	.250**	.342**	-0.129	0.159	-0.069	.340**	1			
Neg. Reser. E.	0.034	0.152	-0.124	0.113	0.063	.213*	.207*	.217*	.303**	-0.150	0.122	0.000	.352**	.785**	1		
Neg. Res. Total	0.046	0.146	-0.120	0.077	0.044	.227*	.261**	.250**	.348**	-0.143	0.155	-0.044	.363**	.974**	.904**	1	
Hostile Be. Int.	0.017	0.158	-0.107	0.145	0.078	.408**	.416**	.435**	.337**	0.066	.260**	0.044	.371**	.542**	.548**	.572**	1

9.4.3.3 Science Discrediting by Condition

Table 68 reveals that Negative Research Evaluations (NRE), Negative Research Evaluations (NRER), Negative Research Evaluations Total (NRET), and Hostile Behavioural Intentions (HBI) were each lower in the Group-Affirmation (Treatment) condition than the Self-Affirmation (Control) condition. For instance, NRE ($NRE_{Treatment}$: M = 2.89, SD = 1.08), NRER ($NRER_{Treatment}$: M = 2.91, SD = 1.18), NRET ($NRET_{Treatment}$: M = 2.88, SD = 1.03), and HBI ($HBI_{Treatment}$: M = 3.06, SD = 1.06) were all lower in the Group Affirmation (Treatment) condition than in the Self-Affirmation (Control) condition ($NRE_{Control}$: M = 3.07, SD = 1.11; $NRER_{Control}$: M = 2.96, SD = 1.03; $NRET_{Control}$: M = 3.03, SD = 1.03; $HBI_{Control}$: M = 2.48, SD = 1.34). To establish whether these differences were significant, a series of independent samples t-tests were conducted. Table 71 displays the results.

Table 71 reveals the mean differences in NRE, NRER, NRET, and HBI between the Group-Affirmation and Self-Affirmation conditions were non-significant. That is, despite participants having the opportunity to affirm an important ingroup-value, their evaluations of the pro-female leadership publication were not statistically significantly different to those participants offered the opportunity to self-affirm. Likewise, the participants hostility toward the author of the pro-female leadership publication was similar between the two affirmation groups.

Table 71 Results of Independent Samples t-Tests on the Dependent Measures by Affirmation Condition

	Group-Affirm		Self-Affirm			
	M	*SD*	*M*	*SD*	*t*	*p*
NRE	2.89	1.08	3.07	1.11	1.20	0.233
NRER	2.91	1.18	2.96	1.03	0.33	0.740
NRET	2.88	1.03	3.03	1.03	1.06	0.288
HBI	2.43	1.57	2.48	1.34	0.27	0.788

NRE = Negative Research Evaluations; NRER = Negative Researcher Evaluations;
NRET = Negative Research Evaluations Total; HBI = Hostile Behavioural Intentions
N = 217

9.4.3.4 The Moderating Effect of Collective Self-Esteem (CSE), Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Precarious Manhood (PM), and Collective Narcissism (CN) on Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by Affirmation Condition

To analyse the predicted moderating effect of Collective Self-Esteem (CSE), Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Precarious Manhood (PM), and Collective Narcissism (CN) on the Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by affirmation condition, a series of hierarchical Moderated Multiple Regressions (MMR) were conducted. The continuous predictors were all mean centred and the two conditions were dummy coded (1 = *Group-Affirmation*, 0 = *Self-Affirmation*) (Aiken and West, 1991).

Having hypothesised for interactions, non-significant interactions are reported. Importantly, when discussing the contribution of individual effects, ceteris paribus is assumed. Its inclusion here is to reduce repetition later.

9.4.3.4.1   Testing Collective Self-Esteem (CSE) as a Moderator of Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by Affirmation Condition

Analysis first considered the moderating effect of the four CSE subdimensions on the relationship between affirmation condition and Negative Research Evaluations (NRE) *and* Negative Researcher Evaluations (NRER). Table 72 (A. and B.) displays the results.

Table 72 Moderation Results of Collective Self-Esteem (CSE) Subscales on the Relationship Between Affirmation Condition and A. Negative Research Evaluations (NRE) and B. Negative Research<u>er</u> Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	3.03	0.10		0.000	2.93	0.10		0.000
Condition	-0.12	0.15	-0.05	0.431	0.01	0.15	0.01	0.926
CSE Membership	-0.17	0.09	-0.17	0.060	-0.12	0.09	-0.12	0.177
CSE Private	0.28	0.10	0.27	0.004	0.29	0.10	0.27	0.004
CSE Public	-0.26	0.09	-0.23	0.004	-0.31	0.09	-0.27	0.001
CSE Importance	0.01	0.06	0.02	0.798	0.06	0.06	0.08	0.298
Step Two					**Step Two**			
Constant	3.04	0.10		0.000	2.93	0.11		0.000
Condition	-0.12	0.15	-	0.429	0.02	0.15	-	0.917
CSE Membership	-0.03	0.14	-	0.847	-0.09	0.14	-	0.540
CSE Private	0.24	0.14	-	0.098	0.28	0.15	-	0.062
CSE Public	-0.20	0.12	-	0.085	-0.22	0.12	-	0.069
CSE Importance	0.02	0.08	-	0.800	0.07	0.08	-	0.383
Condition x Mem	-0.26	0.18	-	0.164	-0.07	0.19	-	0.709
Condition x Pri	0.08	0.20	-	0.683	0.06	0.20	-	0.782
Condition x Pub	-0.14	0.18	-	0.452	-0.21	0.18	-	0.249
Condition x Imp	0.00	0.12	-	0.982	0.00	0.12	-	0.981

R^2 = .07 for Step 1 (p = .006); ΔR^2 = .02 for Step 2 (p = .379). N = 217.　　　　*R^2 = .08 for Step 1 (p = .004); ΔR^2 = .01 for Step 2 (p = .708). N = 217.*

Table 72 A. reveals that for Negative Research Evaluations (NRE), no significant interactions were observed at Step 2 (p > .05). Therefore, interpretation is restricted to Step I. Table 72 A. indicates that Step I accounted for 7.4% of the variance in NRE, F (5, 211) = 3.35, p = .006. Within the model, CSE Private ($β$ = 0.27, p = .004) and CSE Public ($β$ = -0.23, p = .004) were both significant predictors, while CSE Membership ($β$ = -0.17, p = .060) approached significance. The direction of the standardised betas suggests that as CSE Private increased, so too did Negative Research Evaluations (High NRE), while as CSE Public and CSE Membership increased, evaluations became less negative (Low NRE). The lack of significant interaction suggests this held somewhat constant across conditions.

Table 72 B. reveals no significant interactions for Negative Research<u>er</u> Evaluations (NRER) at Step 2, and so again Step I is the focus of interpretation. Step I accounted for 7.8% of the variance, F (5, 211) = 3.59, p = .004. Both CSE Private ($β$ = 0.27, p = .004) and CSE Public ($β$ = -0.27, p = .001) were equal in their effect on NRER, though in opposing directions. As CSE Private increased, so

too did the participants negative evaluations of the publications author. While as CSE Public increased, evaluations of the publications author reduced in negativity. Neither CSE Membership nor CSE Importance were significant at Step I. The lack of interaction again suggests these effects did not significantly vary by affirmation condition.

9.4.3.4.2 Testing Social Dominance Orientation as a Moderator of Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by Affirmation Condition

Table 73 (A. and B.) displays the results as they relate to Social Dominance Orientation (SDO). Both A. and B. reveal no significant interactions were observed at Step 2, and so interpretation is limited to Step I. Table 73 A. indicates that SDO-E was a significant, positive predictor of Negative Research Evaluations (NRE) ($\beta = 0.25$, $p = .017$). The lack of interaction suggests the effect of SDO-E was similar across conditions. Table 73 B. reveals no significant main effect for SDO-D ($\beta = 0.13$, $p = .223$) or SDO-E ($\beta = 0.12$, $p = 275$).

Table 73 Moderation Results of Social Dominance Orientation (SDO) Subscales on the Relationship Between Affirmation Condition and A. Negative Research Evaluations (NRE) and B. Negative Researcher Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	3.09	0.10		0.000	2.99	0.10		0.000
Condition	-0.23	0.14	-0.10	0.118	-0.10	0.15	-0.05	0.493
SDO-D	0.05	0.10	0.05	0.619	0.12	0.10	0.13	0.223
SDO-E	0.25	0.10	0.25	0.017	0.11	0.10	0.12	0.275
Step Two					**Step Two**			
Constant	3.09	0.10		0.000	2.99	0.11		0.000
Condition	-0.23	0.14	-	0.120	-0.10	0.15	-	0.496
SDO-D	0.03	0.14	-	0.828	0.12	0.14	-	0.409
SDO-E	0.25	0.15	-	0.085	0.10	0.15	-	0.503
Condition x SDO-D	0.03	0.19	-	0.862	0.00	0.20	-	0.985
Condition x SDO-E	-0.02	0.20	-	0.933	0.02	0.21	-	0.909

$R^2 = .09$ for Step 1 (p < .000); $\Delta R^2 = .00$ for Step 2 (p = .982). N = 217.   *$R^2 = .05$ for Step 1 (p = .008); $\Delta R^2 = .00$ for Step 2 (p = .979). N = 217.*

9.4.3.4.3 Testing Ambivalent Sexism as a Moderator of Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by Affirmation Condition

Table 74 (A. and B.) presents the results of moderation as they relate to Ambivalent Sexism (AS). Table 74 reveals no significant interactions at Step 2 for either A. NRE or B. NRER, and so interpretation is again limited to Step I. Table 74 A. Step I reveals that both Hostile Sexism (β = 0.50, p < .001) and Benevolent Sexism (β = -0.20, p = .002) were significant predictors of Negative Research Evaluations (NRE). Indeed, it was observed that as Hostile Sexism increased, so too did the negative evaluations of the pro-female publication. While as Benevolent Sexism increased, evaluations of the publication became less negative (Lower NRE). Table 74 B. reveals the same pattern of results for NRER, with increases in Hostile Sexism (β = 0.51, p < 001) predicting more negative evaluations of the author, and increases in Benevolent Sexism (β = -0.22, p = .001) predicting less negative evaluations. The lack of interaction again suggests these effects held true across both conditions.

Table 74 Moderation Results of Ambivalent Sexism Subscales on the Relationship Between Affirmation Condition and A. Negative Research Evaluations (NRE) and B. Negative Researcher Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	3.05	0.09		0.000	2.95	0.09		0.000
Condition	-0.15	0.13	-0.07	0.256	-0.02	0.13	-0.01	0.876
Hostile Sexism	0.44	0.06	0.50	0.000	0.44	0.06	0.51	0.000
Benevolent Sexism	-0.23	0.07	-0.20	0.002	-0.25	0.07	-0.22	0.001
Step Two					**Step Two**			
Constant	3.05	0.09		0.000	2.95	0.09		0.000
Condition	-0.15	0.13	-	0.252	-0.02	0.13	-	0.866
Hostile Sexism	0.40	0.08	-	0.000	0.35	0.08	-	0.000
Benevolent Sexism	-0.33	0.10	-	0.001	-0.32	0.10	-	0.002
Condition x Hostile	0.06	0.11	-	0.600	0.19	0.11	-	0.099
Condition x Benev.	0.23	0.15	-	0.120	0.14	0.15	-	0.325

R^2 = .23 for Step 1 (p < .001): ΔR^2 = .01 for Step 2 (p = .153). N = 217.   *R^2 = .23 for Step 1 (p < .001): ΔR^2 = .02 for Step 2 (p = .063). N = 217.*

9.4.3.4.4 Testing Precarious Manhood (PM) as a Moderator of Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by Experimental Condition

Table 75 (A. and B.) displays the results of moderation as they relate to Precarious Manhood (PM). Table 75 A. reveals a significant interaction at Step 2. At Step I, the model explained a near significant 2.4% of the variance in Negative Research Evaluations (NRE), F (2, 214) = 2.63, p = .075. This increased to 6.1% at Step 2, F (3, 213) = 4.62, p = .004, owing to an additional 3.7% being explained by the significant interaction, ΔR^2 = .04, F change (1, 213) = 8.42, p = .004. The significant interaction of Condition x Precarious Manhood (b = 0.38, p = .004) is displayed in Figure 33.

Table 75 Moderation Results of Precarious Manhood on the Relationship Between Affirmation Condition and A. Negative Research Evaluations (NRE) and B. Negative Researcher Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	3.07	0.10		0.000	2.97	0.11		0.000
Condition	-0.18	0.15	-0.08	0.219	-0.06	0.15	-0.03	0.708
Precarious Manhood	0.13	0.07	0.13	0.053	0.17	0.07	0.17	0.011
Step Two					**Step Two**			
Constant	3.07	0.10		0.000	2.96	0.10		0.000
Condition	-0.18	0.14	-	0.211	-0.06	0.15	-	0.705
Precarious Manhood	-0.07	0.09	-	0.461	0.00	0.10	-	0.998
Condition x PM	0.38	0.13	-	0.004	0.32	0.13	-	0.015

R^2 = .02 for Step 1 (p = .075); ΔR^2 = .04 for Step 2 (p = .004). N = 217. *R^2 = .03 for Step 1 (p = .037); ΔR^2 = .03 for Step 2 (p = .015). N = 217.*

The Condition x PM interaction on Negative Research Evaluations (NRE) was probed using simple slopes ("pick-a-point") analysis. As Figure 33 illustrates, when PM was relatively low (-1SD), evaluations of the pro-female leadership publication significantly differed between affirmation conditions (b = -0.69, SE = 0.23, 95% CI [-1.13, -0.24], p = .003), with the publication receiving less

negative evaluations in the Group Affirmation condition, than the Self-Affirmation condition. However, when PM was moderate (p = .402) and relatively high (+1SD) (p = .227), no significant difference was observed. Importantly though, as PM increased, so too did NRE.

Figure 33 Simple Slopes of Affirmation Condition (Group vs. Self) for Precarious Manhood on Negative Research Evaluations
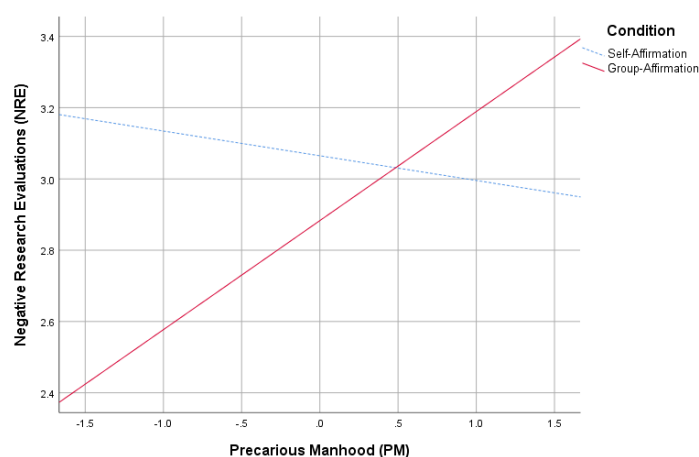
In terms of Negative Researcher Evaluations (NRER), Table 75 B. reveals that Step I the model explained 3% of the variance in NRER, F (2, 214) = 3.34, p = .037. This increased to 5.7% at Step 2, F (3, 213) = 4.30, p = .006, owing to the inclusion of the significant Condition x PM interaction (b = 0.32, p = .015), ΔR^2 = .03, F change (1, 213) = 6.07, p = .015. Figure 34 displays the interaction. As with NRE, NRER were revealed to be significantly lower in the group-affirmation condition than the self-affirmation condition when PM was relatively low (-1SD) (b = -0.49, SE = 0.23, 95% CI [-0.94, -0.04], p = .034). No significant difference was observed when PM was moderate (p = .972) or relatively high (+1SD) (p = .134), though again, as PM increased so too did NRER.

Figure 34 Simple Slopes of Affirmation Condition (Group vs. Self) for Precarious Manhood on Negative Researcher Evaluations
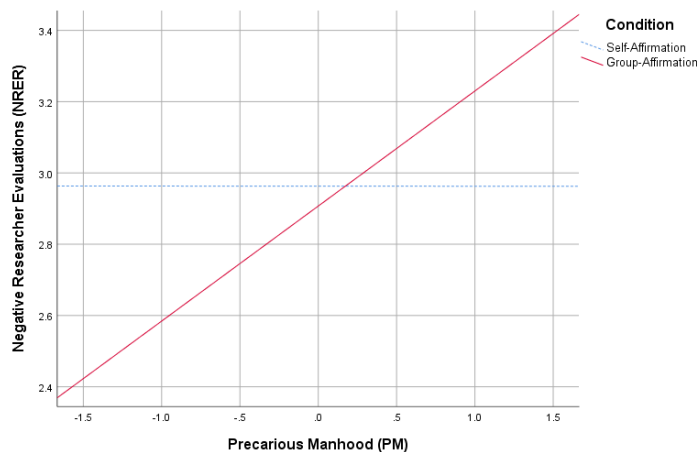
9.4.3.4.5 Testing Collective Narcissism (CN) as a Moderator of Negative Research Evaluations (NRE) and Negative Researcher Evaluations (NRER) by Experimental Condition

Table 76 (A. and B.) displays the results of the MMR as they relate to Collective Narcissism (CN). Both A. and B. reveal no significant interactions at Step 2. Table 76 A. Step I indicates that CN significantly, positively predicted Negative Research Evaluations (NRE) (β = 0.39, p < .001), such that higher CN predicted more negative evaluations of the publications. Likewise, Table 76 B. Step I reveals CN also predicted Negative Research_er_ Evaluations (NRER) (β = 0.41, p < .001), such that higher CN resulted in more negative evaluations of the publications authors. The lack of interactions suggest these effects held across both conditions.

Table 76 Moderation Results of Collective Narcissism (CN) on the Relationship Between Affirmation Condition and A. Negative Research Evaluations (NRE) and B. Negative Researcher Evaluations (NRER)

	A. Negative Research Evaluations (NRE)				B. Negative Researcher Evaluations (NRER)			
	b	*SE b*	*β*	*p*	*b*	*SE b*	*β*	*p*
Step One					**Step One**			
Constant	3.04	0.10		0.000	2.94	0.10		0.000
Condition	-0.13	0.14	-0.06	0.330	0.00	0.14	0.00	0.981
Collective Narcissism	0.37	0.06	0.39	0.000	0.40	0.06	0.41	0.000
Step Two					**Step Two**			
Constant	3.04	0.10		0.000	2.94	0.10		0.000
Condition	-0.13	0.14	-	0.329	0.00	0.14	-	0.974
Collective Narcissism	0.35	0.09	-	0.000	0.33	0.09	-	0.000
Condition x CN	0.05	0.12	-	0.690	0.12	0.12	-	0.322

R^2 = .16 for Step 1 (p < .001); ΔR^2 = .00 for Step 2 (p = .690). N = 217.   *R^2 = .17 for Step 1 (p < .001); ΔR^2 = .00 for Step 2 (p = .322).*

9.4.3.4.6   Summary

To summarise the results as they relate to the two measures of science discrediting, while no significant difference in evaluations between affirmation conditions was observed for Collective Self-Esteem (CSE), CSE Private continued to be a significant, positive predictor of both NRE and NRER. Furthermore, CSE Public was a significant, negative predictor of both NRE and NRER, while CSE Membership significantly, negatively predicted NRE only. For Social Dominance Orientation (SDO) and Ambivalent Sexism (AS) no significant interactions were observed, though SDO-E was revealed to be a significant positive predictor of NRE, and both Hostile and Benevolent Sexism were significant predictors of both NRE and NRER, though Hostile Sexism predicted more negative evaluations, while Benevolent Sexism predicted more positive evaluations. Collective Narcissism (CN) also had no differential effect on evaluations of the two publications and their authors, though it was revealed to be a significant positive predictor for both NRE and NRER across conditions. Finally, the only significant interaction observed was for Precarious Manhood (PM), with results indicating that Low PM predicted less negative NRE and NRER in the group-affirmation condition. Unfortunately, as PM increased in strength, so too did NRE and NRER, suggesting the affirmation task had no mitigating effect when high.

9.4.3.5 The Moderating Effect of Collective Self-Esteem (CSE), Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Precarious Manhood (PM), and Collective Narcissism (CN) on Hostile Behavioural Intentions (HBI) by Affirmation Condition

Interactions for Hostile Behavioural Intentions (HBI) were not hypothesised for, and so the full reporting of results can be found in Appendix X. The findings are summarised here.

Only two interactions were significant: I. Condition x Benevolent Sexism (b = 0.42, p = .024), and II. Condition x Precarious Manhood (b = .51, p = .003). Figures 35 and 36 display each interaction. For Benevolent Sexism, simple slopes revealed that where Benevolent Sexism was low, HBI were lower in the group-affirmation condition than self-affirmation. However, though the difference in HBI did not significantly differ when Benevolent Sexism was moderate and high, they were still higher in the group-affirmation condition than the self-affirmation, suggesting the affirmation manipulation did not have the intended effect. Similarly, as Figure 36 illustrates, the Condition x Precarious Manhood (PM) interaction, while significant still shows that HBI increased as PM increased, also. Again, this suggest the affirmation task did not have the intended effect.

In terms of main effects, all else being equal, CSE Private (β = 0.23, p = .016) and CSE Importance (β = 0.18, p = .016) were both significant positive predictors of HBI, while CSE Public (β = -0.15, p = .059) was a significant negative predictor. Both SDO-D (β = 0.20, p = .059) and SDO-E (β = 0.18, p = .077) were also positive predictors of HBI, all else equal, and so too were Hostile Sexism (β = 0.42, p < .001) and Collective Narcissism (β = 0.43, p < .001). The results suggest that despite the inclusion of the affirmation manipulation prior to reading the pro-female leadership publication, CSE Private, CSE Importance, SDO-D, SDO-E, Hostile Sexism, and Collective Narcissism each predicted greater HBI aimed at the author of the publication. The manipulation was largely ineffective.

Figure 35 Simple Slopes of Affirmation Condition (Group vs. Self) for Benevolent Sexism on Hostile Behavioural Intentions
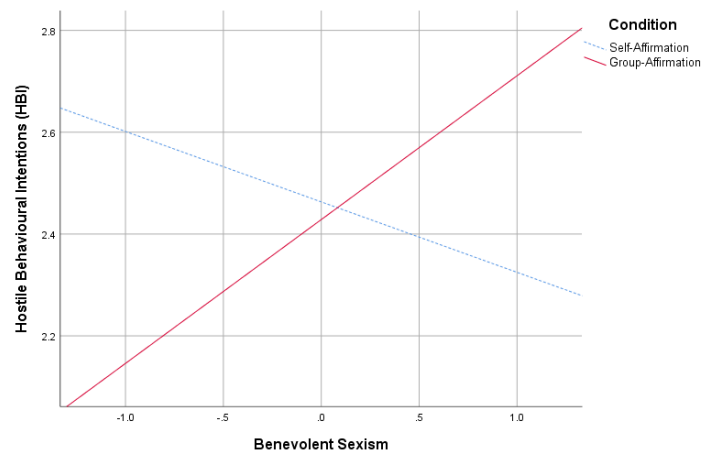
Figure 36 Simple Slopes of Affirmation Condition (Group vs. Self) for Precarious Manhood on Hostile Behavioural Intentions
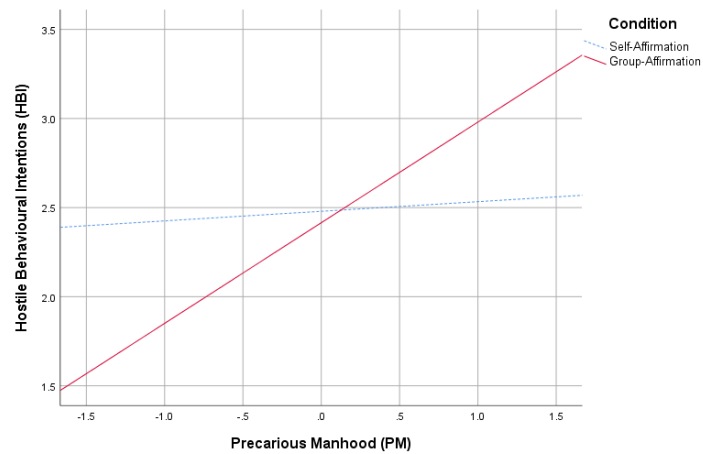
9.4.4   Discussion

The objective of Study 8 was to test the effects of group-affirmation on science discrediting. To that end, the study was unsuccessful. Unfortunately, despite Study 6 revealing that priming male social identity vs. personal identity had no significant effect on science discrediting, Study 8

sought to test the effects of affirming male social identity vs. personal identity, which as a result failed to produce the intended effect. This failure is potentially due to the fact that for the male participants, their gender identity and personal identity are not distinct enough from one another to cause a differential effect. Had the results of Study 6 been considered at the time of designing Study 8, an alternative affirmation to self-affirmation would have been included. For instance, Spencer-Rodgers *et al*. (2016) allowed participants to choose their own group to affirm following a threat to their gender group. Alternatively, national identity is revealed to be distinct enough from personal identity that it might have also been distinct enough from gender identity, also (*see* Čehajić-Clancy *et al*., 2011; Glasford, Dovidio, and Pratto, 2007). Failing that, Gunn and Wilson (2011) employed a male-only sample, affirming one group by asking them to write an essay on an important value to men, and controlling for affirmation in the other group by having them write about an *un*important value to men. What directed the use of self-affirmation as a point of comparison for group-affirmation was a study by Sherman *et al*. (2007). Unfortunately, the group being affirmed in Sherman *et al*.'s (2007) study was a sports team, which may not have been so closely related to their personal identity.

It may also be the case that the values employed within the study were too generic and unrelated to male social identity. While the Pilot Study attempted to identify values that were significant in their importance to men, the values themselves may not have generated an effect for men within the affirmation task, and so failed to broaden the participants self-worth beyond their threatened male social identity.

Ultimately, the failure of Study 8 can be attributed to the researchers inexperience. However, the study successfully validates the previous studies of Stream II, by demonstrating the effects of Collective Self-Esteem (CSE), Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Precarious Manhood (PM), and Collective Narcissism (CN) in predicting science discrediting behaviour.

CHAPTER 10
STREAM II GENERAL DISCUSSION AND CONCLUSIONS

10.1   Introduction

With the introduction of the Research Excellence Framework (REF), there is now incentive for academic researchers to produce research that has "*an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia*" (REF, 2020, p68). This effect is referred to as "impact". For impact to be assessed, Higher Education Institutions provide indicators of the dissemination of research and of its influence on its users and beneficiaries (REF, 2020, p97). But what if that research was rejected by non-academics for non-scientific reasons? What happens to those indicators? To its impact? And to the researchers future funding?

The aim of Stream II was not to provide answers to these questions directly. Instead, it was to investigate the possibility that a similar situation may arise or have arisen previously. Adopting the Motivated Rejection of Science (MRS) perspective, Stream II, titled *Science Discrediting*, aimed to contribute to this perspective by identifying underlying causes for science discrediting, termed "attitude roots" (Hornsey and Fielding, 2017). To that end, Stream II was successful. Stream II revealed that where a scientific publication provides an unfavourable comparison of the male ingroup relative to the female outgroup, that publication and its author are discredited for non-scientific reasons. Utilising the Social Identity Approach (Tajfel and Turner, 1979; Turner *et al*., 1987), Stream II set out to investigate social identity threat as a possible explanation for this discrediting behaviour. What Stream II accomplished, was to reveal multiple alternative explanations for science discrediting, in addition to meeting the social identity need of self-esteem defence.

In this final chapter, the findings of Studies 5 – 8 are first summarised and discussed in terms of their hypotheses and their collective contribution to the literature. The Limitations and Future Directions of these studies are also discussed. The chapter ends with a Conclusion. The thesis is then summarised in the Thesis Summary.

10.2 Science Discrediting

To investigate science discrediting from a social identity perspective, to identify alternative "attitude roots" to science discrediting, and to understand what impact group-affirmation has on this discrediting behaviour, the following hypotheses were tested:

H_4. The scientific publication indicating that companies benefit from increased representation of women at senior management level, owing to their greater social intelligence and productivity, and a leadership style befitting the modern workplace, will be discredited by men more so than women.

H_5. The act of science discrediting will be moderated by the degree to which male's identify with their male social identity, such that high identifiers will discredit the science to a greater extent than low identifiers.

H_6. The act of science discrediting will be moderated by Social Dominance Orientation (SDO), such that males with High SDO will discredit the science to a greater extent than males with Low SDO.

H_7. The act of science discrediting will be moderated by Ambivalent Sexism (AS), such that males with High AS will discredit the science to a greater extent than males with Low AS.

H_8. The act of science discrediting will be moderated by Collective Narcissism (CN), such that males with High Male CN will discredit the science to a greater extent than males with Low Male CN.

H_9. The act of science discrediting will be moderated by Precarious Manhood (PM), such that males with High PM will discredit the science to a greater extent than males with Low PM.

H_{10}. Engaging in group-affirmation will reduce the tendency to discredit an identity-threatening scientific publication.

Stream II was successful in supporting $H_4 - H_9$. H_{10} was not supported. Each of the moderators and group-affirmation are discussed below in terms of their contribution to supporting the hypotheses and literature. Table 77 provides a summary of the Stream II findings, reported in terms of Focal Independent Variable and Hypothesis by Study No. and Dependent Variable (DV). It also includes details of the analysis / effect used to determine support for the hypothesis, and the original Table No. in which the effect had been reported.

Table 77 Stream II Outcome by Focal Independent Variable, Hypothesis, and Dependent Variable

H#	Study#	DV	Table#	Effect	H# Outcome
SOCIAL IDENTITY					
H₄	5	NRET	-	NRET By Gender, F (1, 208) = 17.45, p < .001	Supported
		NRET	36	Condition x CSE Private b = .43, p = .023	Supported
H₅	6	NRE	45A	Main Effect CSE Private β = .30, p = .005	Partial Support
		NRER	45B	Main Effect CSE Private β = .29, p = .007	
	7	NRE	58	Condition x CSE Private b = .32, p = .023	Supported
		NRER	57	No Interaction (p = .476) or Main Effect (p = .188)	
	8	NRE	72A	Main Effect CSE Private β = .27, p = .004	Partial Support
		NRER	72B	Main Effect CSE Private β = .27, p = .004	
SOCIAL DOMINANCE ORIENTATION					
H₆	5	NRET	38	Main Effect SDO-E β = .30, p = .032, SDO-D (p = .519)	P. Support
	6	NRE	47A	Main Effect SDO-E β = .50, p < .001, SDO-D (p = .331)	Partial Support
		NRER	47B	Main Effect SDO-E β = .39, p = .001, SDO-D (p = .484)	
	7	NRE	60A	Condition x SDO-D b = .56, p < .001	Supported
		NRER	60B	Condition x SDO-D b = .51, p = .001	
		NRE	61A	Condition x SDO-E b = .54, p < .001	
		NRER	61B	Condition x SDO-E b = .45, p = .002	
	8	NRE	73A	Main Effect SDO-E β = .25, p = .017	Partial Support
		NRER	73B	Non-Sig. (p = .275).	
AMBIVALENT SEXISM					
H₇	5	NRET	39	Main Effect HS β = .37, p < .001, BS (p = .197)	P. Support
	6	NRE	48A	Main Effect HS β = .54, p < .001	Partial Support
		NRER	48B	Main Effect HS β = .60, p < .001	
		NRE	49	Condition x BS b = .38, p = .018	
		NRER	50	Condition x BS b = .42, p = .014	
	7	NRE	63A	Condition x HS b = .52, p < .001	Supported
		NRER	63B	Condition x HS b = .45, p < .001	
	8	NRE	74A	Main Effect HS β = .50, p < .001	Partial Support
		NRER	74B	Main Effect HS β = .51, p < .001	
COLLECTIVE NARCISSISM					
H₈	7	NRE	65A	Condition x CN b = .42, p = .005	Supported
		NRER	65B	Condition x CN b = .47, p = .003	
	8	NRE	76A	Main Effect β = .39, p < .001	Partial Support
		NRER	76B	Main Effect β = .41, p < .001	
PRECARIOUS MANHOOD					
H₉	7	NRE	64A	Condition x PM b = .39, p = .003	Supported
		NRER	64B	Condition x PM b = .26, p = .056	
	8	NRE	75A	Condition x PM b = .38, p = .004	Partial Support
		NRER	75B	Condition x PM b = .32, p = .015	
GROUP AFFIRMATION					
H₁₀	8	NRE	-	Failed to reduce the tendency to discredit for all IVs.	Not Supported
		NRER	-		

IMPORTANT. Study 6 - *Main Effects are reported as the prime failed to cause a differential effect. Thus, Main Effects refer to the collapsing of priming conditions. Study 7 – SDO-D and SDO-E were analysed separately due to collinearity. Study 8 – Main Effects are reported as the affirmation failed to cause a differential effect. Thus, Main Effects refer to the collapsing of affirmation conditions.*

10.2.1 Social Identity (Strength of)

Study 5 provided support for H$_4$. Study 5 revealed that when presented with a scientific publication that concluded women make for better leaders than men, men were on average more likely to discredit said publication than men presented with a control publication. No significant difference was observed in women presented with the same publications, suggesting the difference was unique to males. Studies 5 – 8 provide support and partial-support for this interpretation and H$_5$. Private Collective Self-Esteem (CSE), which "*assesses [the] subjects' judgements of how positive their social groups are, and comes closest to how Tajfel (1982) defined social identity*" (Crocker and Luhtanen, 1990, p63), was revealed to moderate science discrediting such that greater Private CSE predicted more negative evaluations of the identity-threatening (pro-female leadership) publication (Studies 5 and 7). In Studies 6 and 8, where neither the identity-prime nor the group-affirmation task allowed for moderation to be observed, Private CSE was a significant predictor of science discrediting. Thus, H$_5$ is supported throughout Stream II.

These findings are consistent with the social identity literature. The literature reveals that when under social identity threat, high CSE Private predicts greater outgroup derogation (Branscombe and Wann, 1994; Luhtanen and Crocker, 1990). While the act of science discrediting is not outgroup derogation *per se*, it is a type of derogation that is directed toward the source of threat (the publication and its author). This is in line with the findings of Voci (2006), who reveals that ingroups presented with ingroup-threatening information, view the source of that information with greater distrust, while negatively evaluating its content (see also Dietz-Uhler, 1999). Nauroth *et al.* (2014; 2015; 2017) extend this further by revealing that social identity-threatening science is discredited by those it threatens, including its author. However, their focus was almost exclusively on "gamers" as the ingroup. What Stream II reveals is that scientific information that threatens male social identity is discredited by those it threatens. This male group arguably represents a much larger group than has previously been explored, and one that represents a majority of the "gatekeepers" to research dissemination in the workplace.

10.2.2 Social Dominance Orientation (SDO)

H_6 found partial support. In Study 5, the anti-egalitarian subdimension (SDO-E), which represents the individual's preference for social hierarchies, as well their opposition to measures that would reduce inequality (Kleppestø, Eftedal, and Thomsen, 2020), was a significant predictor of science discrediting for both the pro-female leadership and control publications. This supports what is referred to in the SDO literature as the Invariance Hypothesis (*see* Sidanius *et al.*, 2017, *for a review*). The Invariance Hypothesis states that men will possess greater SDO than women, and as such they will be more anti-egalitarian than women (Sidanius *et al.*, 2000). While the Invariance Hypothesis was not the focus of the thesis, Study 5 suggests that a by-product of it, is that men are not only more likely to discredit research that unfavourably compares their gender ingroup to the female outgroup, but that they are equally likely to discredit research that indicates gender equality (the control publication). This provides an interesting avenue for future research on the Motivated Rejection of Science (MRS), as Hornsey and Fielding (2017) have predominantly focused on SDO-D, pro-dominance. It also provides support for the analysis of both dimensions of SDO, rather than exploring its impact on science discrediting as a composite (Total SDO). As Studies 6 and 8 revealed, SDO-E predicted the discrediting of both the pro-female leadership publication (Studies 6 and 8) and its author (Study 6), while SDO-D failed to. Indeed, it was only when SDO-D was analysed separately from SDO-E (Study 7), that it moderated science discrediting between the pro-female leadership and gender-neutral publications.

That SDO predicts science discrediting is unsurprising, as Hornsey and Fielding (2017) consider it to be an "attitude root" for the Motivated Rejection of Science. Furthermore, the literature reveals that SDO in men predicts prejudice toward women in the workplace, including employment scepticism ("*a belief that women lack abilities needed to succeed in the workplace*", Christopher and Wojda, 2008, p66) and traditional role preferences (*ibid*.). This may explain the SDO-related motivation to discredit both publications in Study 5. The literature also reveals that SDO predicts outgroup derogation where intergroup competition is activated (Duckitt, 2006). It is also found to increase when the status of the ingroup is under threat (Morrison, Fast, and Ybarra, 2009) and where masculinity is threatened (Dahl, Vescio, and Weaver, 2015). What Stream II adds to this literature is evidence of SDOs role in the discrediting of pro-female *and* gender-equal research, so far as leadership ability is concerned.

10.2.3 Ambivalent Sexism (AS)

H_7 also found support. Employing Glick and Fiske's (1996) Ambivalent Sexism Inventory, sexist ideologies were captured as two distinct, yet complimentary dimensions: Hostile and Benevolent Sexism (*see* Connor, Glick, and Fiske, 2017, *for a review*). Hostile Sexism represents the individual's antipathy toward women (Glick and Fiske, 2001) and a belief that women are manipulative and control-seeking (Grubbs, 2017). It also views gender equality as an attack on masculinity and traditional values, and is a predictor of preferences for men's dominance over women (Hack, 2017). It also predicts the negative evaluations of non-traditional women (Glick, Wilkerson, and Cuffe, 2015; Gaunt, 2013). It is therefore unsurprising that Hostile Sexism predicted greater science discrediting of the pro-female leadership publication in Studies 5 – 8, and predicted greater negative evaluations of the gender-equal publication in Study 5.

However, Benevolent Sexism (BS) was not so conclusive. Benevolent Sexism represents a subtler form of sexism, and one that is expressed in seemingly positive ways. It emphasises the innocence, fairness, purity, and fragility of women (Grubbs, 2017), and a belief that men should protect and provide for women so long as they comply with traditional gender roles (Mastari, Spruyt, and Siongers, 2019; Good, 2017). Therefore, the fact that Study 5 reported no significant effect, and that Study 6 revealed science discrediting to be unrelated to changes in BS in the gender prime condition, is surprising. Likewise, that higher rates of BS predicted more positive evaluations of the pro-female leadership publication in Studies 7 and 8, is also surprising. Hideg and Farris (2016) report that while BS predicts gender equality in the workplace, it does so only when the position is feminine, not masculine. In Stream II, leadership ability was emphasised as it is typically viewed as a male trait (Isaac, Kaatz, and Carnes, 2012). Therefore, the results are at odds with the literature.

Fraser, Osborne, and Sibley (2015) may provide some indication as to why, though. Fraser and colleagues revealed men with high BS endorsed gender affirmative action that would increase gender equality, on the basis that affirmative action is seen as "helping behaviour" – something that women require from men, according to those with high BS. Therefore, the positive evaluations of the pro-female leadership publication may be the result of the paternalistic aspect of BS, such that positively evaluating the research is "helping" women. Alternatively, the gender of the publications author may also have been a factor. Future research would benefit from

removing the authors gender or providing a comparison of science discrediting for male authors. This would allow the for the testing of the Intergroup Sensitivity Effect (Hornsey, 2005) from an Ambivalent Sexism perspective on the Motivated Rejection of Science (Hornsey, 2020).

10.2.4 Collective Narcissism (CN)

Study 7 tested and supported H_8. Collective Narcissism (CN) is a form of ingroup bias that is robustly associated with outgroup hate (Golec de Zavala and Lantos, 2020). It is a belief that the ingroup is exceptional and worthy of pride. But this exceptionality is contingent on external validation. Therefore, CN is predictive of intergroup hostility as retaliation to ingroup image threat (Marchlewska *et al.*, 2020; Golec de Zavala *et al.*, 2013). Indeed, collective narcissists are "*hypersensitive to in-group image threat and perceive an insult to the in-group even when it is debatable, not perceived by others or not intended by the other group*" (Golec de Zavala *et al.*, 2016, p533). Applied to male's as an ingroup, Collective Narcissism is a belief in the exceptionality of men, and the belief that men do not receive the respect they deserve (Górska *et al.*, 2020). It was therefore predicted that CN would moderate science discrediting. Study 7 supported this prediction. High CN predicted the discrediting of both the pro-female publication and its author, while Low CN predicted less negative evaluations of each. In Study 8, this was further supported – CN continued to predict science discrediting, despite the inclusion of a group-affirmation task. The theory of Collective Narcissism is gaining traction in academia, though to-date it has not been considered a reason (or "attitude root") for the Motivated Rejection of Science. Therefore, Studies 7 and 8 provide a novel, male-specific reason for science discrediting, where that science unfavourably compares the ingroup of men to the outgroup of women.

10.2.5 Precarious Manhood (PM)

Study 7 also tested and supported H_9. Precarious Manhood (PM) is the belief that "manhood" is achieved, not ascribed, and so it is not a developmental certainty (*see* Vandello and Bosson, 2013, *for a review*). It is also the belief that once achieved, it cannot be guaranteed, and so is easily lost (Vandello *et al.*, 2008). Evidence suggests that threats to masculinity make salient the

precariousness of manhood, causing those with strong PM beliefs to respond defensively and aggressively to reaffirm their masculinity. This includes thinking more aggressively (Vandello *et al.*, 2008), behaving more aggressively (Bosson *et al.*, 2009), support for more aggressive policies and politicians (DiMuccio and Knowles, 2020), a reduction in the confrontation of sexual prejudice toward gay men (Kroeper, Sanchez, and Himmelstein, 2014), and greater amusement of anti-gay and sexist jokes (Connor, Ford, and Banos, 2017). Of relevance to Stream II is the finding that women in supervisory roles are perceived by men to be threatening, and are responded to with greater assertiveness (Netchaeva, Kouchaki, and Sheppard, 2015). Therefore, it was predicted that PM would moderate science discrediting, where that science indicated women made for better leaders than men. To that end, Study 7 provided support for this prediction, revealing High PM (but not Low PM) predicted discrediting of both the pro-female leadership publication and its author. Hostile Behavioural Intentions (HBI) toward the author were also moderated by PM in the expected direction. Study 8 also revealed that greater PM beliefs increased science discrediting.

The PM literature typically employs masculinity threats to prime PM. The results of Stream II therefore provide two questions that future research may address. First, *is the pro-female leadership publication perceived by men to be a threat to their masculinity?* The topic of masculinity is not addressed in the thesis, though it is a closely related topic to male identity (Wood and Eagly, 2015). Second, *if not a threat to masculinity, does the PM-motivated discrediting of the pro-female leadership publication provide evidence that male social identity threat primes PM?* If masculinity threat is not the cause, then the effects of identity threat may be of significance to the development of PM theory. The inclusion of PM also provides a novel, male-specific explanation for science discrediting, contributing to the MRS "ideologies" attitude root.

10.2.6 Group-Affirmation

Study 8 failed to provide support for H_{10}. Unfortunately, without a manipulation check it is impossible to know for certain whether the group-affirmation task had an effect on male participants that was distinct to that caused by the self-affirmation task. It is also impossible to know for certain whether each affirmation task had its intended effect. Though based on speculation alone, it is believed that the self-affirmation task failed to provide a basis for

comparison, due to the participants self-identity being so closely aligned to their male social identity. To explain further, participants in the self-affirmation condition were instructed to: "*rank the values from most to least important to you.*" While participants in the group-affirmation condition were instructed to: "*rank the values from most to least important to men. How you define "men" or "man" is entirely up to you.*" It is believed that because the male participants in the group-affirmation condition were required to define men how they saw fit, they perhaps defined "men" in terms of themselves. Thus, male social identity = self-identity. This of course is speculation. But it is somewhat supported by the findings of Fowler and Geers (2017), who, employing a masculinity threat to evoke "toughness" in men, also employed a self-affirmation task to mitigate the effects of threat. The male participants in the self-affirmation condition were asked to: "*please write about an aspect of your identity, a talent, a relationship, or an accomplishment that makes you feel fulfilled*". This affirmation task was specific to the self, rather than male social identity. Yet it was successful in reducing the effects of masculinity threat. Furthermore, as McGowan, Hassan, and Shiu (2020, p227) explain, "*gender identity is an integral part of individuals' self-concept and serves as the fundamental scaffolding that allows individuals to process information about themselves and the world around them*". Thus, one's gender is one's self, and so affirming one versus the other is likely to have caused a similar effect for both.

If this prediction is true, it provides some indication as to why the group-affirmation task failed to reduce the effects of science discrediting, when it has proven effective elsewhere in reducing the effects of group-level threat (e.g. Sherman *et al.*, 2007; Čehajić-Clancy *et al.*, 2011; Glasford, Dovidio, and Pratto, 2009). If repeated, it is recommended that either a) a separate identity is used to replace the self-affirmation condition, such as national identity, or b) instead of self-affirmation, participants in the control condition rank-order the values most important to men, and then write about the *least* important value (i.e. *no* affirmation). This latter task has proven successful elsewhere (e.g. Gunn and Wilson, 2011).

10.3 Limitations

The following represent the most significant limitations of the thesis.

I.   While samples obtained via Prolific are reported to be less dishonest, more naïve, more diverse, and less likely to fail an attention check than participants sourced through MTurk (Peer *et al.*, 2017), convenience samples of any site suffer from issues of representativeness and generalisability (Cohen *et al.*, 2018). In order for participants to be included in Studies 5 – 8, they first needed an account with Prolific. Prolific boasts a sample of 13,723 active male participants in the UK at the time of writing (24th June 2021). But the simple fact that an account is needed, reduces the representativeness of any sample obtained from Prolific. Furthermore, Studies 5 – 8 did not include sample sizes that would be considered "representative" due to financial constraints. And of those who were sampled, participants were only eligible to take part if they had an approval rating of 95% or higher, and if they had not previously taken part in one of the researchers past studies (i.e. they had to have always been "new" to the researcher). This further limits what is already a limited sample provided by Prolific, and does not include those participants whose submissions were rejected for having failed an attention check or having appeared as a significant outlier. It is possible that with a truly representative sample for each study, that the results relating to science discrediting may differ to those reported here.

II. The justification for Stream II was that male managers and senior managers tasked with disseminating academic research, may be biased against its content and as such, refuse to employ it in the workplace or opt for research with identity-congruent findings. However, Stream II makes no attempt to measure dissemination. Instead, a relationship is implied between discrediting and censorship. It is perfectly reasonable to assume that despite one's personal objections to the results of a particular study, that one may still opt to employ it in the workplace – putting the firm above one's own interests. To determine whether discrediting results in censorship or reduced dissemination, further research is needed.

10.4   Future Directions

The following are potential areas for future research to address.

I. The failure of the group-affirmation task in Study 8 opens the way for alternative means of threat-mitigation to be employed in the science discrediting literature. One method is the Common Ingroup Identity Model (CIIM; Gaertner *et al.*, 1993). The CIIM proposes that intergroup bias can be reduced through a process of recategorisation. Drawing from Brewer's (1979) assertion that intergroup bias more often manifests itself as ingroup favouritism than outgroup derogation, and Self-Categorisation Theory's (SCT; Turner *et al.*, 1987) assertion that ingroup members are drawn closer to the self, the CIIM suggests that to reduce intergroup bias, both the ingroup and outgroup must be recategorized as a superordinate ingroup. The bias for ingroup favouritism is then extended to the former outgroup members, increasing positive attitudes toward them. This superordinate identity may be an existing identity made salient or one that is newly introduced. This method of intergroup bias reduction is revealed to mitigate perceptions of intergroup threat (Riek *et al.*, 2010). Applied to science discrediting, if the "we" is emphasised over the "us" and "them", and if the benefits associated with women in leadership positions is articulated as benefitting a superordinate group (e.g. the firm, the industry), then discrediting behaviour may be reduced. The advancement of women may no longer be seen as a threat to men, but instead as an advancement for the whole group.

II. Alternatively, changing the gender of the author or removing the author's gender entirely, may reduce science discrediting. Ingroup members are revealed to respond less defensively and less negatively to criticism provided by an ingroup member than an outgroup member (Hornsey, Oppes, and Svensson, 2002). This is referred to as the Intergroup Sensitivity Effect (ISE; Hornsey and Imani, 2004). If the pro-female leadership publication was presented as having been authored by a male researcher, it is possible that its content would be received less defensively than had it been authored by a female researcher. Using the pro-female leadership publication, future research could explore the Intergroup Sensitivity Effect by presenting the article as having been authored by a male, female, and gender-neutral researcher (e.g. author initials only, no first name).

10.5   Conclusion

Stream II set out to achieve the following three goals. First, it set out to explore the act of science discrediting from a social identity perspective, focusing specifically on male gender-derived social identity and gender-related scientific publications (the *pro-female leadership* publication). In this way, Stream II was to contribute to the Motivated Rejection of Science (MRS) perspective on science discrediting. Second, Stream II set out to further contribute to the MRS perspective by exploring alternative "attitude roots", namely, Social Dominance Orientation, Ambivalent Sexism, Collective Narcissism, and Precarious Manhood. Thirdly, Stream II aimed to explore the impact of group-affirmation on science discrediting. In achieving these goals, Stream II was intended to answer the following Research Questions (RQ):

RQ$_4$.   To what degree are evaluations of identity-threatening scientific publications influenced by male gender-derived social identity?

RQ$_5$.   To what extent can the act of science discrediting by male's be attributed to alternative explanations, including Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Collective Narcissism (CN), and Precarious Manhood (PM)?

RQ$_6$.   What impact does group-affirmation have on the consumers evaluations of identity-threatening scientific publications?

Each of these three questions were answered in Stream II, though some more conclusively than others.

With reference to RQ$_4$, Stream II revealed that where a scientific publication provides an unfavourable comparison of the ingroup relative to an outgroup, that greater identification with the ingroup will result in greater discrediting of the offending publication. But as identification decreases, discrediting decreases, also. Thus, Stream II revealed that not only does social identity influence the MRS, but that ingroup identification moderates the act of discrediting. Stream II also

revealed that social identity needs extend beyond science discrediting as ingroup normative, to science discrediting as ingroup defence.

But as Stream II revealed, ingroup identification was just the start. From a strictly male perspective, several alternative explanations were explored to help explain the discrediting of the pro-female leadership publication. In answer to RQ$_5$, the reader's preference for social hierarchies, their belief in the exceptionality of men, their belief that manhood is *earned* and not guaranteed, and unsurprisingly, their hostility toward women, were all causes for the discrediting of the publication and/or its author.

In answering RQ$_4$ and RQ$_5$, Stream II provides significant insight into the consumption of group-related science. First, where scientific publications compare one group to another (e.g. comparing businesses, industries, nationalities, ethnic groups, etc.), the consumers of that science who belong to and identify with the group compared less favourably, are at risk of discrediting its findings and potentially limiting its impact. Second, the influence of these moderators paints a picture in which seemingly innocuous research is rejected by those for whom it was perhaps intended. Indeed, there may be hundreds if not thousands of academic papers that have failed to have their discoveries implemented in the real world, simply because it is at odds with the readers psychological needs.

To ensure research has its intended impact, researchers must find ways to improve its acceptance. Stream II attempted to do just that, but failed. In answer to RQ$_6$, Stream II revealed that affirming male social identity had no significant impact on science discrediting. However, the affirmation manipulation may have suffered from several methodological limitations, suggesting the true effect of group-affirmation on science discrediting is yet to be explored. Further research is needed to answer RQ$_6$ more accurately and to corroborate the answers to RQ$_4$ and RQ$_5$.

This concludes Stream II.

CHAPTER 11
THESIS SUMMARY AND REFLECTIONS

"*Everything has to come to an end, sometime.*"

L. Frank Baum, *The Marvelous Land of Oz* (1904)

11.1   Thesis Summary

This thesis began by highlighting a growing interest in consumer psychology to understand what influences consumer avoidance and rejection. The argument for understanding these behaviours was that to understand was to prevent, and to prevent was to ultimately improve the effectiveness of future marketing activities. The aim of this thesis was therefore to explore the avoidance and rejection of products from a social identity perspective; with a specific focus on male gender-derived social identity. Thus, this thesis explored the avoidance of an outgroup-associated product (the *Ladies' Cut Steak*) and the rejection of an identity-threatening product (the *pro-female leadership publication*). These two consumer behaviour contexts were titled Streams I and II, respectively, and together were equal in their successes and failures.

To explore product avoidance, Stream I employed White and Dahl's (2006) Menu Selection Task (MST). The aim of Stream I was to provide evidence that the dissociation effect as observed within the MST, was influenced by male social identity. Stream I failed to provide such evidence. In hindsight, the focus on strength of male ingroup identification moderating the dissociation effect, was perhaps flawed from the outset. In Studies 2 – 4, male participants consistently reported high ingroup identification, with very little variation. This was to be expected. Chapter 3 had made it clear that male social identity was high in both status and value, and was subsequently high in salience. Thus, there may not have been sufficient variation to allow for moderation to occur. To be "low" in male social identity would still have been relatively high, and not statistically distinguishable from "high" male social identity to cause a moderating effect. This may also explain why priming male social identity in Study 3 failed to take effect.

But the lack of a significant effect is still an interesting result. Stream I indicates that male participants presented with an outgroup-labelled product, avoid it not as a result of their male social identity, but for reasons unexplored in this thesis. This finding presents an opportunity for

future researchers to explore the causes of male-specific dissociation, as doing so has the potential to double the market for female-associated products. Interestingly, Stream I did provide a glimpse into the possible dissociation-mitigating effects of gender affirmation, as those who affirmed their gender identity exhibited less dissociation. But this result is far from conclusive. Future research would do well to explore the effects of affirmation using multi-item measures of gender-derived social identity, representing alternative dimensions to those explored here. For now though, the dissociation effect as observed within the MST appears not to be influenced by male social identity.

Stream II showed greater success. To explore product rejection, Stream II employed a pro-female leadership publication to investigate the Motivated Rejection of Science (MRS) from a male social identity perspective. The aim was to provide evidence that male social identity would influence the discrediting of pro-female science. To this end, Stream II was successful. Stream II revealed that male readers discredit research that provides an unfavourable comparison of their male ingroup relative to the female outgroup. It was revealed there were several moderators to this effect. While initially the focus was on social identity needs vis-à-vis ingroup defence, alternative explanations for male-specific science discrediting were revealed, also. These included Social Dominance Orientation, Ambivalent Sexism, Precarious Manhood, and Collective Narcissism. Where each of these "attitude roots" increased, science discrediting also increased.

The findings of Stream II provide an important first step to understanding the motivated rejection of gendered science from a male social identity perspective. It is hoped that by understanding what motivates this rejection, we can better understand how to increase its acceptance, improving the dissemination and application of academic research for the betterment of academia and society more generally. But Stream II is just the start. Further research is needed to understand what science is most at risk of being rejected. Here, we employed gendered science with a focus on leadership ability, designed to put at risk male social identity. But this focus is very narrow. In the wake of the COVID-19 pandemic, the scientific community has faced growing mistrust from the public the world over. It is no longer reasonable to assume that scientific evidence will be assessed on its merit alone. Indeed, we must understand what deeper psychological needs are at risk of being affected by the content of science itself. Failing to do so will only serve to further disconnect public opinion from scientific consensus.

11.2   Reflections

With this project having taken several years to complete, it is appropriate to reflect on some of the key decisions that were made to arrive at this final point. Three decisions shaped the structure and outcome of the thesis. First was the decision to focus on men as the focal ingroup. While gender is far from being underrepresented in the consumer behaviour literature, studying it provides marketers with insight into one of the most important and salient categories to influence consumer decision making. It was intended that by studying the dissociation effect from a male social identity perspective, that marketers tasked with marketing gendered products could avoid dissociation, so as to increase their potential market. This unfortunately failed. In Stream II, social marketers were the intended audience, and the aim was to identify underlying causes of science rejection. But deciding on men as the focal ingroup restricted the content of the manipulation (the *pro-female leadership* publication), the choice of theories used to explain rejection, and the disciplines from which theories were drawn (social psychology).

The second key decision followed the failure of Stream I. The decision was made to shift focus from men avoiding an outgroup product to men rejecting an outgroup-favouring publication. To some, this shift may signal a lack of focus within the thesis. This is a difficult point to counter. Certainly, the two streams would not feature in the same publication. In hindsight, the project could have stopped at Stream I and the PhD would have been considered a successful failure. It failed to identify male social identity as an influence on the dissociation effect. But it did so successfully. Equally, the project could have reported on Stream II only, and been considered a greater success than it perhaps is with both streams included. Either way, the two streams needn't have been included together. The decision to include them was owing to a belief that a non-significant effect was a failure, and as such the PhD would be a failure, too, if only Stream I were included. This opinion has now changed. The inclusion of Stream II is no longer viewed as a requirement for the successful completion of the PhD.

Finally, the third decision was to focus on the collection and analysis of quantitative data. We saw in Stream I that male social identity did not influence the dissociation effect, so far as it was analysed by means of moderation. With qualitative data, probing questions could be asked. The participant could explain in detail exactly *why* they wouldn't choose the *Ladies' Cut Steak*, and what selecting that steak might mean to them personally and socially. In Stream II, it would have been interesting to ask those participants that selected "*Strongly Agree*" to statements such as

"*Men deserve special treatment*" and "*The true worth of men is often misunderstood*", why they feel strongly about these points, and how they felt their responses to these points related to their evaluations of the pro-female leadership publication. The inferences drawn from quantitative data are limited by the theories we apply to it, and no scale perfectly captures the construct under investigation, leaving room for uncertainty. Qualitative data, if captured for Streams I and II, may have shed light on *why* Stream I failed and what theories were better suited to its investigation. It may also have provided insight into alternative "attitude roots" to science rejection that may have had nothing to do with gender. The decision to focus on quantitative data was a personal one, informed by the theories and journals favoured by the author. To achieve deeper understanding of the effects reported here, qualitative methods may be required.

But this deeper understanding is to come from another project at another time. For now, as Baum notes in the epigraph, *everything must come to an end, sometime*. And so it does here, at least for this project.

REFERENCES

Abrams, D. and Hogg, M. A. (1988). Comments on the Motivational Status of Self-Esteem in Social and Intergroup Discrimination. *European Journal of Social Psychology*. 18 (4), p317-334.

Abrams, D. and Hogg, M. A. (1990). Social Identification, Self-Categorization and Social Influence. *European Review of Social Psychology*. 1 (1), p195-228.

Achinstein, P. (2002). Is There a Valid Experimental Argument for Scientific Realism? *The Journal of Philosophy*. 99 (9), p470-495.

Adams, C. J (2015). *The Sexual Politics of Meat: A Feminist-Vegetarian Critical Theory*. London: Bloomsbury Academic. (Original work published 1990)

Adarves-Yorno, I., Postmes, T., and Haslam, S. A. (2006). Social Identity and the Recognition of Creativity in Groups. *British Journal of Social Psychology*. 45 (3), p479–497.

Adelman, L. and Dasgupta, N. (2019). Effect of Threat and Social Identity on Reactions to Ingroup Criticism: Defensiveness, Openness, and a Remedy. *Personality and Social Psychology Bulletin*. 45 (5), p740–753.

Aguirre-Rodriguez, A., Bosnjak, M. and Sirgy, M. J. (2012). Moderators of the Self-Congruity Effect on Consumer Decision-Making: A Meta-Analysis. *Journal of Business Research*. 65 (8), p1179-1188.

Agyemang-Mintah, P. and Schadewitz, H. (2019). Gender Diversity and Firm Value: Evidence From UK Financial Institutions. *International Journal of Accounting & Information Management*. 27 (1), p2-26.

Ahuvia, A. C. (2015). Nothing Matters More to People Than People: Brand Meaning and Social Relationships. In: MacInnis, D. J., Park, C. W. and Agarwal, M *Brand Meaning Management*. Bingley, England: Emerald Group Publishing Limited . p121-149.

Aiken, L. S. and West, S. G (1991). *Multiple Regression: Testing and Interpreting Interactions*. London: Sage Publications.

Ali, M., Ng, Y. L., and Kulik, C. T. (2014). Board Age and Gender Diversity: A Test of Competing Linear and Curvilinear Predictions. *Journal of Business Ethics*. 125 (3), p497-512.

Allington, D., Duffy, B., Wessely, S., Dhavan, N., and Rubin, J. (2020). Health-Protective Behaviour, Social Media Usage and Conspiracy Belief During the COVID-19 Public Health Emergency. *Psychological Medicine*. p1-7.

Allport, G. W (1954). *The Nature of Prejudice*. Cambridge, Massachusetts: Addison-Wesley.

Allport, G. W (1961). *Pattern and Growth in Personality*. New York: Rinehart and Winston.

Allport, G. W. and Vernon, P. E. (1931). *A Study of Values*. Boston: Houghton Mifflin.

Allport, G. W., Vernon, P. E., and Lindzey, G (1960). *Study of Values*. 3rd ed. Boston: Houghton Mifflin.

Amodio, D. M., Devine, P. G., and Harmon-Jones, E. (2008). Individual Differences in the Regulation of Intergroup Bias: The Role of Conflict Monitoring and Neural Signals for Control. *Journal of Personality and Social Psychology*. 94 (1), p60-74.

Aristotle (1998). *The Metaphysics*. London: Penguin Books.

Aron, A., McLaughlin-Volpe, T., Mashek, D., Lewandowski, G., Wright, S. C., Aron, E. N. (2004). Including Others in the Self. *European Journal of Social Psychology*. 15 (1), p101-132.

Aron, A., McLaughlin-Volpe, T., Mashek, D., Lewandowski, G., Wright, S. C., Aron, E. N. (2001). The Self Expansion Model of Motivation and Cognition in Close Relationships and Beyond. In: Fletcher, G. and Clark, M. *Blackwell Handbook of Social Psychology. Vol. 2: Interpersonal Processes*. Oxford: Blackwell. p478-501.

Aronson, J. and McGlone, M. S. (2009). Stereotype and Social Identity Threat. In: Nelson, T. D. *Handbook of Prejudice, Stereotyping, and Discrimination*. Hove, East Sussex: Psychology Press (Taylor and Francis Group). p153-178.

Asendorpf, J. B., Conner, M., Fruyt, F. D., Houwer, J. D., Denissen, J. J. A., Fielder, K., Fielder, S., Funder, D. C., Kliegl, R., Nosek, B. A., Perugini, M., Roberts, B. W., Schmitt, M., Vanaken, M. (2013). Recommendations for Increasing Replicability in Psychology. *European Journal of Personality*. 27 (2), p108-119.

Bandura, A. (1977). Self-Efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review*. 84 (2), p191-215.

Banister, E. N. and Hogg, M. K. (2004). Negative Symbolic Consumption and Consumers' Drive for Self-Esteem. *European Journal of Marketing*. 38 (7), p850-868.

Barreto, M. and Ellemers, N. (2002). The Impact of Respect Versus Neglect of Self-Identities on Identification and Group Loyalty. *Personality and Social Psychology Bulletin*. 28 (5), p629-639.

Barreto, M. and Ellemers, N. (2003). The Effects of Being Categorised: The Interplay Between Internal and External Social Identities. *European Journal of Social Psychology*. 14 (1), p139-170.

Baum, L. F (1904). *The Marvelous Land of Oz*. Chicago: The Reilly & Britton Co.

Baumeister, R. F (1999). *The Self in Social Psychology*. Philadelphia: Taylor and Francis.

Baumeister, R. F. (1997). Identity, Self-Concept, and Self-Esteem: The Self Lost and Found. In: Hogan, R., Johnson, J. and Briggs, S *Handbook of Personality Psychology*. London: Academic Press. p681-710.

Baumeister, R. F. (1998). The Self. In: Gilbert, D. T., Fiske, S. T. and Lindzey, G. *Handbook of Social Psychology*. 4th ed. New York: McGraw-Hill. p680-740.

Baumeister, R. F. (2001). *After 18,000 Studies, What Good is Self-Esteem?* Paper Presented at the Society of Experimental Social Psychology Pre-Conference on the Self. Spokane, W.A. October.

Baumeister, R. F. (2011). Self and Identity: A Brief Overview of What They Are, What They Do, and Who They Work. *Annals of the New York Academy of Sciences*. 1234 (1), p48-55.

Baumeister, R. F. and Twenge, J. M. (2003). The Social Self. In: Millon, T. and Lerner, M. J. *Handbook of Psychology: Personality and Social Psychology*. 5th vol. New Jersey: Wiley. p327-352.

Baumeister, R. F. and Vohs, K. D. (2001). Narcissism as Addiction to Esteem. *Psychological Inquiry*. 12 (4), p206-210.

BBC. (2021). *Covid Map: Coronavirus Cases, Deaths, Vaccinations by Country.* Available: https://www.bbc.co.uk/news/world-51235105. Last accessed 15th February 2021.

Bearden, W. O. and Etzel, M. J. (1982). Reference Group Influence on Product and Brand Purchase Decisions. *Journal of Consumer Research*. 9 (2), p183-194.

Bearden, W. O., Netemeyer, R. G. and Teel, J. E. (1989). Measurement of Consumer Susceptibility to Interpersonal Influence. *Journal of Consumer Research*. 15 (4), p473-481.

Beardsworth, A., Brynan, A., Keil, T., Goode, J., Haslam, C., and Lancashire, E. (2002). Women, Men and Food: The Significance of Gender for Nutritional Attitudes and Choices. *British Food Journal*. 104 (7), p470-491.

Begany, J. J. and Milburn, M. A. (2002). Psychological Predictors of Sexual Harassment: Authoritarianism, Hostile Sexism, and Rape Myths. *Psychology of Men & Masculinity*. 3 (2-3), p119–126.

Behrend, T. S., Sharek, D. J., Meade, A. W., and Wiebe, E. N. (2011). The Viability of Crowdsourcing for Survey Research. *Behavior Research Methods*. 43 (3), p800-813.

Beilock, S. L., Rydell, R. J., and McConnell, A. R. (2007). Stereotype Threat and Working Memory: Mechanisms, Alleviation, and Spillover. *Journal of Experimental Psychology*. 136 (2), p256-276.

Belk, R. W. (1988). Possessions and the Extended Self. *Journal of Consumer Research*. 15, p139-168.

Belk, R. W., Bahn, K. D., Mayer, R. N. (1982). Developmental Recognition of Consumption Symbolism. *Journal of Consumer Research*. 9 (1), p4-17.

Berger, J. (2008). Identity Signaling, Social Influence, and Social Contagion. In: Prinstein, M. J. and Dodge, K. A. *Understanding Peer Influence in Children and Adolescents*. New York: The Guilford Press. p181–199.

Berger, J. and Heath, C. (2007). Where Consumers Diverge from Others: Identity Signaling and Product Domains. *Journal of Consumer Research*. 34 (2), p121-134.

Berger, J. and Heath, C. (2008). Who Drives Divergence? Identity Signalling, Outgroup Dissimilarity, and the Abandonment of Cultural Tastes. *Journal of Personality and Social Psychology*. 95 (3), p593-607.

Bhaskar, R (1979). *The Possibility of Naturalism: A Philosophical Critique of the Contemporary Human Sciences*. Brighton: Harvester Press.

Billig, M. and Tajfel, H. (1973). Social Categorization and Similarity in Intergroup Behaviour. *European Journal of Social Psychology*. 3 (1), p27-52.

Binning, K. R., Sherman, D. K., Cohen, G. L., and Heitland, K. (2010). Seeing the Other Side: Reducing Political Partisanship via Self-Affirmation in the 2008 Presidential Election. *Analyses of Social Issues and Public Policy*. 10 (1), p276-292.

Birdwell, A. E. (1968). A Study of the Influence of Image Congruence on Consumer Choice. The Journal of Business. 41 (1), p76-88.

Blaikie, N (2007). *Approaches to Social Enquiry: Advancing Knowledge*. 2nd ed. Cambridge: Polity Press.

Blanca, M. J., Alarcón, R., Arnau, J., Bono, R., and Bendayan, R. (2018). Effect of variance ratio on ANOVA robustness: Might 1.5 be the limit? *Behavior Research Methods*. 50 (3), p937–962.

Blanz, M. (1999). Accessibility and Fit as Determinants of the Salience of Social Categorizations. *European Journal of Social Psychology*. 29 (1), p43–74.

Blanz, M. and Aufderheide, B. (1999). Social Categorization and Category Attribution: The Effects of Comparative and Normative Fit on Memory and Social Judgment. *British Journal of Social Psychology*. 38 (2), p157-179.

Blanz, M., Mummendey, A., Mielke, R., and Klink, A. (1998). Responding to Negative Social Identity: A Taxonomy of Identity Management Strategies. *European Journal of Social Psychology*. 28 (5), p697–729.

Borsboom, D., Mellenbergh, G. J., and van Heerden, J. (2004). The Concept of Validity. *Psychological Review*. 111 (4), p1061-1071.

Bortolini, T., Newson, M., Natividade, J. C., Vazquez, A., and Gomez, A. (2018). Identity Fusion Predicts Endorsement of Pro-Group Behaviours Targeting Nationality, Religion, or Football in Brazilian Samples. *British Journal of Social Psychology*. 57 (2), p346-366.

Bosson, J. K., Prewitt-Freilino, J. L., and Taylor, J. N. (2005). Role Rigidity: A Problem of Identity Misclassification?. *Journal of Personality and Social Psychology*. 89 (4), p552-565.

Bosson, J. K., Vandello, J. A., Burnaford, R. M., Weaver, J. R., and Wasti, S. A. (2009). Precarious Manhood and Displays of Physical Aggression. *Personality and Social Psychology Bulletin*. 35 (5), p623-634.

Bourhis, R. Y., Giles, H., Leyens, J. P., and Tajfel, H. (1979). Psycholinguistic Distinctiveness: Language Divergence in Belgium. In: Giles, H. and St-Clair, R. *Language and Social Psychology*. Oxford: Blackwell. p158-185.

Bourne, F. S. (1957). Group Influence in Marketing and Public Relations. In: Likert, R. and Hayes, S. P. *Some Applications of Behavioral Research*. France: UNESCO. p207-257.

Brahma, S., Nwafor, C., and Boateng, A. (2020). Board Gender Diversity and Firm Performance: The UK Evidence. *International Journal of Finance and Economics*. p1-16. ('Early View' – Online Version of a Record Before Inclusion in an Issue)

Brambor, T., Clark, W. R., and Golder, M. (2006). Understanding Interaction Models: Improving Empirical Analyses. *Political Analysis*. 14 (1), p63-82.

Branscombe, N. R. and Wann, D. L. (1994). Collective Self-Esteem Consequences of Outgroup Derogation When a Valued Social Identity is on Trial. *European Journal of Social Psychology*. 24 (6), p641–657.

Branscombe, N. R., Ellemers, N., Spears, R., and Doosje, E. J (1999). *Social identity: Context, Commitment, Content*. Oxford: Blackwell.

Breckler, S. J. and Greenwald, A. G. (1986). Motivational Facets of the Self. In: Sorrentino, R. M. and Higgins, E. T. *Handbook of Motivation and Cognition: Foundations of Social Behavior*. New York: Guilford Press. p145-164.

Brewer, M. (1991). The Social Self: On Being the Same and Different at the Same Time. *Personality and Social Psychology Bulletin*. 17 (5), p475-482.

Brewer, M. B. (1979). In-Group Bias in the Minimal Intergroup Situation: A Cognitive-Motivational Analysis. *Psychological Bulletin*. 86 (2), p307-324.

Brewer, M. B. (2001). Ingroup Identification and Intergroup Conflict: When Does Ingroup Love Become Outgroup Hate? In: Asmore, R. D., Jussim, L., and Wilder, D. *Social Identity, Intergroup Conflict, and Conflict Reduction*. Oxford: Oxford University Press. p17-41.

Brewer, M. B. (2017). Intergroup Discrimination: Ingroup Love or Outgroup Hate? In: Sibley, C. G. and Barlow, F. K. *The Cambridge Handbook of the Psychology of Prejudice*. Cambridge: Cambridge University Press. p90-110.

Brewer, M. B. and Crano, W. D. (2014). Research Design and Issues of Validity. In: Reis, H. T. and Judd, C. M. *Handbook of Research Methods in Social and Personality Psychology*. 2nd ed. New York: Cambridge University Press. p11-26.

Brown, J. D. and Marshall, M. A. (2006). The Three Faces of Self-Esteem. In: Kernis, M. H. *Self-Esteem: Issues and Answers*. Hove, East Sussex: Psychology Press. p4-9.

Brown, J. J. and Reingen, P. H. (1987). Social Ties and Word-of-Mouth Referral Behavior. *Journal of Consumer Research*. 14 (3), p350-362.

Brown, R. and Abrams, D. (1986). The Effects of Intergroup Similarity and Goal Interdependence on Intergroup Attitudes and Task Performance. *Journal of Experimental Social Psychology*. 22 (1), p78-92.

Bruner, J. (1957). On Perceptual Readiness. *Psychological Review*. 64 (2), p123-152.

Bryman, A. and Bell, E (2011). *Business Research Methods*. 3rd ed. Oxford: Oxford University Press.

Bunge, M. (1993). Realism and Antirealism in Social Science. *Theory and Decision*. 35, p207-235.

Bushman, B. J. and Baumeister, R. F. (1998). Threatened Egotism, Narcissism, Self-Esteem, and Direct and Displaced Aggression: Does Self-Love or Self-Hate Lead to Violence? *Journal of Personality and Social Psychology*. 75 (1), p219-229.

Butler, S. K. and Constantine, M. G. (2005). Collective Self-Esteem and Burnout in Professional School Counselors. *Professional School Counseling*. 9 (1), p55-62.

Button, K. S., Ioannidis, J. P. A., Mokrysz, C., Nosek, B. A., Flint, J., Robinson, E. S. J., and Munafo, M. R. (2013). Power Failure: Why Small Sample Size Undermines the Reliability of Neuroscience. *Nature*. 14 (5), 365-376.

Cadinu, M. and Cerchioni, M. (2001). Compensatory Biases After Ingroup Threat: 'Yeah, But We Have a Good Personality'. *European Journal of Social Psychology*. 3 (4), p353-367.

Calder, B. J., Phillips, L. W., and Tybout, A. M. (1982). The Concept of External Validity. *Journal of Consumer Research*. 9 (3), p240-244.

Cameron, J. E. (2004). A Three-Factor Model of Social Identity. *Self and Identity*. 3 (3), p239-262.

Campbell, D. T. and Stanley, J. C (1963). *Experimental and Quasi-Experimental Designs for Research*. Chicago: Rand McNally & Company.

Campbell, J. I. D. and Thompson, V. A. (2012). MorePower 6.0 for ANOVA with Relational Confidence Intervals and Bayesian Analysis. *Behavior Research Methods*. 44 (4), p1255–1265.

Cannon, A., Bartel, B., Bradley, R., Chapman, R. W., Curran, M. L., Gill, D. W. J., Humphreys, S. C., Masset., C., Morris, Morris, I., Quilter, J., Rothschild, N. A. and Runnels, C. (1989). The Historical Dimension in Mortuary Expressions of Status and Sentiment [and Comments and Reply]. *Current Anthropology*. 30 (4), p437-458.

Čehajić-Clancy, S., Effron, D. A., Halperin, E., Liberman, V., and Ross, L. D. (2011). Affirmation, Acknowledgment of In-Group Responsibility, Group-Based Guilt, and Support for Reparative Measures. *Journal of Personality and Social Psychology*. 101 (2), p256-270.

Cha, Y-J., Baek, S., Ahn, G., Lee, H., Lee, B., Shin, J. and Jang, D. (2020). Compensating for the Loss of Human Distinctiveness: The Use of Social Creativity Under Human–Machine Comparisons. *Computers in Human Behaviour*. 103, p80-90.

Chaiken, S. (1980). Heuristic Versus Systematic Information Processing and the Use of Source Versus Message Cues in Persuasion. *Journal of Personality and Social Psychology*. 39 (5), p752-766.

Chaiken, S. and Ledgerwood, A. (2012). A Theory of Heuristic and Systematic Information Processing. In: Van Lange, P. A. M., Kruglanski, A. W., and Higgins, E. T. *Handbook of Theories of Social Psychology*. London: Sage Publications. p246-266.

Chaiken, S., Giner-Sorolla, R., and Chen, S. (1996). Beyond Accuracy: Defense and Impression Motives in Heuristic and Systematic Information Processing. In: Gollwitzer, P. M. and Bargh, J. A. *The Psychology of Action: Linking Cognition and Motivation to Behavior*. New York: Guilford Press. p553-578.

Chakravartty, A. (2011). Scientific Realism and Ontological Relativity. *The Monist*. 94 (2), p157-180.

Champniss, C., Wilson, H. N., Macdonald, E. K., and Dimitriu, R. (2016). No I Won't, But Yes We Will: Driving Sustainability-Related Donations Through Social Identity Effects. *Technological Forecasting & Social Change*. 111, p317-326.

Chan, C., Berger, J., and van Boven, L. (2012). Identifiable but Not Identical: Combining Social Identity and Uniqueness Motives in Choice. *Journal of Consumer Research*. 29 (3), p561–573.

Chandler, J. and Shapiro, D. (2016). Conducting Clinical Research Using Crowdsourced Convenience Samples. *Annual Review of Clinical Psychology*. 12, p53-81.

Chandler, J., Rosenzweig, C., Moss, A. J., Robinson, J., and Litman, L. (2019). Online Panels in Social Science Research: Expanding Sampling Methods Beyond Mechanical Turk. *Behavior Research Methods*. 51, p2022–2038.

Chaplin, L. N. and John, D. R. (2005). The Development of Self-Brand Connections in Children and Adolescents. *Journal of Consumer Research*. 32 (1), p119-129.

Cheng, H. and Furnham, A. (2003). Personality, Self-Esteem, and Demographic Predictions of Happiness and Depression. *Personality and Individual Differences*. 34 (6), p921-942.

Cheryan, S. and Bodenhausen, G. V. (2000). When Positive Stereotypes Threaten Intellectual Performance: The Psychological Hazards of "Model Minority" Status. *Psychological Science*. 11 (5), p399-402.

Cheryan, S., Cameron, J. S., Katagiri, Z., and Monin, B. (2015). Manning Up: Threatened Men Compensate by Disavowing Feminine Preferences and Embracing Masculine Attributes. *Social Psychology*. 46 (4), p218-227.

Chia, R. (2002). The Production of Management Knowledge: Philosophical Underpinnings of Research Design. In: Partington, D. *Essential Skills for Management Research*. London: Sage Publications Ltd. p1-19.

Childers, T. L. and Rao, A. R. (1992). The Influence of Familial and Peer-based Reference Groups on Consumer Decisions. *Journal of Consumer Research*. 19 (2), p198-211.

Cho, S., van Doren, N., Minnick, M. R., Albohn, D. N., Adams, R. B., and Soto, J. A. (2018). Culture Moderates the Relationship Between Emotional Fit and Collective Aspects of Well-Being. *Frontiers in Psychology*. 9, p1-14.

Christopher, A. N. and Wojda, M. R. (2008). Social Dominance Orientation, Right-Wing Authoritarianism, Sexism, and Prejudice Toward Women in the Workplace. *Psychology of Women Quarterly*. 32 (1), p65-73.

Clarke, J. and Newman, J. (2017). 'People In This Country Have Had Enough of Experts': Brexit and the Paradoxes of Populism. *Critical Policy Studies*. 11 (1), p101-116.

Cocanougher, A. B. and Bruce, G. D. (1971). Socially Distant Reference Groups and Consumer Aspirations. *Journal of Marketing Research*. 8 (3), p379-381.

Cohen, E. L., Seate, A. A., Kromka, S. M., Sutherland, A., Thomas, M., Skerda, K., and Nicholson, A. (2020). To Correct Or Not To Correct? Social Identity Threats Increase Willingness to Denounce Fake News Through Presumed Media Influence and Hostile Media Perceptions. *Communication Research Reports*. 37 (5), p263-275.

Cohen, G. L. (2012). Identity, Belief, and Bias. In: Hanson, J. *Ideology, Psychology, and Law*. New York: Oxford University Press. p385-403.

Cohen, G. L., Garcia, J., Apfel, N., and Master, A. (2006). Reducing the Racial Achievement Gap: A Social-Psychological Intervention. *Science*. 313 (5791), p1307-1310.

Cohen, J (1988). *Statistical Power Analysis for the Behavioral Sciences*. New York: Lawrence Erlbaum Associates.

Cohen, J. (1962). The Statistical Power of Abnormal-Social Psychological Research. *Journal of Abnormal and Social Psychology*. 65 (3), p145-153.

Cohen, J. and Cohen, P (1983). *Applied Multiple Regression / Correlation Analysis for the Behavioral Sciences*. 2nd ed. New Jersey: Erlbaum.

Cohen, L., Manion, L., and Morrison, K (2007). *Research Methods in Education*. 6th ed. Oxon: Routledge.

Cohen, L., Manion, L., and Morrison, K (2018). *Research Methods in Education*. 8th ed. Oxon: Routledge.

Collins, H. M. (1983). An Empirical Relativist Programme in the Sociology of Scientific Knowledge. In: Knorr-Cetina, K. and Mulkay, M. *Science Observed: Perspectives on the Social Study of Science*. London: Sage. p85-114.

Connor, E. C., Ford, T. E., and Banos, N. C. (2017). Restoring Threatened Masculinity: The Appeal of Sexist and Anti-Gay Humor. *Sex Roles*. 77 (9-10), p567-580.

Connor, R. A., Glick, P. and Fiske, S. T. (2017). Ambivalent Sexism in the Twenty-First Century. In: Sibley, C. G. and Barlow, F. K. *The Cambridge Handbook of the Psychology of Prejudice*. Cambridge: Cambridge University Press. p295-320.

Cook, R. D. and Weisberg, S. (1982). *Residuals and Influence in Regression*. London: Chapman and Hall.

Cook, T. C. and Campbell, D. T (1979). *Quasi-Experimentation: Design and Analysis Issues for Field Settings*. Chicago: Rand McNally.

Cooley, C. H (1902). *Human Nature and the Social Order*. New York: Charles Scribner's Sons.

Corbetta, P (2003). *Social Research : Theory, Methods and Techniques*. London: Sage Publications.

Cottrell, C. A. and Neuberg, S. L. (2005). Different Emotional Reactions to Different Groups: A Sociofunctional Threat-Based Approach to "Prejudice". *Journal of Personality and Social Psychology*. 88 (5), p770-789.

Creswell, J. D., Welch, W. T., Taylor, S. E., Sherman, D. K., Gruenewald, T. L., and Mann, T. (2005). Affirmation of Personal Values Buffers Neuroendocrine and Psychological Stress Responses. *Psychological Science*. 16 (11), p846-851.

Crocker, J. and Luhtanen, R. (1990). Collective Self-Esteem and Ingroup Bias. *Journal of Personality and Social Psychology*. 58 (1), p60-67.

Crocker, J. and Park, L. E. (2004). The Costly Pursuit of Self-Esteem. *Psychological Bulletin*. 130 (3), p392-414.

Crocker, J. and Wolfe, C. T. (2001). Contingencies of Self-Worth. *Psychological Review*. 108 (3), p593-623.

Crocker, J., Luhtanen, R., Blaine, B. and Broadnax, S. (1994). Collective Self-Esteem and Psychological Well-Being among White, Black, and Asian College Students. *Personality and Social Psychology Bulletin*. 20 (5), p503-513.

Crocker, J., Niya, Y., and Mischkowski, D. (2008). Why Does Writing About An Important Value Reduce Defensiveness. *Psychological Science*. 19 (7), p740-747.

Cronbach, L. J. (1951). Coefficient Alpha and the Internal Structure of Tests. *Psychometrika*. 16 (3), p297-334.

Crotty, M (1998). *The Foundations of Social Research*. London: Sage Publications Ltd.

Csikszentmihalyi, M. and Rochberg-Halton, E (1981). *The Meaning of Things: Domestic Symbols and the Self*. Cambridge: Cambridge University Press.

Curran, P. G. (2016). Methods for the Detection of Carelessly Invalid Responses in Survey Data. *Journal of Experimental Social Psychology*. 66, p4-19.

Dahl, D. W., Manchanda, R. V., and Argo, J. J. (2001). Embarrassment in Consumer Purchase: The Roles of Social Presence and Purchase Familiarity. *Journal of Consumer Research*. 28 (3), p473-481.

Dahl, J., Vescio, T. and Weaver, K. (2015). How Threats to Masculinity Sequentially Cause Public Discomfort, Anger, and Ideological Dominance Over Women. *Social Psychology*. 46 (4), p242-254.

Dahl, J., Vescio, T., and Weaver, K. (2015). How Threats to Masculinity Sequentially Cause Public Discomfort, Anger, and Ideological Dominance Over Women. *Social Psychology*. 46 (4), p242-254.

Dambrun, M., Duarte, S. and Guimond, S. (2004). Why Are Men More Likely to Support Group-Based Dominance than Women? The Mediating Role of Gender Identification. *British Journal of Social Psychology*. 43 (2), p287-297.

Darmon, R. Y., Laroche, M., and Pétrof, J. V (1990). *Le Marketing: Fondements et Application*. 4th ed. McGraw-Hill.

Dawson, J. F. (2014). Moderation in Management Research: What, Why, When, and How. *Journal of Business and Psychology*. 29 (1), p1-19.

Day, N. E. (2011). The Silent Majority: Manuscript Rejection and Its Impact on Scholars. *Academy of Management Learning & Education*. 10 (4), p704-718.

de Hoog, N. (2013). Processing of Social Identity Threats A Defense Motivation Perspective. *Social Psychology*. 44 (6), p361-372.

DeMarree, K. G., Wheeler, S. C., and Petty, R. E. (2005). Priming a New Identity: Self-Monitoring Moderates the Effects of Nonself Primes on Self-Judgments and Behavior. *Journal of Personality and Social Psychology*. 89 (5), p657-671.

Descartes, R., Bluhm, W. T., Massa, L., Pavel, T., Post, J. F., Toulmin, S. and Weissman, D (1996). *Discourse on the Method And Meditations on First Philosophy*. New Haven, U.S.: Yale University Press.

Deutsch, M. and Gerard, H. B. (1955). A Study of Normative and Informational Social Influences Upon Individual Judgement. *he Journal of Abnormal and Social Psychology*. 51 (3), p629-636.

Diamantopoulos, A., Sarstedt, M., Fuchs, C., Wilczynski, P., and Kaiser, S. (2012). Guidelines for Choosing Between Multi-Item and Single-Item Scales for Construct Measurement: a Predictive Validity Perspective. *Journal of the Academy of Marketing Science*. 40 (3), p434-449.

Diehl, M. (1990). The Minimal Group Paradigm: Theoretical Explanations and Empirical Findings. *European Review of Social Psychology*. 1 (1), p263-292.

Diener, E. and Diener, M. (2009). Cross-Cultural Correlates of Life Satisfaction and Self-Esteem. In: Diener, E *Culture and Well-Being: Social Indicators Research Series, Vol 38*. Dordrecht: Springer. p71-91.

Dietz-Uhler, B. (1999). Defensive Reactions to Group-Relevant Information. *Group Processes and Intergroup Relations*. 2 (1), p17-29.

Dietz-Uhler, B. and Murrell, A. (1998). Effects of Social Identity and Threat on Self-Esteem and Group Attributions. *Group Dynamics: Theory, Research, and Practice*. 2 (11), p24-35.

DiMuccio, S. H. and Knowles, E. D. (2020). Precarious Manhood Predicts Support for Aggressive Policies and Politicians. *Personality and Social Psychology Bulletin*. p1-19.

Doosje, B., Ellemers, N. and Spears, R. (1995). Perceived Intragroup Variability as a Function of Group Status and Identification. *Journal of Experimental Social Psychology*. 31 (5), p410-436.

Doosje, B., Spears, R. and Ellemers, N. (2002). Social Identity as Both Cause and Effect: The Development of Group Identification in Response to Anticipated and Actual Changes in the Intergroup Status Hierarchy. *British Journal of Social Psychology*. 41 (1), p57-76.

Dori, G. A. and Overholser, J. C. (1999). Depression, Hopelessness, and Self-Esteem: Accounting for Suicidality in Adolescent Psychiatric Inpatients. *Suicide and Life-Threatening Behavior*. 29 (4), p309-318.

Dover, T. L., Major, B. and Kaiser, C. R. (2016). Members of High-Status Groups are Threatened by Pro-Diversity Organizational Messages. *Journal of Experimental Social Psychology*. 62 (1), p58-67.

Dowsett, E., Semmler, C., Bray, H., Ankeny, R. A., and Chur-Hansen, A. (2018). Neutralising the Meat Paradox: Cognitive Dissonance, Gender, and Eating Animals. *Appetite*. 123, p280-288.

Duckitt, J. (2006). Differential Effects of Right Wing Authoritarianism and Social Dominance Orientation on Outgroup Attitudes and Their Mediation by Threat From and Competitiveness to Outgroups. *Personality and Social Psychology Bulletin*. 32 (5), p684-696.

Duckitt, J., Bizmuic, B., Krauss, S. W., and Heled, E. (2010). A Tripartite Approach to Right-Wing Authoritarianism: The Authoritarianism-Conservatism-Traditionalism Model. *Political Psychology*. 31 (5), p685-715.

Easterby-Smith, M., Thorpe, R., Jackson, P (2015). *Management & Business Research*. 5th ed. London: Sage Publications.

Ellemers, N. (1993). The Influence of Socio-structural Variables on Identity Management Strategies. *European Review of Social Psychology*. 4 (1), p27-57.

Ellemers, N. (2018). Gender Stereotypes. *Annual Review of Psychology*. 69 (1), p275-298.

Ellemers, N. and Bos, A. E. R. (1998). Social Identity, Relative Deprivation, and Coping with the Threat of Position Loss: A Field of Study Among Native Shopkeepers in Amsterdam. *Journal of Applied Social Psychology*. 28 (21), p1987-2006.

Ellemers, N. and van Rijswijk, W. (1997). Identity Needs versus Social Opportunities: The Use of Group-Level and Individual-Level Identity Management Strategies. *Social Psychology Quarterly*. 60 (1), p52-65.

Ellemers, N., Haslam, S. A., Platow, M. J., and van Knippenberg, D. (2003). Social Identity at Work: Developments, Debates, Directions. In: Haslam, S. A., van Knippenberg, D., Platow, M. J., and Ellemers, N. *Social Identity at Work: Developing Theory for Organizational Practice*. Hove, Sussex: Psychology Press. p3-26.

Ellemers, N., Kortekaas, P., and Ouwerkerk, J. W. (1999a). Self-Categorisation, Commitment to the Group and Group Self-Esteem as Related but Distinct Aspects of Social Identity. *European Journal of Social Psychology*. 29 (2-3), p371-389.

Ellemers, N., Spears, R., and Doosje, B (1999b). *Social Identity*. Oxford: Blackwell Publishers Ltd.

Ellemers, N., Spears, R., and Doosje, B. (1997). Sticking Together or Falling Apart: In-Group Identification as a Psychological Determinant of Group Commitment Versus Individual Mobility. *Journal of Personality and Social Psychology*. 72 (3), p617-626.

Ellemers, N., Spears, R., and Doosje, B. (2002). Self and Social Identity. *Annual Review of Psychology*. 53, p161-186.

Englis, B. G. and Solomon, M. R. (1995). To Be and Not to Be: Lifestyle Imagery, Reference Groups, and The Clustering of America. *Journal of Advertising*. 24 (1), p13-28.

Eromo, T. L. and Levy, D. A. (2017). The Rise, Fall, and Resurgence of "Self-Esteem": A Critique, Reconceptualization, and Recommendations. *North American Journal of Psychology*. 19 (2), p255–302.

Escalas, J. E. and Bettman, J. R. (2003). You Are What They Eat: The Influence of Reference Groups on Consumers' Connections to Brands. *Journal of Consumer Psychology*. 13 (3), p339-348.

Escalas, J. E. and Bettman, J. R. (2005). Self-Construal, Reference Groups, and Brand Meaning. *Journal of Consumer Research*. 32 (3), p378-389.

Evans, W. D. and French, J. (2021). Demand Creation for COVID-19 Vaccination: Overcoming Vaccine Hesitancy Through Social Marketing. *Vaccines*. 9 (4), p319.

Fasig, L. G. (2000). Toddlers' Understanding of Ownership: Implications for Self-Concept Development. *Social Development*. 9 (3), 370-382.

Faul, F., Erdfelder, E., Buchner, A., and Lang, A. (2009). Statistical Power Analyses Using G*Power 3.1: Tests for Correlation and Regression Analyses. *Behavior Research Methods*. 41 (4), p1149-1160.

Faul, F., Erdfelder, E., Lang, A. G., and Buchner, A. (2007). G* Power 3: A Flexible Statistical Power Analysis Program for the Social, Behavioral, and Biomedical Sciences. *Behavior Research Methods*. 39 (2), p175-191.

Fein, S. and Spencer, S. J. (1997). Prejudice as Self-Image Maintenance: Affirming the Self Through Derogating Others. *Journal of Personality and Social Psychology*. 73 (1), p31-44.

Festinger, L (1957). *A Theory of Cognitive Dissonance*. Stanford, California: Stanford University Press.

Festinger, L. (1954). A Theory of Social Comparison Processes. *Human Relations*. 7 (2), p117-140.

Field, A (2013). *Discovering Statistics Using IBM SPSS Statistics*. 4th ed. London: Sage Publications.

Fielding, K. S. and Hornsey, M. J. (2016). A Social Identity Analysis of Climate Change and Environmental Attitudes and Behaviors: Insights and Opportunities. *Frontiers in Psychology*. 76, p1-12.

Figueredo, A. J., Olderbak, S. G., Schlomer, G. L., Carcia, R. A., and Wolf, P. S. A. (2013). Program Evaluation: Principles, Procedures, and Practices. In: Little, T. D. *The Oxford Handbook of Quantitative Methods: Volume 1 Foundations*. Oxford: Oxford University Press. p332-360.

Fischer, P., Haslam, S. A., and Smith, L. (2010). "If You Wrong Us, Shall We Not Revenge?" Social Identity Salience Moderates Support for Retaliation in Response to Collective Threat. *Group Dynamics: Theory, Research, and Practice*. 14 (2), p143-150.

Fiske, S. T. and Neuberg, S. L. (1990). A Continuum of Impression Formation, From Category-Based to Individuating Processes: Influences of Information and Motivation on Attention and Interpretation. *Advances in Experimental Social Psychology*. 23, p1-74.

Flew, A. (2002). Instrumentalism. In: Flew, A. *A Dictionary of Philosophy*. Aylesbury: Macmillan Publishers Ltd.

Ford, J., O'Hare, D., and Henderson, R. (2012). Putting the "We" Into Teamwork: Effects of Priming Personal or Social Identity on Flight Attendants' Perceptions of Teamwork and Communication. *Human Factors: The Journal of the Human Factors and Ergonomics Society*. 55 (3), p499-508.

Forehand, M. R., Deshpande, R., and Reed, A. (2002). Identity Salience and the Influence of Differential Activation of the Social Self-Schema on Advertising Response. *Journal of Applied Psychology*. 87 (6), p1086–1099.

Fowler, S. L. and Geers, A. L. (2017). Does Trait Masculinity Relate to Expressing Toughness? The Effects of Masculinity Threat and Self-Affirmation in College Men. *Psychology of Men & Masculinity*. 18 (2), p176-186.

Franz, C. M., Cuddy, A. J. C., Burnett, M., Ray, H., and Hart, A. (2004). A Threat in the Computer: The Race Implicit Association Test as a Stereotype Threat Experience. *Personality and Social Psychology Bulletin*. 30 (12), p1611-1624

Fraser, G., Osborne, D., and Sibley, C. G. (2015). "We Want You In The Workplace, But Only In A Skirt!" Social Dominance Orientation, Gender-Based Affirmative Action and the Moderating Role of Benevolent Sexism. *Sex Roles*. 73 (5-6), p231-244.

Freeman, D., Waite, F., Rosebrock, L., Petit, A., Causier, C., East, A., Jenner, L., Teale, A-L., Carr, L., Mulhall, S., Bold, E., and Lambe, S. (2020). Coronavirus Conspiracy Beliefs, Mistrust, and Compliance with Government Guidelines in England. *Psychological Medicine*. p1-13.

Fry, R. B. and Prentice-Dunn, S. (2005). Effects of Coping Information and Value Affirmation on Responses to a Perceived Health Threat. *Health Communication*. 17 (2), p133-147.

Fugate, D. L. and Phillips, J. (2010). Product Gender Perceptions and Antecedents of Product Gender Congruence. *Journal of Consumer Marketing*. 27 (3), p251-261.

Fuller, S. (2017). Brexit as the Unlikely Leading Edge of the Anti-Expert Revolution. *European Management Journal*. 35 (5), p575-580.

Furr, R. M. (2012). Yates's Correction. In: Salkind, N. J. *Encyclopedia of Research Design*. Thousand Oaks: Sage Publications. p1645-1648.

Gabarrot, F. and Falomir-Pichastor, J. M. (2017). Ingroup Identification Increases Differences in Response to Egalitarian Ingroup Norm Under Distinctiveness Threat. *International Review of Social Psychology*. 20 (1), p219-228.

Gaertner, S. L., Dovidio, J. F., Anastasio, P. A., Backman, B. A., and Rust, M. C. (1993). The Common Ingroup Identity Model: Recategorisation and the Reduction of Intergroup Bias. *European Review of Social Psychology*. 4 (1), p1-26.

Gal, D. and Wilkie, J. (2010). Real Men Don't Eat Quiche: Regulation of Gender-Expressive Choices by Men. *Social Psychological and Personality Science*. 1 (4), p291-301.

Galinsky, A. D., Stone, J., and Cooper, J. (2000). The Reinstatement of Dissonance and Psychological Discomfort Following Failed Affirmations. *European Journal of Social Psychology*. 30 (1), p123-147.

Gardner, D. G., Cummings, L. L., Dunham, R. B., and Pierce, J. L. (1998). Single-Item Versus Multiple-Item Measurement Scales: An Empirical Comparison. *Educational and Psychological Measurement*. 58 (6), p898-915.

Gaunt, R. (2013). Ambivalent Sexism and the Attribution of Emotions to Men and Women. *International Review of Social Psychology*. 26 (2), p29-54.

Gecas, V. (1989). The Social Psychology of Self-Efficacy. *Annual Review of Sociology*. 15, p291-316.

Gesquiere, L. R., Learn, N. H., Simao, M. C. M., Onyango, P. O., Alberts, S. C., and Altmann, J. (2011). Life at the Top: Rank and Stress in Wild Male Baboons. *Science*. 333 (6040), p357-360.

Giedymin, J. (1975). Antipositivism in Contemporary Philosophy of Social Science and Humanities. *The British Journal for the Philosophy of Science*. 26 (4), p275-301.

Glasford, D. E., Dovidio, J. F., and Pratto, F. (2009). I Continue to Feel So Good About Us: In-Group Identification and the Use of Social Identity-Enhancing Strategies to Reduce Intragroup Dissonance. *Personality and Social Psychology Bulletin*. 35 (4), p415-427.

Glick, P. and Fiske, S. T. (1996). The Ambivalent Sexism Inventory: Differentiating Hostile and Benevolent Sexism. *Journal of Personality and Social Psychology*. 70 (3), p491-512.

Glick, P. and Fiske, S. T. (2001). Ambivalent Sexism. In: Zanna, M. *Advances in Experimental Social Psychology, Vol. 33*. San Diego: Academic Press. p115-188.

Glick, P., Wilkerson, M., and Cuffe, M. (2015). Masculine Identity, Ambivalent Sexism, and Attitudes Toward Gender Subtypes. *Social Psychology*. 46 (4), p210-217.

Godfrey, P. C. and Hill, C. W. L. (1995). The Problem of Unobservables in Strategic Management Research. *Strategic Management Journal*. 16 (7), p519-533.

Goff, P. A., Steele, C. M., and Davies, P. G. (2008). The Space Between Us: Stereotype Threat and Distance in Interracial Contexts. *Journal of Personality and Social Psychology*. 94 (1), p91-107.

Goldman, L. and Hogg, M. A. (2016). Going to Extremes for One's Group: The Role of Prototypicality and Group Acceptance. *Journal of Applied Social Psychology*. 46 (9), p544-553.

Golec de Zavala, A. and Bierwiaczonek, K. (2020). Male, National, and Religious Collective Narcissism Predict Sexism. *Sex Roles*.

Golec de Zavala, A., and Lantos, D. (2020). Collective Narcissism and Its Social Consequences: The Bad and the Ugly. *Current Directions in Psychological Science*. 29 (3), p273-278.

Golec de Zavala, A., Cichocka, A., and Iskra-Golec, I. (2013). Collective Narcissism Moderates the Effect of In-Group image Threat on Intergroup Hostility. *Journal of Personality and Social Psychology.* 104 (6), p1019–1039.

Golec de Zavala, A., Cichocka, A., Eidelson, R., and Jayawickreme. (2009). Collective Narcissism and Its Social Consequences. *Journal of Personality and Social Psychology*. 97 (6), p1074-1096.

Golec de Zavala, A., Dyduch-Hazar, K., and Lantos, D. (2019). Collective Narcissism: Political Consequences of Investing Self-Worth in the Ingroup's Image. *Advances in Political Psychology*. 40, p37-74.

Golec de Zavala, A., Federico, C. M., Sedikides, C., Guerra, R., Lantos, D., Mrozińksi, B., Cypryańska, M., and Baran, T. (2020). Low Self-Esteem Predicts Out-Group Derogation via Collective Narcissim, but This Relationship Is Obscured by In-Group Satisfaction. *Journal of Personality and Social Psychology.* 119 (3), p741-764.

Golec de Zavala, A., Peker, M., Guerra, R., and Baran, T. (2016). Collective Narcissism Predicts Hypersensitivity to In-group Insult and Direct and Indirect Retaliatory Intergroup Hostility. *European Journal of Personality*. 30 (6), p532-551.

Good, J. J. (2017). Benevolent Sexism. In: Nadal, K. L. *The SAGE Encyclopedia of Psychology and Gender*. Thousand Oaks, C.A.: Sage Publications. p136-137.

Goodman, J. K. and Paolacci, G. (2017). Crowdsourcing Consumer Research. *Journal of Consumer Research*. 44 (1), p196-210.

Górska, P., Stefaniak, A., Malinowska, K., Lipowska, K., Marchlewska, M., Budziszewska, M., and Maciantowicz, O. (2020). Too Great to Act in Solidarity: The Negative Relationship Between Collective Narcissism and Solidarity-Based Collective Action. *European Journal of Social Psychology*. 50 (3), p561-578.

GOV UK. (2019). *Gender Equality Monitor*. Government Equalities Office. [PDF] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/814080/GEO_GEEE_Strategy_Gender_Equality_Monitor_tagged.pdf

Grant, P. R. (1992). Ethnocentrism Between Groups of Unequal Power in Response to Perceived Threat to Social Identity and Valued Resources. *Canadian Journal of Behavioural Science*. 24 (3), p348–370.

Grant, P. R. and Brown, R. (1995). From Ethnocentrism to Collective Protest: Responses to Relative Deprivation and Threats to Social Identity. *Social Psychology Quarterly*. 58 (3), p195-212.

Grecas, V. (1982). The Self-Concept. *Annual Review of Sociology*. 8 (11), p1-33.

Greenaway, K. H., Cruwys, T., Haslam, S. A., and Jetten, J. (2015). Social Identities Promote Well-Being Because they Satisfy Global Psychological Needs. *European Journal of Social Psychology*. 46 (3), p294-307.

Greenberg, J., Solomon, S., Pyszczynski, T., Rosenblatt, A., Burling, J., Lyon, D., Simon, L., and Pinel, E. (1992). Why Do People Need Self-Esteem? Converging Evidence that Self-Esteem Serves an Anxiety-Buffering Function. *Journal of Personality and Social Psychology*. 63 (6), p913–922.

Greenwald, A. (1980). The Totalitarian Ego: Fabrication and Revision of Personal History. *American Psychologist*. 35 (7), p603-618.

Griffin, D. W. and Ross, L. (1991). Construal, Social Inference, and Human Misunderstanding. In: Zanna, M. P. *Advances in Experimental Social Psychology, Vol. 24*. New York: Academic Press. p319-359.

Grubb, E. L. and Hupp, G. (1968). Perception of Self, Generalized Stereotypes, and Brand Selection. *Journal of Marketing Research*. 5 (1), p58-63.

Grubbs, J. B. (2017). Ambivalent Sexism. In: Nadal, K. L. *The SAGE Encyclopedia of Psychology and Gender*. Thousand Oaks, C.A.: Sage Publications. p62-63.

Guba, E. C. and Lincoln, Y. S. (1994). Competing Paradigms in Quantitative Research. In: Denzin, N. K. and Guba, Y. S. *Handbook of Qualitative Research*. London: Sage Publications Ltd. p105-117.

Gunn, G. R. and Wilson, A. E. (2011). Acknowledging the Skeletons in Our Closet: The Effect of Group Affirmation on Collective Guilt, Collective Shame, and Reparatory Attitudes. *Personality and Social Psychology Bulletin*. 37 (11), p1474-1487.

Hack, T. (2017). Hostile Sexism. In: Nadal, K. L. *The SAGE Encyclopedia of Psychology and Gender*. Thousand Oaks, C.A.: Sage Publications. p895-896.

Hacking, I. (1982). Experimentation and Scientific Realism. *Philosophical Topics.* 13 (1), p71-87.

Haig, B. D. (2013). The Philosophy of Quantitative Methods. In: Little, T. D. *The Oxford Handbook of Quantitative Methods: Volume 1 Foundations*. Oxford: Oxford University Press. p7-31.

Haig, B. D. and Borsboom, D. (2012). Truth, Science, and Psychology. *Theory and Psychology*. 22 (3), p272-289.

Hair, J. F., Black, W. C., Babin, B. J. and Anderson, R. E (2014). *Multivariate Data Analysis: Pearson New International Edition*. 7th ed. Harlow: Pearson Education Ltd.

Halevy, N., Bornstein, G., and Sagiv, L. (2008). "In-Group Love" and "Out-Group Hate" as Motives for Individual Participation in Intergroup Conflict: A New Game Paradigm. *Psychological Science*. 19 (4), p405-411.

Hall, N. R. and Crisp, R. J. (2008). Assimilation and Contrast to Group Primes: The Moderating Role of Ingroup Identification. *Journal of Experimental Social Psychology*. 44 (2), p344-353.

Hallberg, K., Wing, C., Wong, V., and Cook, T. D. (2013). Experimental Design for Causal Inference: Clinical Trials and Regression Discontinuity Designs. In: Little, T. D. *The Oxford Handbook of Quantitative Methods: Volume 1 Foundations*. Oxford: Oxford University Press. p223-236.

Hammerl, M., Dorner, F., Foscht, T., and Brandstätter, M. (2016). Attribution of Symbolic Brand Meaning: The Interplay of Consumers, Brands and Reference Groups. *Journal of Consumer Marketing*. 33 (1), p32-40.

Hardy, M. A (1993). *Regression with Dummy Variables: Sage University Paper Series on Quantitative Applications in the Social Sciences (07-093)*. Newbury Park, C.A.: Sage Publications.

Harris, P. R. and Napper, L. (2005). Self-Affirmation and the Biased Processing of Threatening Health-Risk Information. *Personality and Social Psychology Bulletin*. 31 (9), p1250-1263.

Hart, P. S., Feldman, L., Leiserowitz, A., and Maibach, E. (2015). Extending the Impacts of Hostile Media Perceptions: Influences on Discussion and Opinion Polarization in the Context of Climate Change. *Science Communication*. 37 (4), p506–532.

Haslam, S. A., Oakes, P. J., Reynolds, K. J., and Turner, J. C. (1999). Social Identity Salience and the Emergence of Stereotype Consensus. *Personality and Social Psychology Bulletin*. 25 (7), p809-818.

Hayes, A. F (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. London: The Guilford Press.

Hayes, A. F (2018). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. 2nd ed. London: The Guilford Press.

Heilman, M. E., Wallen, A. S., Fuchs, D., and Tamkins, M. M. (2004). Penalties for Success: Reactions to Women Who Succeed at Male Gender-Typed Tasks. *Journal of Applied Psychology*. 89 (3), p416-427.

Henrich, J., Heine, S., and Norenzayan, A. (2010). The Weirdest People in the World? *Behavioral and Brain Sciences*. 33 (2-3), p61-83.

Hewstone, M., Rubin, M., and Willis, H. (2002). Intergroup Bias. *Annual Review of Psychology*. 53 (1), p575-604.

Hideg, I. and Ferris, D. L. (2016). The Compassionate Sexist? How Benevolent Sexism Promotes and Undermines Gender Equality in the Workplace. *Journal of Personality and Social Psychology*. 111 (5), p706-727.

Higgins, E. T. (1989). Knowledge Accessibility and Activation: Subjectivity and Suffering from Unconscious Sources. In: Uleman, J. S. and Bargh, J. A. *Unintended Thought*. New York: The Guildford Press. p75-123.

Hilliard, L. J. and Liben, L. S. (2010). Differing Levels of Gender Salience in Preschool Classrooms: Effects on Children's Gender Attitudes and Intergroup Bias. *Child Development*. 81 (6), p1787-1798.

Hitchcock, D. B. (2009). Yates and Contingency Tables: 75 Years Later. *Electronic Journal for History of Probability and Statistics*. 5 (2), p1-14.

Ho, A. K., Sidanius, J., Kteily, N., Sheehy-Skeffington, J., Pratto, F., Henkel, K. E., Foels, R., and Stewart, A. L. (2015). The Nature of Social Dominance Orientation: Theorizing and Measuring Preferences for Intergroup Inequality Using the New SDO7 Scale. *Journal of Personality and Social Psychology*. 109 (6), p1003-1028.

Hogg, M. A. (1985). Masculine and Feminine Speech in Dyads and Groups: A Study of Speech Style and Gender Salience. *Journal of Language and Social Psychology*. 4 (2), p99–112.

Hogg, M. A. (2001). Social Categorization, Depersonalization, and Group Behavior. In: Hogg, M. A. and Tindale, S. *Blackwell Handbook of Social Psychology: Group Processes*. Oxford: Blackwell Publishers Ltd. p56-85.

Hogg, M. A. (2006). Social Identity Theory. In: Burke, P. J. *Contemporary Social Psychological Theories*. Stanford, CA: Stanford University Press. p111-136.

Hogg, M. A. (2007). Uncertainty-Identity Theory. In: Zanna, M. *Advances in Experimental Social Psychology, Vol. 39*. US: Academic Press. p69-126.

Hogg, M. A. (2014). From Uncertainty to Extremism: Social Categorization and Identity Processes. *Current Directions in Psychological Science*. 23 (5), p338-342.

Hogg, M. A. and Reid, S. A. (2006). Social Identity, Self-Categorization, and the Communication of Group Norms. *Communication Theory*. 16 (1), p7-30.

Hogg, M. A. and Smith, J. R. (2007). Attitudes in Social Context: A Social Identity Perspective. *European Review of Social Psychology*. 18 (1), p89-131.

Hogg, M. A. and Turner, J. C. (1987)[a]. Social Identity and Conformity: A Theory of Referent Informational Influence. In: Doise, W. and Moscovici, S. *Current Issues in European Social Psychology*. Cambridge: Cambridge University Press. p139-182.

Hogg, M. A. and Turner, J. C. (1987)[b]. Intergroup Behaviour, Self-Stereotyping and the Salience of Social Categories. *British Journal of Social Psychology*. 26 (4), p325-340.

Hogg, M. A., Meehan, C., and Farquharson, J. (2010). The Solace of Radicalism: Self-Uncertainty and Group Identification in the Face of Threat. *Journal of Experimental Social Psychology*. 46 (6), p1061-1066.

Hogg, M. A., Terry, D. J., and White, K. M. (1995). A Tale of Two Theories: A Critical Comparison of Identity Theory with Social Identity Theory. *Social Psychology Quarterly*. 58 (4), p255-269.

Hood, S. B. (2009). Validity in Psychological Testing and Scientific Realism. *Theory and Psychology*. 19 (4), p451-473.

Hood, S. B. (2013). Psychological Measurement and Methodological Realism. *Erkenntnis*. 78, p739-761.

Hoogendoorn, S., Oosterbeek, H., and van Praag, M. (2013). The Impact of Gender Diversity on the Performance of Business Teams: Evidence from a Field Experiment. *Management Science*. 59 (7), p1514-1528.

Hornsey, M. J. (2005). Why Being Right is not Enough: Predicting Defensiveness in the Face of Group Criticism. *European Review of Social Psychology*. 16 (1), p301-334.

Hornsey, M. J. (2020). Why Facts Are Not Enough: Understanding and Managing the Motivated Rejection of Science. *Current Directions in Psychological Science*. 29 (6), p583-591.

Hornsey, M. J. and Fielding, K. S. (2017). Attitude Roots and Jiu Jitsu Persuasion: Understanding and Overcoming the Motivated Rejection of Science. *American Psychologist*. 72 (5), p459-473.

Hornsey, M. J. and Imani, A. (2004). Criticizing Groups From the Inside and the Outside: An Identity Perspective on the Intergroup Sensitivity Effect. *Personality and Social Psychology Bulletin*. 30 (3), p365-383.

Hornsey, M. J., Frederiks, E., Smith, J. R., and Ford, L. (2007). Strategic Defensiveness: Public and Private Responses to Group Criticism. *British Journal of Social Psychology*. 46 (4), p697-716.

Hornsey, M. J., Oppes, T., and Svensson, A. (2002). "It's OK If We Say It, But You Can't": Responses to Intergroup and Intragroup Criticism. *European Journal of Social Psychology*. 32 (3), p293-307.

Houston, D. M. and Andreopoulou, A. (2003). Test of Both Corollaries of Social Identity Theory's Self-Esteem Hypothesis in Real Group Settings. *British Journal of Social Psychology*. 42 (3), p357-370.

Houston, F. S. (1986). The Marketing Concept: What It Is and What It Is Not. *Journal of Marketing*. 50 (2), p81-87.

Howard, J. A. (2000). Social Psychology of Identities. *Annual Review*. 26, p367-393.

Howard, S. and Borgella, A. (2018). "Sinking"or Sinking? Identity Salience and Shifts in Black Women's Athletic Performance. *Psychology of Sport & Exercise*. 39, p179-183.

Hughes, J. A (1980). *The Philosophy of Social Research*. New York: Longman.

Hyman, H. H. (1942). The Psychology of Status. *Archives of Psychology*. 269, p94-102.

Imhoff, R. and Lamberty, P. (2020). A Bioweapon or a Hoax? The Link Between Distinct Conspiracy Beliefs About the Coronavirus Disease (COVID-19) Outbreak and Pandemic Behavior. *Social Psychological and Personality Science*. 11 (8), p1110-1118.

Independent. (2019). *Brexit Party MEP Shut Down After Questioning Economic Credentials of Green Party MEP, Who Informs Him She is a Professor of Economics.* Available: https://www.independent.co.uk/news/uk/politics/green-mep-brexit-party-professor-economics-degree-molly-scott-cato-video-watch-a9219801.html. Last accessed 6th July 2020.

Isaac, C. A., Kaatz, A., and Carnes, M. (2012). Deconstructing the Glass Ceiling. *Sociology Mind*. 2 (1), p80-86.

Jackson, L. A., Sullivan, L. A., Harnish, R. and Hodge, C. N. (1996). Achieving Positive Social Identity: Social Mobility, Social Creativity, and Permeability of Group Boundaries. *Interpersonal Relations and Group Processes*. 70 (2), p241-254.

Jager, J., Putnick, D. L., and Bornstein, M. H. (2017). More Than Just Convenient: The Scientific Merits of Homogeneous Convenience Samples. *Monographs of the Society for Research in Child Development*. 82 (2-3), p13-30.

James, W (1890). *The Principles of Psychology*. New York: Henry Holt.

James, W (1983). *The Principles of Psychology*. Cambridge, M.A: Harvard University Press.

Jetten, J. and Spears, R. (2003). The Divisive Potential of Differences and Similarities: The Role of Intergroup Distinctiveness in Intergroup Differentiation. *European Review of Social Psychology*. 14 (1), p203-241.

Jetten, J., Branscombe, N. R., Spears, R., and McKimmie, B. M. (2003). Predicting the Paths of Peripherals: The Interaction of Identification and Future Possibilities. *Personality and Social Psychology Bulletin*. 29 (1), p130-140.

Jetten, J., Haslam, S. A., Cruwys, T., Greenaway, K. H., Haslam, C. and Steffens, N. K. (2017). Advancing the Social Identity Approach to Health and Well-Being: Progressing the Social Cure Research Agenda. *European Journal of Social Psychology*. 47 (7), p789-802.

Jetten, J., Spears, R., and Manstead, A. S R. (1997). Distinctiveness Threat and Prototypicality: Combined Effects on Intergroup Discrimination and Collective Self-Esteem. *European Journal of Social Psychology*. 27 (6), p635-657.

Jetten, J., Spears, R., and Manstead, A. S R. (1999). Group Distinctiveness and Intergroup Discrimination. In: Ellemers, N., Spears, R., and Doosje, B *Social Identity*. Oxford: Blackwell Publishers Ltd. p107-126.

Jetten, J., Spears, R., and Postmes, T. (2004). Intergroup Distinctiveness and Differentiation: A Meta-Analytic Integration. *Journal of Personality and Social Psychology*. 86 (6), p862–879.

Joecks, J., Pull, K., and Vetter, K. (2013). Gender Diversity in the Boardroom and Firm Performance: What Exactly Constitutes a "Critical Mass?" *Journal of Business Ethics*. 118 (1), p61-72.

Joinson, A. (1999). Social Desirability, Anonymity, and Internet-Based Questionnaires. *Behavior Research Methods, Instruments, & Computers*. 31 (3), p433-438.

Kagan, J (1981). *The Second Year: The Emergence of Self-Awareness*. Cambridge, M.A: Harvard University Press.

Kahn, K. B., Barreto, M., Kaiser, C. R., Rego, M. C. (2016). When Do High and Low Status Group Members Support Confrontation? The Role of Perceived Pervasiveness of Prejudice. *British Journal of Social Psychology*. 55 (1), p27-43.

Kaplan, R. M. and Saccuzzo, D. P (2009). *Psychological Testing: Principles, Applications, and Issues*. 6th ed. Belmont, CA: Wadsworth-Thompson.

Kavanagh, C. M., Kapitany, R., Putra, I. E., and Whitehouse, H. (2020). Exploring the Pathways Between Transformative Group Experiences and Identity Fusion. *Frontiers in Psychology*. 11, p1-16.

Keller, K. L. (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity. *Journal of Marketing*. 57 (1), p1-22.

Kelley, H. H. (1952). Two Functions of Reference Groups. In: Swanson, G., Newcomb, T. and Hartley, E. *Society for the Psychological Study of Social Issues, Readings in Social Psychology*. New York: Holt. p410-414.

Kelley, J. (2020). Activating Gender: How Identity Affects Students' Perceptions of Music Activities. *Sempre*. p1-16.

Kemp, S. and Holmwood, J. (2003). Realism, Regularity and Social Explanation. *Journal for the Theory of Social Behaviour*. 33 (2), p165-187.

Kettle, K. L. (2019). Identity Salience: Understanding When Identity Affects Consumption. In: Reed, A. and Forehand, M. *Handbook of Research on Identity Theory in Marketing*. Cheltenham, UK: Edward Elgar Publishing Limited. p30-43.

Khalidi, M. A. (2016). Mind-Dependent Kinds. *Journal of Social Ontology*. 2 (2), p223–246.

Khanna, P. (2019). Positivism and Realism. In: Liamputtong, P. *Handbook of Research Methods in Health Social Sciences*. Singapore: Springer International Publishing. p151-168.

Kihlstrom, J. F. and Cantor, N. (1984). Mental Representations of the Self. *Advances in Experimental Social Psychology*. 17 (1), p1-47.

Kihlstrom, J. F. and Klein, S. B. (1994). The Self as a Knowledge Structure. In: Wyer, R. S. and Srull, T. K. *Handbook of Social Cognition: Vol. 1 Basic Processes*. 2nd ed. New York: Psychology Press (Taylor and Francis Group). p153-208.

Kihlstrom, J. F., Beer, J. S., and Klein, S. B. (2003). Self and Identity as Memory. In: Leary, M. R. and Tangney, J. P. *Handbook of Self and Identity*. New York: Guilford Press. p68-90.

Kim, H-Y. (2017). Statistical Notes for Clinical Researchers: Chi-Squared Test and Fisher's Exact Test. *Restorative Dentistry & Endodontics*. 42 (2), p152-155.

Kim, J (1998). *Mind in a Physical World: An Essay on the Mind-Body Problem and Mental Causation*. Cambridge, M.A: MIT Press.

Kim, K. S. (2010). Public Understanding of the Politics of Global Warming in the News Media: The Hostile Media Approach. *Public Understanding of Science*. 20 (5), p690-705.

Kirmani, A. and Ferraro, R. (2017). Social Influence in Marketing: How Other People Influence Consumer Information Processing and Decision Making. In: Harkins, S. G., Williams, K. D., and Burger, J. *The Oxford Handbook of Social Influence*. New York: Oxford University Press. p415-432.

Kleppestø, T. H., Eftedal, N. H., and Thomsen, L. (2020). Social Dominance Orientation (SDO). In: Shackelford, T. K. and Weekes-Shackelford, V. A. *Encyclopedia of Evolutionary Psychological Science*. Cham: Springer. p1-9.

Konrath, S. and Anderson, P. A. (2011). A Century of Self-Esteem. In: De Wals, S. and Meszaros, K. *Handbook on Psychology of Self-Esteem*. New York: Nova Science Publishers.

Koole, S. L., Smeets, K., van Knippenberg, A., and Dijksterhuis, A. (1999). The Cessation of Rumination Through Self-Affirmation. *Journal of Personality and Social Psychology*. 77 (1), p111-125.

Koper, A. and Goettig, M. (2018). *Thousands Join 'Black Friday' Marches Against Polish Abortion Restrictions.* Available: https://www.reuters.com/article/us-poland-abortion-idUSKBN1GZ2LP. Last accessed 28th February 2021.

Kotler, P (2000). *Marketing Management, Millennium Edition*. 10th ed. United States: Prentice Hall.

Kotler, P. and Armstrong, G (2010). *Principles of Marketing*. 13th ed. London: Pearson Education Limited.

Kotler, P. and Zaltman, G. (1971). Social Marketing: An Approach to Planned Social Change. *Journal of Marketing*. 35 (3), p3-12.

Kroeper, K. M., Sanchez, D. T. and Himmelstein, M. S. (2014). Heterosexual Men's Confrontation of Sexual Prejudice: The Role of Precarious Manhood. *Sex Roles*. 70 (1-2), p1-13.

Krupnikov, Y. and Findley, B. (2016). Survey Experiments: Managing the Methodological Costs and Benefits. In: Atkeson, L. R. and Alvarez, R. M. *The Oxford Handbook of Polling and Survey Methods*. New York: Oxford University Press. p483-504.

Kuhn, T. S (1962). *The Structure of Scientific Revolutions*. 2nd ed. Chicago: The University of Chicago Press.

Kunda, Z. (1990). The Case for Motivated Reasoning. *Psychological Bulletin*. 108 (3), p480-498.

LaLonde, R. N. and Silverman, R. A. (1994). Behavioral Preferences in Response to Social Injustice: The Effects of Permeability and Social Identity Salience. *Journal of Personality and Social Psychology*. 66 (1), p78-85.

Lau, F. (2016). Methods for Survey Studies. In: Lau, F. and Kuziemsky, C. *Handbook of eHealth Evaluation: An Evidence-Based Approach*. British Columbia, Canada: University of Victoria. p227-242.

Leach, C. W., van Zomeren, M., Zebel, S., Vliek, M. L. W., Pennekamp, S. F., Doosje, B., Ouwerkerk, J. W., and Spears, R. (2008). Group-Level Self-Definition and Self-Investment: A Hierarchical(Multicomponent) Model of In-Group Identification. *Journal of Personality and Social Psychology*. 95 (1), p144-165.

Leary, M. R. and Baumeister, R. F. (2000). The Nature and Function of Self-Esteem: Sociometer Theory. *Advances in Experimental Social Psychology*. 32, p1-62.

Leary, M. R. and Buttermore, N. R. (2003). The Evolution of the Human Self: Tracing the Natural History of Self-Awareness. *Journal for the Theory of Social Behaviour*. 33 (4), p365-404.

Leary, M. R. and Tangney, J. P. (2012). The Self as an Organizing Construct in the Behavioral and Social Sciences. In: Leary, M. and Tangney, J. *Handbook of Self and Identity*. 2nd ed. London: Guilford Press. p1-18.

Leary, M. R., Tambor, E. S., Terdal, S. K., and Downs, D. L. (1995). Self-Esteem as an Interpersonal Monitor: The Sociometer Hypothesis. *Journal of Personality and Social Psychology*. 68 (3), p518-530.

Lee, I-C., Pratto, F. and Johnson, B. T. (2011). Intergroup Consensus/Disagreement in Support of Group-Based Hierarchy: An Examination of Socio-Structural and Psycho-Cultural Factors. *Psychological Bulletin*. 137 (6), p1029-1064.

Leigh, J. H. (1989). An Extension of the Bourne Typology of Reference Group Influence on Product-Related Decisions. *Journal of Business and Psychology*. 4 (1), p65-85.

Lemay, E. P. and Ashmore, R. D. (2004). Reactions to Perceived Categorization by Others During the Transition to College: Internalization and Self-Verification Processes. *Group Processes and Intergroup Relations*. 7 (2), p173–187.

Lemert, E. M (1951). *Social Pathology. A Systemic Approach to the Theory of Sociopathic Behavior*. New York: McGraw-Hill.

Leonardelli, G. J., Pickett, C. L., and Brewer, M. B. (2010). Optimal Distinctiveness Theory: A Framework for Social Identity, Social Cognition, and Intergroup Relations. In: Zanna, M. and Olson, J. *Advances in Experimental Social Psychology, Vol. 43*. London: Academic Press. p63-113.

Levay, K. E., Freese, J., and Druckman, J. N. (2016). The Demographic and Political Composition of Mechanical Turk Samples. *SAGE Open*. 6 (1), p1-17.

Levene, H. (1960). Robust Tests for Equality of Variances. In: Olkin, I. *Contributions to Probability and Statistics*. California: Stanford University Press. p278–292.

Levy, S. J. (1959). Symbols for Sale. *Harvard Business Review*. 37 (4), p117-124.

Lewandowsky, S. and Oberauer, K. (2016). Motivated Rejection of Science. *Current Directions in Psychological Science*. 25 (4), p217-222.

Lewis, G. J. and Bates, T. C. (2010). Genetic Evidence for Multiple Biological Mechanisms Underlying In-Group Favoritism. *Psychological Science*. 21 (11), p1623–1628.

Lieberman, P. (1993). *Uniquely Human: The Evolution of Speech, Thought, and Selfless Behavior*. United States of America: Harvard University Press.

Lindsay, D. S. (2015). Editorial: Replication in Psychological Science. *Psychological Science*. 26 (12), p1827-1832.

Loo, T. (2001). Of Moose and Men: Hunting for Masculinities in British Columbia, 1880–1939. *Western Historical Quarterly*. 32 (3), p296–319.

Luhtanen, R. and Crocker, J. (1992). A Collective Self-Esteem Scale: Self-Evaluation of One's Social Identity. *Personality and Social Psychology Bulletin*. 18 (3), p302-318.

Maass, A., Cadinu, M., Guarnieri, G., and Grasselli, A. (2003). Sexual Harassment Under Social Identity Threat: The Computer Harassment Paradigm. *Journal of Personality and Social Psychology*. 85 (5), p853-870.

Mackie, D. M., Devos, T., and Smith, E. R. (2000). Intergroup Emotions: Explaining Offensive Action Tendencies in an Intergroup Context. *Journal of Personality and Social Psychology*. 79 (4), p602-616.

Madill, A., Jordan, A., and Shirley, C. (2000). Objectivity and Reliability in Qualitative Analysis: Realist, Contextualist and Radical Constructionist Epistemologies. *British Journal of Psychology*. 91 (1), p1-20.

Magee, B (1985). *Philosophy and the Real World: An Introduction to Karl Popper*. U.S.: Open Court.

Mahajan, N., Martinez, M. A., Gutierrez, N. L., Diesendruck, G., Banaji, M. R., and Santos, L. R. (2011). The Evolution of Intergroup Bias: Perceptions and Attitudes in Rhesus Macaques. *Journal of Personality and Social Psychology*. 100 (3), p387-405.

Mahalanobis, P.C. (1936). *On the Generalised Distance in Statistics*. Proceedings of the National Institute of Sciences of India, 2, p49-55.

Marchlewska, M., Cichocka, A., Jaworska, M., Golec de Zavala, A., and Bilewicz, M. (2020). Superficial Ingroup Love? Collective Narcissism Predicts Ingroup Image Defense, Outgroup Prejudice, and Lower Ingroup Loyalty. *British Journal of Social Psychology*. 59 (4), p857-875.

Markus, H. (1977). Self-Schemata and Processing Information About the Self. *Journal of Personality and Social Psychology*. 35 (2), p63-78.

Markus, H. (1980). The Self in Thought and Memory. In: Wegner, D. M. and Vallacher, R. R. *The Self in Social Psychology*. Oxford: Oxford University Press. p102-130.

Markus, H. and Nurius, P. (1986). Possible Selves. *American Psychologist*. 41 (9), p954-969.

Markus, H. and Wurf, E. (1987). The Dynamic Self-Concept: A Social Psychological Perspective. *Annual Review of Psychology*. 38 (1), p299-337.

Martens, A., Johns, M., Greenberg, J., and Schimel, J. (2006). Combating Stereotype Threat: The Effect of Self-Affirmation on Women's Intellectual Performance. *Journal of Experimental Social Psychology*. 42 (2), p236-243.

Martínez-Martí, M. L. and Ruch, W. (2017). Character Strengths Predict Resilience Over and Above Positive Affect, Self-Efficacy, Optimism, Social Support, Self-Esteem, and Life Satisfaction. *The Journal of Positive Psychology*. 12 (2), p110-119.

Martiny, S. E. and Rubin, M. (2016). Towards a Clearer Understanding of Social Identity Theory's Self-Esteem Hypothesis. In: McKeown, S., Haji, R., and Ferguson, N. *Understanding Peace and Conflict Through Social Identity Theory*. Switzerland: Springer International Publishing. p19-32.

Mastari, L., Spruyt, B., and Siongers, J. (2019). Benevolent and Hostile Sexism in Social Spheres: The Impact of Parents, School and Romance on Belgian Adolescents' Sexist Attitudes. *Frontiers in Psychology*. 4, p1-13.

Matthay, E. C. and Glymour, M. M. (2020). A Graphical Catalog of Threats to Validity. *Epidemiology*. 31 (3), p376-384.

Maxwell, S. E. and Delaney, H. D (1990). *Designing Experiments and Analyzing Data*. Belmont, CA, US: Wadsworth/Thomson Learning.

Maxwell, S. E., Lau, M. Y., and Howard, G. S. (2015). Is Psychology Suffering From a Replication Crisis? *American Psychologist*. 70 (6), p487-498.

McCall, G. J. and Simmons, J. L (1966). *Identities and Interaction*. New York: Free Press.

McConnell, A. R. (2011). The Multiple Self-Aspects Framework: Self-Concept Representation and Its Implications. *Personality and Social Psychology Review*. 15 (1), p3-27.

McConnell, A. R. and Strain, L. M. (2007). Content and Structure of the Self-Concept. In: Sedikides, C. and Spender, S. *The Self in Social Psychology*. New York: Psychology Press (Taylor and Francis Group). p51-73.

McCracken, G (1988). *Culture and Consumption: New Approaches to the Symbolic Character of Consumer Goods and Activities*. Bloomington, Indiana: Indiana University Press.

McCracken, G. (1989). Who is the Celebrity Endorser? Cultural Foundations of the Endorsement Process. *Journal of Consumer Research*. 16 (3), p310-321.

McCright, A. M. and Dunlap, R. E. (2011). The Politicization of Climate Change and Polarization in the American Public's Views of Global Warming, 2001–2010. *The Sociological Quarterly*. 52 (2), p155-194.

McDonald, M. M., Navarrete, C. D., and van Vugt, M. (2021). Evolution and the Psychology of Intergroup Conflict: The Male Warrior Hypothesis. *Philosophical Transactions of the Royal Society B: Biological Sciences*. 367 (1589), p670-679.

McDoom, O. S. (2012). The Psychology of Threat in Intergroup Conflict: Emotions, Rationality, and Opportunity in the Rwandan Genocide. *International Security*. 37 (2), p119-155.

McGee, R., Williams, S. and Nada-Raja, S. (2001). Low Self-Esteem and Hopelessness in Childhood and Suicidal Ideation in Early Adulthood. *Journal of Abnormal Child Psychology*. 29 (4), p281–291.

McGowan, M. and Hassan, L. M. (2021). The Usefulness of the Social Identity Approach to Social Marketing. In: Strong, C. *Ethical Approaches to Marketing*. Berlin: De Gruyter. p17-37.

McGowan, M., Hassan, L. M., and Shiu, E. (2020). Solving Dissociative Group Effects Using Construal Level Theory. *European Journal of Marketing*. 54 (1), p212-237.

McGowan, M., Shiu, E., and Hassan, L. M. (2017). The Influence of Social Identity on Value Perceptions and Intention. *Journal of Consumer Behaviour*. 16 (3), p242-253.

McGrath, R. E (2011). *Quantitative Models in Psychology*. London: American Psychological Association.

McGregor, I., Haji, R., and Kang, S-J. (2008). Can Ingroup Affirmation Relieve Outgroup Derogation. *Journal of Experimental Social Psychology*. 44 (5), p1395-1401.

McHugh, M. L. (2013). The Chi-Square Test of Independence. *Biochemia Medica*. 23 (2), p143-149.

McKinsey & Company. (2015). *The Power of Parity: How Advancing Women's Equality Can Add $12 Trillion to Global Growth*. McKinsey Global Institute.

McLeish, K. N. and Oxoby, R. J. (2011). Social Interactions and the Salience of Social Identity. *Journal of Economic Psychology*. 32 (1), p172-178.

McQueen, A. and Klein, W. M. P. (2006). Experimental Manipulations of Self-Affirmation: A Systematic Review. *Self and Identity*. 5 (4), p289-354.

Michael, M. (1998). Between Citizen and Consumer: Multiplying the Meanings of the "Public Understanding of Science". *Public Understanding of Science*. 7 (4), p313-327.

Michniewicz, K. S., Bosson, J. K., Lenes, J. G., and Chen, J. I. (2015). Gender-Atypical Mental Illness as Male Gender Threat. *American Journal of Men's Health*. 10 (4), p306-317.

Millward, L. J. and Haslam, S. A. (2013). Who Are We Made To Think We Are? Contextual Variation in Organizational, Workgroup and Career Foci of Identification. *Journal of Occupational and Organizational Psychology*. 86 (1), p50-66.

Milton, J (2008). *Paradise Lost*. Waiheke Island: Floating Press. (Original work published 1667)

Milton, J. (1950). Apology Against a Pamphlet. In: Brooks, C. *Complete Poetry and Selected Prose of John Milton*. New York: Modern Library. (Original work published 1642)

Mlicki, P. P. and Ellemers, N. (1996). Being Different or Being Better? National Stereotypes and Identifications of Polish and Dutch Students. *European Journal of Social Psychology*. 26 (1), p97-114.

Moore, C. (2014). How to 'Know Thyself' in Plato's Phaedrus. *Apeiron*. 47 (3), p1-30.

Morf, C. C. and Rhodewalt, F. (2001). Unraveling the Paradoxes of Narcissism: A Dynamic Self-Regulatory Processing Model. *Psychological Inquiry*. 12 (4), p177-196.

Morton, T. A., Haslam, S. A., Postmes, T., and Ryan, M. K. (2006). We Value What Values Us: The Appeal of Identity-Affirming Science. *Political Psychology*. 27 (6), p823-838.

Moss-Racusin, C. A., Phelan, J. E., and Rudman, L. A. (2010). When Men Break the Gender Rules: Status Incongruity and Backlash Against Modest Men. *Psychology of Men & Masculinity*. 11 (2), p140-151.

Mruk, C. J (2006). *Self-Esteem Research, Theory, and Practice: Toward a Positive Psychology of Self-Esteem*. 3rd ed. New York: Springer.

Mullinix, K. J., Leeper, T. J., Druckman, J. N., and Freese, J. (2015). The Generalizability of Survey Experiments. *Journal of Experimental Political Science*. 2 (2), p109-138.

Mullins, G. and Kiley, M. (2002). 'It's a PhD, not a Nobel Prize': How Experienced Examiners Assess Research Theses. *Studies in Higher Education*. 27 (4), p369-386.

Mummendey, A., Kessler, T., Klink, A. and Mielke, R. (1999). Strategies to Cope with Negative Social Identity: Predictions by Social Identity Theory and Relative Deprivation Theory. *Journal of Personality and Social Psychology*. 76 (2), p229-245.

Mummolo, J. and Peterson, E. (2017). Demand Effects in Survey Experiments: An Empirical Assessment. *American Political Science Review*. 113 (2), p517-529.

Muñoz-Reyes, J. A., Polo, P., Valenzuela, N., Pavez, P., Ramírez-Herrera, O., Figueroa, O., Rodriguez-Sickert, C., Diaz, D., and Pita, M. (2020). The Male Warrior Hypothesis: Testosterone-related Cooperation and Aggression in the Context of Intergroup Conflict. *Scientific Reports*. 10 (375), p1-12.

Munro, G. D. (2010). The Scientific Impotence Excuse: Discounting Belief-Threatening Scientific Abstracts. *Journal of Applied Social Psychology*. 40 (3), p579-600.

Nakagawa, S. and Hart, C. (2019). Where's the Beef? How Masculinity Exacerbates Gender Disparities in Health Behaviours. *Socius*. 5, p1-12.

Nash, R. (2005). Explanation and Quantification in Educational Research: The Arguments of Critical and Scientific Realism. *British Educational Research Journal*. 31 (2), 185-204.

Nauroth, P., Gollwitzer, M., Bender, J. and Rothmund, T. (2014). Gamers Against Science: The Case of the Violent Video Games Debate. *European Journal of Social Psychology*. 44 (2), p104-116.

Nauroth, P., Gollwitzer, M., Bender, J., Rothmund, T. (2015). Social Identity Threat Motivates Science-Discrediting Online Comments. *PLoS ONE*. 10 (2), p1-26.

Nauroth, P., Gollwitzer, M., Kozuchowski, H., Bender, J. and Rothmund, T. (2017). The Effects of Social Identity Threat and Social Identity Affirmation on Laypersons' Perception of Scientists. *Public Understanding of Science*. 26 (7), p754-770.

Neiss, M. B., Sedikides, C., and Stevenson, J. (2002). Self-Esteem: A Behavioural Genetic Perspective. *European Journal of Personality*. 16 (5), p351–367.

Netchaeva, E., Kouchaki, M., and Sheppard, L. D. (2015). A Man's (Precarious) Place: Men's Experienced Threat and Self-Assertive Reactions to Female Superiors. *Personality and Social Psychology Bulletin*. 41 (9), p1247-1259.

Neuberg, S. L. and Cottrell, C. A. (2006). Evolutionary Bases of Prejudices. In: Schaller, M., Simpson, J. A., and Kenrick, D. T. *Evolution and Social Psychology*. Hove: Psychology Press. p163-188.

Neuberg, S. L., Kenrick, D. T., and Schaller, M. (2010). Evolutionary Social Psychology. In: Fiske, S. T., Gilbert, D. T., and Lindzey, G. *Handbook of Social Psychology*. 5th ed. New Jersey: John Wiley & Sons, Inc. p761–79.

Neuville, E. and Croizet, J-C. (2007). Can Salience of Gender Identity Impair Math Performance Among 7-8 Years Old Girls? The Moderating Role of Task Difficulty. *European Journal of Psychology of Education*. 22 (3), p307-316.

Noel, J. G., Wann, D. L., Branscombe, N. L. (1995). Peripheral Ingroup Membership Status and Public Negativity Toward Outgroups. *Journal of Personality and Social Psychology*. 68 (1), p127-137.

Norman, G. (2010). Likert Scales, Levels of Measurement and the "Laws" of Statistics. *Advances in Health Sciences Education*. 15 (5), p625-632.

Nunnally, J. C (1967). *Psychometric Theory*. New York: McGraw-Hill.

Oakes, P. (1987). The Salience of Social Categories. In: Turner, J. C., Hogg, M. A., Oakes, P J., and Wetherell, M. S *Rediscovering the Social Group: A Self-Categorization Theory*. Oxford: Basil Blackwell. p117-141.

Oakes, P. J., Turner, J. C., and Haslam, S. A. (1991). Perceiving People as Group Members: The Role of Fit in the Salience of Social Categorizations. *British Journal of Social Psychology*. 30 (2), p125-144.

Ogilvie, D. M. (1987). The Undesired Self: A Neglected Variable in Personality Research. *Journal of Personality and Social Psychology*. 52 (2), p379-385.

Open Science Collaboration. (2015). Estimating the Reproducibility of Psychological Science. *Science*. 349 (6251), p943-950.

Oppenheimer, D. M., Meyvis, T. and Davidenko, N. (2009). Instructional Manipulation Checks: Detecting Satisficing to Increase Statistical Power. *Journal of Experimental Social Psychology*. 45 (4), p867-872.

Orschiedt, J. (2018). The Late Upper Palaeolithic and Earliest Mesolithic Evidence of Burials in Europe. *Philosophical Transactions of the Royal Society B: Biological Sciences*. 373 (1754), p1-15.

Ouwerkerk, J. W., de Gilder, D., and de Vries, N. K. (2000). When the Going Gets Tough, the Tough Get Going: Social Identification and Individual Effort in Intergroup Competition. *Personality and Social Psychology Bulletin*. 26 (12), p1550-1559.

Owens, T. J., Robinson, D. T. and Smith-Lovin, L. (2010). Three Faces of Identity. *Annual Review of Sociology*. 36 (1), p477-499.

Oyserman, D., Elmore, K. and Smith, G. (2012). Self, Self-Concept, and Identity. In: Leary, M. and Tangney, J. *Handbook of Self and Identity*. 2nd ed. London: Guilford Press. p69-104.

Pallant, J (2016). *SPSS Survival Guide*. 6th ed. Berkshire, UK: Open University Press.

Palomares, N. A. (2004). Gender Schematicity, Gender Identity Salience, and Gender-Linked Language Use. *Human Communication Research*. 30 (4), p556–588.

Palomares, N. A. (2008). Explaining Gender-Based Language Use: Effects of Gender Identity Salience on References to Emotion and Tentative Language in Intra- and Intergroup Contexts. *Human Communication Research*. 34 (2), p263-286.

Paolacci, G., Chandler, J., and Ipeirotis, P. G. (2010). Running Experiments on Amazon Mechanical Turk. *Judgment and Decision Making*. 5 (5), p411-419.

Park, C. W. and Lessig, V. P. (1977). Students and Housewives: Differences in Susceptibility to Reference Group Influence. *Journal of Consumer Research*. 4 (2), p102-110.

Park, C. W., Jaworski, B. J., and MacInnis, D. J. (1986). Strategic Brand Concept-Image Management. *Journal of Marketing*. 50 (4), p135-145.

Pedersen, E. R., Hsu, S. H., Neighbors, C., Lee, C. M., and Larimer, M. E. (2013). The Relationship Between Collective Self-Esteem, Acculturation, and Alcohol-Related Consequences Among Asian American Young Adults. *Journal of Ethnicity in Substance Abuse*. 12 (1), p51-67.

Peer, E., Brandimarte, L., Samat, S., and Acquisti, A. (2017). Beyond the Turk: Alternative Platforms for Crowdsourcing Behavioral Research. *Journal of Experimental Social Psychology*. 70, p153-163.

Perez, D. and Steinhart, Y. (2014). Not So Personal: The Benefits of Social Identity Ad Appeals with Activation in Advertising. *Social Influence*. 9 (3), p224-241.

Perugini, M., Gallucci, M., and Constantini, G. (2018). A Practical Primer to Power Analysis for Simple Experimental Designs. *International Review of Social Psychology*. 31 (1), p1-23.

Peterson, R. A. (1994). A Meta-Analysis of Cronbach's Coefficient Alpha. *Journal of Consumer Research*. 21 (2), p381-391.

Peterson, R. A. (2001). On the Use of College Students in Social Science Research: Insights from a Second-Order Meta-analysis. *Journal of Consumer Research*. 28 (3), p450-461.

Peterson, R. A. and Merunka, D. R. (2014). Convenience Samples of College Students and Research Reproducibility. *Journal of Business Research*. 67 (5), p1035-1041.

Pfeiffer, J. E (1978). *The Emergence of Man*. 3rd ed. New York: Harper and Row.

Pituch, K. A. and Stevens, J. P (2016). *Applied Multivariate Statistics for the Social Sciences*. 6th ed. Oxon: Routledge.

Postmes, T., Haslam, S. A. and Jans, L. (2013). A Single-Item Measure of Social Identification: Reliability, Validity, and Utility. *British Journal of Social Psychology*. 52 (4), p597–617.

Pratto, F., Sidanius, J., Stallworth, L. M. and Malle, B. F. (1994). Social Dominance Orientation: A Personality Variable Predicting Social and Political Attitudes. *Journal of Personality and Social Psychology*. 67 (4), p741-763.

Preacher, K. J., Curran, P. J., and Bauer, D. J. (2006). Computational Tools for Probing Interactions in Multiple Linear Regression, Multilevel Modeling, and Latent Curve Analysis. *Journal of Educational and Behavioral Statistics*. 31 (4), p437-448.

Punch, K. F (2005). *Introduction to Social Research: Quantitative and Qualitative Approaches*. Thousand Oaks, California: Sage Publications.

Purdie-Vaughns, V., Steele, C. M., Davies, P. G., Ditlmann, R., and Crosby, J. R. (2008). Social Identity Contingencies: How Diversity Cues Signal Threat or Safety for African Americans in Mainstream Institutions. *Journal of Personality and Social Psychology*. 94 (4), p615-630.

Rabinovich, A. and Morton, T. A. (2015). Things We (Don't) Want to Hear: Exploring Responses to Group-Based Feedback. *European Journal of Social Psychology*. 26 (1), p126-161.

Randel, A. E. (2002). Identity Salience: A Moderator of the Relationship Between Group Gender Composition and Work Group Conflict. *Journal of Organizational Behavior*. 23 (6), p749–766.

Randolph-Seng, B., Reich, D. A., and DeMarree, K. G. (2012). On the Nonconscious Antecedents of Social Identification: Ingroup Salience, Outgroup Salience, or Both? *Social Cognition*. 30 (3), p335–349.

Ratner, R. K. and Kahn, B. E. (2002). The Impact of Private versus Public Consumption on Variety-Seeking Behavior. *Journal of Consumer Research*. 29 (2), p246-257.

Razpurker-Apfeld, I. and Shamoa-Nir, L. (2020). Imagined Contact With Strongly Identified Outgroup Members: Do Religious Trappings Make the Man? *Asian Journal of Social Psychology*. 23 (4), p384-396.

Reed, A. (2002). Social Identity as a Useful Perspective for Self-Concept–Based Consumer Research. *Psychology and Marketing*. 19 (3), p235-266.

Reed, A., Cohen, J. B., and Bhattacharjee, A. (2009). When Brands Are Built from Within: A Social Identity Pathway to Liking and Evaluation. In: MacInnis, D. J., Park, C. W., and Priester, J. R. *Handbook of Brand Relationships*. Oxon: Routledge. p124-150.

REF. (2020). *Index of Revisions to the 'Guidance on Submissions' (2019/01).* Available: https://www.ref.ac.uk/media/1447/ref-2019_01-guidance-on-submissions.pdf. Last accessed 23rd February 2021.

Reingen, P. H., Foster, B. L., Brown, J. J., and Seidman, S. B. (1984). Brand Congruence in Interpersonal Relations: A Social Network Analysis. *Journal of Consumer Research*. 11 (3), p771-783.

Reysen, S., Katzarska-Miller, I., Nesbit, S. M., and Pierce, L. (2013). Further Validation of a Single-Item Measure of Social Identification. *European Journal of Social Psychology*. 43 (6), p463-470.

Rhodewalt, F. and Tragakis, M. W. (2003). Self-Esteem and Self-Regulation: Toward Optimal Studies of Self-Esteem. *Psychological Inquiry*. 14 (1), p66-70.

Ridgeway, C. L. (2001). Gender, Status, and Leadership. *Journal of Social Issues*. 57 (4), p637-655.

Ridgeway, C. L. (2014). Why Status Matters for Inequality. *American Sociological Review*. 79 (1), 1-16.

Riek, B. M., Mania, E. W., Gaertner, S. L., McDonald, S. A., and Lamoreaux, M. J. (2010). Does a Common Ingroup Identity Reduce Intergroup Threat. *Group Processes and Intergroup Relations*. 13 (4), p403-423.

Roberts, M. J. and Russo, R (1999). *A Student's Guide to Analysis of Variance*. London: Routledge.

Rodgon, M. M. and Rashman, S. E. (1976). Expression of Owner-Owned Relationships among Holophrastic 14- to 32-Month-Old Children. *Child Development*. 47 (4), p1219-1222.

Rogosa, D. (1980). Comparing Nonparallel Regression Lines. *Psychological Bulletin*. 88 (2), p307-321.

Rosenberg, M (1979). *Conceiving the Self*. New York: Basic Books.

Rosenberg, M., Schooler, C., and Schoenbach, C. (1989). Self-Esteem and Adolescent Problems: Modeling Reciprocal Effects. *American Sociological Review*. 54 (6), p1004-1018.

Rosenberg, M., Schooler, C., Shoenbach, C., and Rosenberg, F. (1995). Global Self-Esteem and Specific Self-Esteem: Different Concepts, Different Outcomes. *American Sociological Review*. 60 (1), p141-156.

Ross, L. and Ward, A. (1996). Naive Realism in Everyday Life: Implications for Social Conflict and Misunderstanding. In: Reed, E. S., Turiel, E., and Brown, T. *Values and Knowledge*. New Jersey: Lawrence Erlbaum Associates. p103-135.

Rossiter, J. R. (2002). The C-OAR-SE Procedure for Scale Development in Marketing. *International Journal of Research in Marketing*. 19 (4), p305-335.

Rothgerber, H. (2013). Real Men Don't Eat (Vegetable) Quiche: Masculinity and the Justification of Meat Consumption. *Psychology of Men & Masculinity*. 14 (4), p363–375.

Rozin, P., Hormes, J. M., Faith, M. S., and Wansink, B. (2012). Is Meat Male? A Quantitative Multimethod Framework to Establish Metaphoric Relationships. *Journal of Consumer Research*. 39 (3), p629–643.

Rubin, M. and Hewston, M. (1998). Social Identity Theory's Self-Esteem Hypothesis: A Review and Some Suggestions for Clarification. *Personality and Social Psychology Review*. 2 (1), p40-62.

Rudman, L. A., Moss-Racusin, C. A., Phelan, J. E., and Nauts, S. (2012). Status Incongruity and Backlash Effects: Defending the Gender Hierarchy Motivates Prejudice Against Female Leaders. *Journal of Experimental Social Psychology*. 48 (1), p165-179.

Sachdev, I. and Bourhis, R. Y. (1991). Power and Status Differentials in Minority and Majority Group Relations. *European Journal of Social Psychology*. 21 (1), p1-24.

Sampasivam, S., Collins, K. A., Bielajew, C., and Clément, R. (2016). The Effects of Outgroup Threat and Opportunity to Derogate on Salivary Cortisol Levels. *International Journal of Environmental Research and Public Health*. 13 (6), p616-628.

Sanchez, D. T., Chavez, G., Good, J. J. and Wilton, L. S. (2012). The Language of Acceptance: Spanish Proficiency and Perceived Intragroup Rejection Among Latinos. *Journal of Cross-Cultural Psychology*. 43 (6), p1019-1033.

Sankey, H (2008). *Scientific Realism and the Rationality of Science*. Aldershot: Ashgate.

Sankey, H. (2001). Scientific Realism: An Elaboration and a Defence. *Theoria*. 98, p35-54.

Sapolsky, R. M. (1992). Cortisol Concentrations and the Social Significance of Rank Instability Among Wild Baboons. *Psychoneuroendocrinology*. 17 (6), p701-709.

Sarett, L. H. (1983). Research and Invention. *Proceedings of the National Academy of Sciences of the United States of America, April 1982, Washington DC*. 80 (14), p4572-4574.

Schaafsma, J. and Williams, K. D. (2012). Exclusion, Intergroup Hostility, and Religious Fundamentalism. *Journal of Experimental Social Psychology*. 48 (4), p829-837.

Scheepers, D. and Ellemers, N. (2005). When the Pressure is Up: The Assessment of Social Identity Threat in Low and High Status Groups. *Journal of Experimental Social Psychology*. 41 (2), p192-200.

Scheepers, D. and Ellemers, N. (2019). Status Stress: Explaining Defensiveness to the Resolution of Social Inequality in Members of Dominant Groups. In: Jetten J. and Peters, K. *The Social Psychology of Inequality*. Switzerland: Springer. p294-316.

Scheepers, D., Ellemers, N., and Sintemaartensdijk, N. (2009). Suffering From the Possibility of Status Loss: Physiological Responses to Social Identity Threat in High Status Groups. *European Journal of Social Psychology*. 39 (6), p1075–1092.

Scheff, T (1966). *Being Mentally Ill*. Chicago: Aldine.

Schlueter, E. and Schmidt, P. (2010). Special Issue: Survey Experiments. *Methodology*. 6 (3), p93-95.

Schmeichel, B. J. and Martens, A. (2005). Self-Affirmation and Mortality Salience: Affirming Values Reduces Worldview Defense and Death-Thought Accessibility. *Personality and Social Psychology Bulletin*. 31 (5), p658-667.

Schmitt, M. T. and Branscombe, N. R. (2001). The Good, the Bad, and the Manly: Threats to One's Prototypicality and Evaluations of Fellow In-Group Members. *Journal of Experimental Social Psychology*. 37 (6), p510–517.

Schmitt, N. (1996). Uses and Abuses of Coefficient Alpha. *Psychological Assessment*. 8 (4), p350-353.

Schur, E. M (1971). *Labeling Behavior Deviant*. New York: Harper and Row.

Schwartz, S. H. (1992). Universals in the Content and Structure of Values: Theoretical Advances and Empirical Tests in 20 Countries. In: Zanna, M. *Advances in Experimental Social Psychology, Vol. 25*. London: Academic Press. p1-65.

Schwartz, S. H. and Cieciuch, J. (2016). Values. In: Leong, F. T. L., Bartram, D., Cheung, F., Geisinger, K. F., and Iliescu, D. *International Test Commision Handbook of Testing and Assessment*. Oxford: Oxford University Press. p106-119.

Schwartz, S. H., Cieciuch, J., Vecchione, M., Davidov, E., Fischer, R., Beierlein, C., Ramos, A., Verkasalo, M., Lonngvist, J-E., Demirutku, K., Dirilen-Gumus, O., and Konty, M. (2012). Refining the Theory of Basic Individual Values. *Journal of Personality and Social Psychology*. 103 (4), p663-688.

Schwartz, S. J., Zamboanga, B. L., and Weisskirch, R. S. (2008). Broadening the Study of the Self: Integrating the Study of Personal Identity and Cultural Identity. *Social and Personality Psychology Compass*. 2 (2), p635-651.

Schwarz, N., Bless, H., Strack, F., Klumpp, G., Rittenauer-Schatka, H., and Simons, A. (1991). Ease of Retrieval as Information: Another Look at the Availability Heuristic. *Journal of Personality and Social Psychology*. 61 (2), p195-202.

Schwinghammer, S. A., Stapel, D. A., and Blanton, H. (2006). Different Selves Have Different Effects: Self-Activation and Defensive Social Comparison. *Personality and Social Psychology Bulletin*. 32 (1), p27-39.

Scotland, J. (2012). Exploring the Philosophical Underpinnings of Research: Relating Ontology and Epistemology to the Methodology and Methods of the Scientific, Interpretive, and Critical Research Paradigms. *English Language Teaching*. 5 (9), p9-16.

Sedikides, C. and Gregg, A. P. (2003). Portraits of the Self. In: Hogg, M. A. and Cooper, J. *Sage Handbook of Social Psychology*. London: Sage Publishing. p110-138.

Sedlmeier, P. and Gigerenzer, G. (1989). Do Studies of Statistical Power Have an Effect on the Power of Studies? *Psychological Bulletin*. 105 (2), p309-316.

Seger, C. R., Smith, E. R., and Mackie, D. M. (2009). Subtle Activation of a Social Categorization Triggers Group-Level Emotions. *Journal of Experimental Social Psychology*. 45 (3), p460–467.

Sempé, L. (2015). Social Circle and Reference Group. In: Manrai, A. and Meadow, H. *Global Perspectives in Marketing for the 21st Century. Developments in Marketing Science: Proceedings of the Academy of Marketing Science*. New York: Springer. p360-361.

Shakespeare, W (2016). *As You Like It, A Comedie: All the World's A Stage*. London: Scribe Publishing. (Written in 1599, Published in 1623)

Shamoa-Nir, L. and Razpurker-Apfeld, I. (2020). Exposure to Religious Outgroup Symbols and Intergroup Anxiety in Israel. *Israel Affairs*. 26 (6), p969–981.

Shavitt, S. and Nelson, M. R. (2000). The Social-Identity Function in Person Perception: Communicated Meanings of Product Preferences. In: Maio, G. R. and Olson, J. M. *Why We Evaluate: Functions of Attitudes*. Abingdon: Lawrence Erlbaum Associates. p37-58.

Sherman, D. K. (2013). Self-Affirmation: Understanding the Effects. *Social and Personality Psychology Compass*. 7 (11), p834-845.

Sherman, D. K. and Cohen, G. L. (2006). The Psychology of Self-Defence: Self-Affirmation Theory. In: Zanna, M. P. *Advances in Experimental Social Psychology, Vol. 38*. UK: Elsevier Academic Press. p183–242.

Sherman, D. K. and Kim, H. S. (2005). Is There an "I" in "Team"? The Role of the Self in Group-Serving Judgments. *Journal of Personality and Social Psychology*. 88 (1), p108-120.

Sherman, D. K., Brookfield, J., and Ortosky, L. (2017). Intergroup Conflict and Barriers to Common Ground: A Self-Affirmation Perspective. *Social and Personality Psychology Compass*. 11 (12), p1-13.

Sherman, D. K., Kinias, Z., Major, B., Kim, H. S., and Prenovost, M. (2007). The Group as a Resource: Reducing Biased Attributions for Group Success and Failure via Group Affirmation. *Personality and Social Psychology Bulletin*. 33 (8), p1100-1112.

Sherman, D. K., Nelson, L. D., and Steele, C. M. (2000). Do Messages about Health Risks Threaten the Self? Increasing the Acceptance of Threatening Health Messages Via Self-Affirmation. *Personality and Social Psychology Bulletin*. 26 (9), p1046-1058.

Sherman, R. C., Buddie, A. M., Dragan, K. L., End, C. M., and Finney, L. J. (1999). Twenty Years of PSPB: Trends in Content, Design, and Analysis. *Personality and Social Psychology Bulletin*. 25 (2), p177-187.

Shih, M., Pattinsky, T. L., and Ambady, N. (1999). Stereotype Susceptibility: Identity Salience and Shifts in Quantitative Performance. *Psychological Science*. 10 (1), p80-83.

Sidanius, J. and Pratto, F (1999). *Social Dominance: An Intergroup Theory of Social Hierarchy and Oppression*. Cambridge: Cambridge University Press.

Sidanius, J., Cotterill, S., Sheehy-Skeffington, J., Kteily, N. and Carvacho, H. (2017). Social Dominance Theory: Explorations in the Psychology of Oppression. In: Sibley, C. G. and Barlow, F. K. *The Cambridge Handbook of the Psychology of Prejudice*. Cambridge: Cambridge University Press. p149-187.

Sidanius, J., Levin, S., Liu, J., and Pratto, F. (2000). Social Dominance Orientation, Anti-Egalitarianism and the Political Psychology of Gender: An Extension and Cross-Cultural Replication. *European Journal of Social Psychology*. 30 (1), p41-67.

Siebler, F., Sabelus, S. and Bohner, G. (2008). A Refined Computer Harassment Paradigm: Validation, and Test of Hypotheses About Target Characteristics. *Psychology of Women Quarterly*. 32 (1), p22-35.

Simpson, B., Dunn, L., and White, K. (2019). A Framework for Considering Dissociative Identity Effects in Consumption. In: Reed, A. and Forehand, M. *Handbook of Research on Identity Theory in Marketing*. Cheltenham, UK: Edward Elgar Publishing Limited. p172-184.

Sinclair, S. and Carlsson, R. (2013). What Will I Be When I Grow Up? The Impact of Gender Identity Threat on Adolescents' Occupational Preferences. *Journal of Adolescence*. 36 (3), p465-474.

Sinclair, S. and Carlsson, R., and Björklund, F. (2016). Getting Along or Ahead: Effects of Gender Identity Threat on Communal and Agentic Self-Presentations. *Scandinavian Journal of Psychology*. 57 (5), p427-432.

Sirgy, M. J (1982). Self-Concept in Consumer Behavior: A Critical Review. *Journal of Consumer Research*. 9 (1), p287-300.

Sirgy, M. J (1986). *Self-Congruity: Toward a Theory of Personality and Cybernetics*. New York: Praeger.

Sirgy, M. J (2018). Self-Congruity Theory in Consumer Behavior: A Little History. *Journal of Global Scholars of Marketing Science*. 28 (2), p197-207.

Smith, E. (2014). Research Design. In: Reis, H. T. and Judd, C. M. *Handbook of Research Methods in Social and Personality Psychology*. 2nd ed. New York: Cambridge University Press. p27-48.

Smith, J. R. (2010). Referent Informational Influence Theory. In: Levine, J. M. and Hogg, M. *Encyclopedia of Group Processes and Intergroup Relations*. London: Sage Publications Ltd. p687-689.

Smith, J. R. and Louis, W. R. (2008). Do As We Say And As We Do: The Interplay of Descriptive and Injunctive Group Norms in the Attitude–Behaviour Relationship. *British Journal of Social Psychology*. 47 (4), p647–666.

Smith, J. R. and Terry, D. J. (2003). Attitude-Behaviour Consistency: The Role of Group Norms, Attitude Accessibility, and Mode of Behavioural Decision-Making. *European Journal of Social Psychology*. 33 (5), p591-608.

Smith, S. (1996). Positivism and Beyond. In: Smith, S., Booth, K., and Zalewski, M. *International Theory*. Cambridge: Cambridge University Press. p11-44.

Sobal, J. (2005). Men, Meat, and Marriage: Models of Masculinity. *Food and Foodways*. 13 (1-2), p135-158.

Solomon, M. R. (1983). The Role of Products as Social Stimuli: A Symbolic Interactionism Perspective. *Journal of Consumer Research*. 10 (3), p319-329.

Sorabji, R (2006). *Self: Ancient and Modern Insights about Individuality, Life, and Death*. Oxford: Oxford University Press.

Spears, R., Doosje, B., and Ellemers, N. (1997). Self-Stereotyping the Face of Threats to Group Status and Distinctiveness: The Role of Group Identification. *Personality and Social Psychology Bulletin*. 23 (5), p538-553.

Spector, P. E. (2013). Survey Design and Measure Development. In: Little, T. D. *The Oxford Handbook of Quantitative Methods: Volume 1 Foundations*. Oxford: Oxford University Press. p170-188.

Spencer, S. J., Fein, S., and Lomore, C. D. (2001). Maintaining One's Self-Image Vis-à-Vis Others: The Role of Self-Affirmation in the Social Evaluation of the Self. *Motivation and Emotion*. 25 (1), p41-65.

Spencer, S. J., Steele, C. M., and Quinn, D. M. (1999). Stereotype Threat and Women's Math Performance. *Journal of Experimental Social Psychology*. 35 (1), p4-28.

Spencer-Rodgers, J., Major, B., Forster, D. E., Peng, K. (2016). The Power of Affirming Group Values: Group Affirmation Buffers the Self-Esteem of Women Exposed to Blatant Sexism. *Self and Identity*. 15 (4), p413-431.

Spoor, J. R. and Schmitt, M. R. (2011). "Things Are Getting Better" Isn't Always Better: Considering Women's Progress Affects Perceptions of and Reactions to Contemporary Gender Inequality. *Basic and Applied Social Psychology*. 33 (1), p24-36.

Spranger, E. (1914). *Lebensformen. Geisteswissenschaftliche Psychologie und Ethik der Personlichkeit*. Halle: Niemeyer. [Translated as: Life Forms. Humanities, Psychology and Ethics of Personality]

Stafford, J. E. (1966). Effects of Group Influences on Consumer Brand Preferences. *Journal of Marketing Research*. 3 (1), 68-75.

Steele, C. M. (1988). The Psychology of Self-Affirmation: Sustaining the Integrity of the Self. In: Berkowitz, L. *Advances in Experimental Social Psychology, Vol. 21*. New York: Academic Press. p261-302.

Steele, C. M. and Aronson, J. (1995). Stereotype Threat and the Intellectual Test Performance of African Americans. *Journal of Personality and Social Psychology*. 69 (5), p797-811.

Steele, C. M. and Liu, T. J. (1981). Making the Dissonant Act Unreflective of Self: Dissonance Avoidance and the Expectancy of a Value-Affirming Response. *Personality and Social Psychology Bulletin*. 7 (3), p393-397.

Steele, C. M. and Liu, T. J. (1983). Dissonance Processes as Self-Affirmation. *Journal of Personality and Social Psychology*. 45 (1), p5-19.

Stevens, J. R. (2017). Replicability and Reproducibility in Comparative Psychology. *Frontiers in Psychology*. 8, p1-6.

Stewart, N., Chandler, J., and Paolacci, G. (2017). Crowdsourcing Samples in Cognitive Science. *Trends in Cognitive Sciences*. 21 (10), p736-748.

Stryker, S. (1968). Identity Salience and Role Performance: The Importance of Symbolic Interaction Theory for Family Research. *Journal of Marriage and the Family*. 30 (4), p558-564.

Summers, J. and Summers, J. (2017). Motivating Intention to Take Action on Behalf of an Out-Group: Implications for the Use of Advocacy Messages in Social Marketing Strategies. *Journal of Marketing Management*. 33 (11-12), p973-1002.

Sumner, W. G (1906). *Folkways: A Study of the Sociological Importance of Usages, Manners, Customs, Mores, and Morals*. New York: Ginn and Company.

Swim, J. K. and Campbell, B. (2003). Sexism: Attitudes, Beliefs, and Behaviors. In: Brown, R. and Gaertner, S *Blackwell Handbook of Social Psychology: Intergroup Processes*. Oxford: Blackwell Publishers Ltd. p218-237.

Tabachnick, B. G. and Fidell, L. S (2014). *Using Multivariate Statistics: Pearson New International Edition*. Harlow: Pearson Education Limited.

Taber, K. S. (2018). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*. 48 (6), p1273-1296.

Tainter, J. A. (1978). Mortuary Practices and the Study of Prehistoric Social Systems. *Advances in Archaeological Method and Theory*. 1, p105-141.

Tajfel, H (1981). *Human Groups and Social Categories: Studies in Social Psychology*. Cambridge: Cambridge University Press.

Tajfel, H. (1972). Social Categorization. English Manuscript of 'La Catégorisation Sociale'. In: Moscovici, S. *Introduction à la Psychologie Sociale*. Paris: Larousse.

Tajfel, H. (1975). The Exit of Social Mobility and the Voice of Social Change. *Social Science Information*. 14 (2), p101-119.

Tajfel, H. (1978). Social Categorization, Social Identity and Social Comparison. In: Tajfel, H. *Differentiation Between Social Groups: Studies in the Social Psychology of Intergroup Relations*. London: Academic Press. p61-76.

Tajfel, H. (1982). Social Psychology of Intergroup Relations. *Annual Review of Psychology*. 33, p1-39.

Tajfel, H. and Turner, J. C. (1979). An Integrative Theory of Intergroup Conflict. In: Austin, W. G. and Worchel, S. *The Social Psychology of Intergroup Relations*. Monterey, C. A.: Brooks/Cole Publishing Company. p33-47.

Tajfel, H. and Turner, J. C. (1986). The Social Identity Theory of Intergroup Behavior. In: Worchel, S. and Austin, W. G. *Psychology of Intergroup Relations*. 2nd ed. Chicago, I. L.: Nelson-Hall Publishers. p7-24.

Tajfel, H., Flament, C., Billig, M. G., and Bundy, R. F. (1971). Social Categorization and Intergroup Behaviour. *European Journal of Social Psychology*. 1 (2), p149-177.

Tajfel, H., Jaspars, J. M. F., and Fraser, C. (1984). The Social Dimension in European Social Psychology. In: Tajfel, H. *The Social Dimension, Volume 1, European Developments in Social Psychology*. Cambridge: Cambridge University Press. p1-5.

Taylor, D. M. and McKirnan, D. J. (1984). Theoretical Contributions: A Five-Stage Model of Intergroup Relations. *British Journal of Social Psychology*. 23 (4), p291-300.

Taylor, S. E. and Brown, J. D. (1988). Illusion and Well-Being: A Social Psychological Perspective on Mental Health. *Psychological Bulletin*. 103 (2), p193-210.

Tepper, K. (1994). The Role of Labeling Processes in Elderly Consumers' Responses to Age Segmentation Cues. *Journal of Consumer Research*. 20 (4), p503-519.

Terry, D. J. and Hogg, M. A. (1996). Group Norms and the Attitude-Behavior Relationship: A Role for Group Identification. *Personality and Social Psychology Bulletin*. 22 (8), p776-793.

Tesser, A. (1988). Toward a Self-Evaluation Maintenance Model of Social Behavior. In: Berkowitz, L. *Advances in Experimental Social Psychology, Vol. 21*. New York: Academic Press. p181-227.

Tesser, A. (2000). On the Confluence of Self-Esteem Maintenance Mechanisms. *Personality and Social Psychology Review*. 4 (4), p290-299.

Tesser, A. and Cornell, D. P. (1991). On the Confluence of Self Processes. *Journal of Experimental Social Psychology*. 27 (6), p501-526.

Thürmer, J. L., McCrea, S. M., and McIntyre, B. M. (2019). Motivated Collective Defensiveness: Group Members Prioritize Counterarguing Out-Group Criticism Over Getting Their Work Done. *Social Psychological and Personality Science*. 10 (3), p382-392.

Timeo, S. and Suitner, C. (2018). Eating Meat Makes You Sexy: Conformity to Dietary Gender Norms and Attractiveness. *Psychology of Men & Masculinity*. 19 (3), p418–429.

Trope, Y. and Liberman, N. (2010). Construal-Level Theory of Psychological Distance. *Psychological Review*. 117 (2), p440-463.

Tuan, Y-F. (1980). The Significance of the Artifact. *Geographical Review*. 70 (4), p462-472.

Turner, J. C (1991). *Social Influence*. Milton Keynes: Open University Press.

Turner, J. C. (1975). Social Comparison and Social Identity: Some Prospects for Intergroup Behaviour. *European Journal of Social Psychology*. 5 (1), p1–34.

Turner, J. C. (1982). Towards a Cognitive Redefinition of the Social Group. In: Tajfel, H. *Social Identity and Intergroup Relations*. Cambridge: Cambridge University Press. p15-40.

Turner, J. C. (1999). Some Current Issues in Research on Social Identity and Self-Categorization Theories. In: Ellemers, N., Spears, R., and Doosje, B *Social Identity*. Oxford: Blackwell Publishers Ltd. p6-34.

Turner, J. C. and Brown, R. (1978). Social Status, Cognitive Alternatives and Intergroup Relations. In: Tajfel, H. *Differentiation Between Social Groups: Studies in the Social Psychology of Intergroup Relations*. London: Academic Press. p201-234.

Turner, J. C. and Oakes, P. J. (1989). Self-Categorization Theory and Social Influence. In: Paulus, P. B. *The Psychology of Group Influence*. New Jersey: Erlbaum. p233-275.

Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., and Wetherell, M. S (1987). *Rediscovering the Social Group: A Self-Categorization Theory*. Oxford: Basil Blackwell.

Turner, J. C., Wetherell, M. S., and Hogg, M. A. (1989). Referent Informational Influence and Group Polarization. *British Journal of Social Psychology*. 28 (2), p135-147.

Tversky, A. and Kahneman, D. (1973). Availability: A Heuristic for Judging Frequency and Probability. *Cognitive Psychology*. 5 (2), p207-232.

Vallone, R. P., Ross, L., and Lepper, M. R. (1985). The Hostile Media Phenomenon: Biased Perception and Perceptions of Media Bias in Coverage of the Beirut Massacre. *Journal of Personality and Social Psychology*. 49 (3), p577-585.

Valved, T., Kosakowska-Berezecka, N., Besta, T., and Martiny, S. E. (2021). Gender Belief Systems Through the Lens of Culture—Differences in Precarious Manhood Beliefs and Reactions to Masculinity Threat in Poland and Norway. *Psychology of Men & Masculinity*. 22 (2), p265-276.

van Bavel, J. J., Mende-Siedlecki, P., Brady, W. J., and Reinero, D. A. (2016). Contextual Sensitivity in Scientific Reproducibility. *Proceedings of the National Academy of Sciences of the United States of America*. 113 (23), p6454-6459.

van Knippenberg, A., van Twuyver, M. and Pepels, J. (1994). Factors Affecting Social Categorization Processes in Memory. *British Journal of Social Psychology*. 33 (4), p419-431.

van Tilburg, M., Lieven, T., Herrmann, A., and Townsend, C. (2015). Beyond "Pink It and Shrink It" Perceived Product Gender, Aesthetics, and Product Evaluation. *Psychology and Marketing*. 32 (4), p422-437.

van Twuyver, M. and van Knippenberg, A. (1995). Social Categorization as a Function of Priming. *European Journal of Social Psychology*. 25 (6), p695-701.

Vandello, J. A. and Bosson, J. K. (2013). Hard Won and Easily Lost: A Review and Synthesis of Theory and Research on Precarious Manhood. *Psychology of Men & Masculinity*. 14 (2), p101-113.

Vandello, J. A., Bosson, J. K., Cohen, D., Burnaford, R. M., and Weaver, J. R. (2008). Precarious Manhood. *Journal of Personality and Social Psychology*. 95 (6), p1325-1339.

Vankov, I., Bowers, J., and Munafo, M. R. (2014). On the Persistence of Low Power in Psychological Science. *The Quarterly Journal of Experimental Psychology*. 67 (5), p1037–1040.

Velazquez, J. L. P. (2019). *The Rise of the Scientist-Bureaucrat: Survival Guide for Researchers in the 21st Century*. Switzerland: Springer.

Voci, A. (2006). The Link Between Identification and In-Group Favourtism: Effects of Threat to Social Identity and Trust-Related Emotions. *British Journal of Social Psychology*. 45 (2), 265-284.

Wacquant, L. J. D. (1994). Positivism. In: Outhwaite, W. and Bottomore, T. *The Blackwell Dictionary of Twentieth-Century Social Thought*. Cambridge: Blackwell. p495-498.

Wang, K. and Dovidio, J. F. (2017). Perceiving and Confronting Sexism: The Causal Role of Gender Identity Salience. *Psychology of Women Quarterly*. 41 (1), p65-76.

Warner, R. M (2012). *Applied Statistics: From Bivariate Through Multivariate Techniques*. 2nd ed. London: Sage Publications.

Watson, D., Clark, L. A., and Tellegen, A. (1988). Development and Validation of Brief Measures of Positive and Negative Affect: The PANAS Scales. *Journal of Personality and Social Psychology*. 54 (6), p1063-1070.

Watson, J. B. (1913). Psychology as the Behaviorist Views It. *Psychological Review*. 20, p158-177.

Watson, J. B. (1994). Psychology as the Behaviorist Views It. *Psychological Review*. 101 (2), p248-253.

Weaver, J. R., Vandello, J. A., and Bosson, J. K. (2013). Intrepid, Imprudent, or Impetuous? The Effects of Gender Threats on Men's Financial Decisions. *Psychology of Men & Masculinity*. 14 (2), p184-191.

Weingarten, E. and Hutchinson, J. W. (2018). Does Ease Mediate the Ease-of-Retrieval Effect? A Meta-Analysis. *Psychological Bulletin*. 144 (3), p227-283.

Whisman, M. A. and McClelland, G. H. (2005). Designing, Testing, and Interpreting Interactions and Moderator Effects in Family Research. *Journal of Family Psychology*. 19 (1), p111-120.

White, K. and Argo, J. J. (2009). Social Identity Threat and Consumer Preferences. *Journal of Consumer Psychology*. 19 (3), p313-325.

White, K. and Dahl, D. W. (2006). To Be or Not Be? The Influence of Dissociative Reference Groups on Consumer Preferences. *Journal of Consumer Psychology*. 16 (4), p404-414.

White, K. and Dahl, D. W. (2007). Are All Out-Groups Created Equal? Consumer Identity and Dissociative Influence. *Journal of Consumer Research*. 34, p525-536.

White, K., Argo, J. J., and Sengupta, J. (2012). Dissociative versus Associative Responses to Social Identity Threat: The Role of Consumer Self-Construal. *Journal of Consumer Research*. 39 (4), p704-719.

Whittler, T. E. and Spira, J. S. (2002). Model's Race: A Peripheral Cue in Advertising Messages? *Journal of Consumer Psychology*. 12 (4), p291–301.

WHO. (2020). *Munich Security Conference.* Available: https://www.who.int/director-general/speeches/detail/munich-security-conference. Last accessed 15th February 2021.

Wight, C. (2013). Philosophy of Social Science and International Relations. In: Carlsnaes, W., Risse, T., and Simmons, B. A. *Handbook of International Relations*. London: Sage Publications. p23-51.

Wilson, J. P. and Hugenberg, K. (2010). When Under Threat, We All Look the Same: Distinctiveness Threat Induces Ingroup Homogeneity in Face Memory. *Journal of Experimental Social Psychology*. 46 (10), p1004-1010.

Wilson, M. S. and Liu, J. H. (2003). Social Dominance Orientation and Gender: The Moderating Role of Gender Identity. *British Journal of Social Psychology*. 42 (2), p187-198.

Witt, R. E. (1969). Informal Social Group Influence on Consumer Brand Choice. *Journal of Marketing Research*. 6 (4), p473-476.

Wohl, M. J. A., Giguère, B., Branscombe, N. R., and McVicar, D. N. (2011). One Day We Might Be No More: Collective Angst and Protective Action from Potential Distinctiveness Loss. *European Journal of Social Psychology*. 41 (3), p289-300.

Wojcieszak, M. and Garrett, R. K. (2018). Social Identity, Selective Exposure, and Affective Polarization: How Priming National Identity Shapes Attitudes Toward Immigrants Via News Selection. *Human Communication Research*. 44 (3), p247–273.

Wood, J. V., Giordano-Beech, M., and Ducharme, M. J. (1999). Compensating for Failure Through Social Comparison. *Personality and Social Psychology Bulletin*. 25 (11), p1370-1386.

Wood, J. W., Heimpel, S. A. and Michela, J. L. (2003). Savoring Versus Dampening: Self-Esteem Differences in Regulating Positive Affect. *Journal of Personality and Social Psychology*. 83 (3), p566–580.

Wood, W. and Eagly, A. H. (2015). Two Traditions of Research on Gender Identity. *Sex Roles*. 73 (11-12), p461-473.

Worth, L. T., Smith, J., and Mackie, D. M. (1992). Gender Schematicity and Preference for Gender-Preference for Gender-Typed Products. Psychology and Marketing. 9 (1), p17-30.

Wright, S. C., Taylor, D. M., Moghaddam, F. M. (1990). Responding to Membership in a Disadvantaged Group: From Acceptance to Collective Protest. *Journal of Personality and Social Psychology*. 58 (6), p994-1003.

Wright, S.C. (2003). Strategic Collective Action: Social Psychology and Social Change. In: Brown, R. and Gaertner, S *Blackwell Handbook of Social Psychology: Intergroup Processes*. Oxford: Blackwell Publishers Ltd. p409-430.

Yates, F. (1934). Contingency Tables Involving Small Numbers and the χ2 Test. *Supplement to the Journal of the Royal Statistical Society*. 1 (2), p217-235.

Yong, E. (2012). Replication Studies: Bad Copy. *Nature*. 485 (7398), p298–300.

Zárate, M. A. and Garza, A. A. (2002). In-Group Distinctiveness and Self-Affirmation as Dual Components of Prejudice Reduction. *Self and Identity*. 1 (3), p235-249.

APPENDIX A – Participant Information Sheet

Participant Information Sheet
Menu Selection Task

Thank you for your interest in our research. Please read the following information carefully.

What is this research looking at?

We are in the process of designing a menu selection task that we hope will feature in later studies of consumer behaviour.

Do I have to take part?

It is up to you to decide whether to take part. This information sheet describes the study, but should you have any further questions you can contact the researcher using the email address provided below. If you agree to take part, we will ask you to provide your consent by entering your Prolific ID.

What will happen if I agree to take part?

You will be presented with a scenario and asked to select three dishes from the menu provided. You will also be asked to evaluate several other dishes from the same menu. Demographic information is also collected.

Are there any risks involved?

There should be no issues with taking part. However, if you decide during the survey that you no longer wish to take part, then simply close your browser or tab, and any incomplete responses received by us will be deleted.

What payment will I receive for taking part?

Participants who accurately complete the survey will be reimbursed for their time. The amount paid will be £0.80 calculated on a completion time of 7mins at a rate of £6.86 p/hr. Payment will not be made in those instances where an attention check is failed or the questionnaire is completed within 3 minutes.

How will you store the information that I give you?

All information that you provide during the study will be stored in accordance with the General Data Protection Regulations (GDPR), and will be kept strictly confidential. The chief investigator / researcher will be the custodian of the anonymous research data. All complete data will be kept for 5 years, after which point it will be securely disposed of. Electronic data will be kept on a password protected computer. To ensure confidentiality, your data will be assigned a unique identification code that will be used in place of your Prolific ID. The master list connecting Prolific IDs to the assigned codes, will be stored separately and securely. Only the researcher and the supervisory team will have access to the data.

How will the data be used?

The data will initially feature in a PhD thesis, and later presented at conferences and in journals. Your data will be presented collectively as group data so that you will not be identifiable by any means.

What happens if I agree to take part, but later change my mind?

Participation is voluntary. If you decide that you no longer wish to take part, then you have 5 weeks within which to contact us via email to have your data removed from the study. Please also include your Prolific ID so that we can identify your data for removal. You do not need to provide a reason for withdrawing, and you will not be penalised or lose any benefits for which you would otherwise qualify.

Contact Details:

If you have any questions or concerns or if you wish to withdraw from the studies, then please contact us at Norwich Business School, University of East Anglia using the following email addresses:

Researcher: r.cameron@uea.ac.uk

Supervisor: k.le-meunier-fitzhugh@uea.ac.uk

APPENDIX B – Questionnaire for Study I

Menu Selection Task

PAGE 1

Thank you for your interest in this study. Before taking part, please read the Participant Information Sheet **available here**.

The information sheet outlines the purpose of the research, the handling of your data, your rights as a participant, and our contact details should you require further information or wish to withdraw. You are under no obligation to agree to take part, but if you do agree you can withdraw at any time without giving a reason.

Please note that responses provided in under 3 minutes will be considered low-effort and will not be approved.

Please indicate that you understand and agree with the following:

	Yes
• I understand the purpose and nature of the study. • I understand that my participation is voluntary and that I can withdraw at any time without giving a reason. • I understand that all information collected as part of the study will be treated as completely confidential, and the data will be anonymised.	○ ○ ○

PAGE 2

Please enter your Prolific ID:

_____

PAGE 3

Please read the following scenario carefully.

Imagine that you've been invited to attend a meal for work. You're presented with the menu below, and asked to select a starter, main, and dessert. You're tempted to select a light starter and perhaps a steak for your main course.

Using the menu below, please select and enter your starter, main, and dessert.

Starter   _____

Main   _____

Dessert   _____

MENU

BIRCH STREET TAVERN

020 7946 3512

//

STARTERS

TOMATO BRUSCHETTA (V)
Tomato, extra virgin olive oil, garlic & basil, served on toasted bread

LEMON & HERB CHICKEN WINGS
Six chicken wings marinated in lemon and herbs, served with a light house dressing

SOURDOUGH (V)
Warm tear-&-share sourdough, extra virgin olive oil & balsamic vinegar

PIZZAS

Available in medium (12") and large (14")

NAPOLI (V)
Tomato sauce, extra virgin olive oil, mozzarella, fresh garlic, basil, and oregano

FLORENCE
Tomato sauce, extra virgin olive oil, mozzarella, prosciutto (fresh/cooked), rocket, & Parmigiano Reggiano

TORINO
Tomato sauce, extra virgin olive oil, mozzarella, anchovies, capers, fresh garlic & black olives

STEAKS

Served on an individual lava stone to allow cooking to finish at your table

LADIES' CUT 10oz
10oz fillet steak served with a field mushroom, roasted tomato, fries & choice of sauce

HOUSE CUT 12oz
12oz fillet steak served with a field mushroom, roasted tomato, fries & choice of sauce

SAUCES
Diane, Mushroom, Blue Cheese, Bernaise, Peppercorn, Garlic Butter

BURGERS

CLASSIC
Steak burger, lettuce, relish, burger sauce

BACON & CHEESE
Steak burger, smoked bacon, cheese, lettuce, relish, burger sauce

BEAN BURGER (V)
Garden pea and broad bean burger, lettuce, sour cream

DESSERTS

HOT APPLE CRUMBLE
With French vanilla ice cream

NY STYLE CHEESECAKE
With raspberry sauce and whipped cream

PEACH & RASPBERRY MELBA
With caramel sauce

SORBET
Lemon, Raspberry, or Strawberry

PAGE 4

Thank you.

We're interested in what you think about the menu options. This next stage will be a little repetitive, so we understand that you might be tempted to rush through. To reduce repetition, we ask that you only evaluate six options from the menu (some that you selected, and some that you didn't).

Please click **Next Page** to begin.

PAGE 5

NY STYLE CHEESECAKE
With raspberry sauce and whipped cream

Unfavourable	○ ○ ○ ○ ○ ○ ○ ○ ○	Favourable
Dislike	○ ○ ○ ○ ○ ○ ○ ○ ○	Like
Bad	○ ○ ○ ○ ○ ○ ○ ○ ○	Good

TOMATO BRUSCHETTA (V)
Tomato, extra virgin olive oil, garlic & basil, served on toasted bread

Unfavourable	○ ○ ○ ○ ○ ○ ○ ○ ○	Favourable
Dislike	○ ○ ○ ○ ○ ○ ○ ○ ○	Like
Bad	○ ○ ○ ○ ○ ○ ○ ○ ○	Good

PAGE 6

LEMON & HERB CHICKEN WINGS
Six chicken wings marinated in lemon and herbs, served with a light house dressing

Unfavourable	○ ○ ○ ○ ○ ○ ○ ○ ○	Favourable
Dislike	○ ○ ○ ○ ○ ○ ○ ○ ○	Like
Bad	○ ○ ○ ○ ○ ○ ○ ○ ○	Good

CHEF'S CUT 10oz
10oz fillet steak served with a field mushroom, roasted tomato, fries & choice of sauce

Unfavourable	○ ○ ○ ○ ○ ○ ○ ○ ○	Favourable
Dislike	○ ○ ○ ○ ○ ○ ○ ○ ○	Like
Bad	○ ○ ○ ○ ○ ○ ○ ○ ○	Good

PAGE 7

HOT APPLE CRUMBLE
With French vanilla ice cream

Unfavourable	○ ○ ○ ○ ○ ○ ○ ○ ○	Favourable
Dislike	○ ○ ○ ○ ○ ○ ○ ○ ○	Like
Bad	○ ○ ○ ○ ○ ○ ○ ○ ○	Good

HOUSE CUT 12oz
12oz fillet steak served with a field mushroom, roasted tomato, fries & choice of sauce

Unfavourable	○ ○ ○ ○ ○ ○ ○ ○ ○	Favourable
Dislike	○ ○ ○ ○ ○ ○ ○ ○ ○	Like
Bad	○ ○ ○ ○ ○ ○ ○ ○ ○	Good

PAGE 8

Please select the number four for this question, and No for the next question. This is to help us filter out random clicking.

| | 1 2 3 4 5 6 7 | |
| Rarely | ○ ○ ○ ○ ○ ○ ○ | Frequently |

Please select the correct response.

| | Yes | No |
| | ○ | ○ |

Included in Studies 2 – 4

What are your dietary restrictions associated with meat?

○ Vegetarian
○ Vegan
○ Neither
○ Other (Please Specify)—————————————————

PAGE 9

What is your gender?

○ Male
○ Female
○ Other (Please Specify)—————————————————

Please enter your age:

_____

Please select your nationality:

_____

PAGE 10

Finally, we're interested in receiving your feedback about the content of the study. In your own words, what was the present study about?

PAGE 11

You have completed this survey!
Thank you for taking the time to answer this survey.

APPENDIX C – Debrief for Study 2

Thank you for taking part in this study.

Your help with our work is greatly appreciated. It is only with the time and effort provided by participants such as yourself, that research in consumer behaviour is possible. Your participation today has made a genuine contribution to both the University of East Anglia (UEA) and the field of consumer behaviour.

As explained in the Participant Information Sheet, your data is to be used as part of a PhD project. You are reminded that all data is held confidentially and anonymously, though if you decide that you no longer wish to take part, then please contact Ross Cameron within 5 weeks using the email address below. You do not have to provide a reason for withdrawing, but please do provide your Prolific ID so that we can identify your data.

The present study is part of a two-part project. Part 1 was completed two weeks ago when you participated in a study titled *New Measure of Gender Identification*. In that study, we used several measures of gender identification (cognitive, evaluative, and emotional) to understand the degree to which you identify with your gender. We were not creating a new measure of gender identification.

Part 2 was completed today. You were tasked with selecting three courses from the menu provided, and asked to evaluate several others. Depending on which condition you were in, the menu either included a 10oz Chefs Cut or 10oz Ladies' Cut Steak. Both conditions also included a 12oz House Cut Steak. In 2006, Katherine White and Darren Dahl published a paper titled "*To Be or Not Be? The Influence of Dissociative Reference Groups on Consumer Preferences*", which revealed that when presented with a 10oz Ladies' Cut and 12oz House Cut Steak, men were more likely to choose the latter and negatively evaluate the former. However, when presented with a 10oz Chefs Cut and 12oz House Cut Steak, there was no significant difference in selection or evaluation. We're investigating whether this phenomenon is influenced by gender identification. That is, does the extent to which men identify with their gender, influence their selection and evaluation of a product associated with women (i.e. the Ladies' Cut Steak).

If you would like to know more about this study or have any further questions then please contact Ross Cameron using the details below. Unfortunately, we cannot provide individual feedback on your results.

Contact Details:

Researcher: Ross Cameron r.cameron@uea.ac.uk

Supervisor: Kenneth Le Meunier Fitzhugh k.le-meunier-fitzhugh@uea.ac.uk

APPENDIX D – Questionnaire for Studies 2 – 4 Time I

New Measure of Gender Identification

PAGE 1

Thank you for your interest in this study. Before taking part, please read the Participant Information Sheet **available here**.

The information sheet outlines the purpose of the research, the handling of your data, your rights as a participant, and our contact details should you require further information or wish to withdraw. You are under no obligation to agree to take part, but if you do agree you can withdraw without giving a reason.

Please note that responses provided in under 2 minutes will be considered low-effort and will not be approved.

Please indicate that you understand and agree with the following:

	Yes
• I understand the purpose and nature of the study.	○
• I understand that my participation is voluntary and that I can withdraw at any time without giving a reason	○
• I understand that all information collected as part of the study will be treated as completely confidential, and the data will be anonymised.	○

PAGE 2

Please enter your Prolific ID:

_____

PAGE 3

What is your gender?

○ Male
○ Female
○ Other (Please Specify)_____

PAGE 4

You selected MALE as your gender group. We'd like you to take a moment to think about what you and other men have in common. Please read the instructions below and provide answers where needed.

List up to three things that you and other men do relatively **often**.
1. _____
2. _____
3. _____

List up to three things that you and other men do relatively **rarely**.
1. _____
2. _____
3. _____

List up to three things that you and most other men generally do **well**.
1. _____
2. _____
3. _____

List up to three things that you and most other men generally do **badly**.
1. _____
2. _____
3. _____

PAGE 5

Thinking about your gender as a group, to what extent do you agree with the following statements.

	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7
1. I am a worthy member of my gender group.	○	○	○	○	○	○	○
2. I often regret that I belong to my gender group.	○	○	○	○	○	○	○
3. Overall, my gender is considered good by others.	○	○	○	○	○	○	○
4. Overall, my gender has very little to do with how I feel about myself.	○	○	○	○	○	○	○
5. I feel I don't have much to offer my gender group.	○	○	○	○	○	○	○
6. In general, I'm glad to be a member of my gender group.	○	○	○	○	○	○	○
7. Most people consider my gender group to be more ineffective than other groups.	○	○	○	○	○	○	○
8. My gender is an important reflection of who I am.	○	○	○	○	○	○	○
9. I am a cooperative participant in the activities of my gender group.	○	○	○	○	○	○	○
10. Overall, I often feel that my gender group is not worthwhile.	○	○	○	○	○	○	○
11. In general, others respect my gender.	○	○	○	○	○	○	○
12. My gender is unimportant to my sense of what kind of a person I am.	○	○	○	○	○	○	○
13. I often feel I'm a useless member of my gender group.	○	○	○	○	○	○	○
14. I feel good about my gender.	○	○	○	○	○	○	○
15. In general, others think that my gender group is unworthy.	○	○	○	○	○	○	○
16. In general, belonging to my gender is an important part of my self-image.	○	○	○	○	○	○	○
17. I identify with my gender group.	○	○	○	○	○	○	○
18. It is important that you pay attention during this study. Please select 'Strongly Disagree'.	○	○	○	○	○	○	○

PAGE 6

To what extent do you agree with the following statements.

	Strongly Disagree				Strongly Agree
	1	2	3	4	5	6

		1	2	3	4	5	6
1.	I often think about the fact that I am a man.	○	○	○	○	○	○
2.	Overall, being a man has very little to do with how I feel about myself.	○	○	○	○	○	○
3.	In general, being a man is an important part of my self-image.	○	○	○	○	○	○
4.	The fact that I am a man rarely enters my mind.	○	○	○	○	○	○

PAGE 7

To what extent do you agree with the following statements.

	Strongly Disagree				Strongly Agree
	1	2	3	4	5	6

		1	2	3	4	5	6
1.	I have a lot in common with other men.	○	○	○	○	○	○
2.	I feel strong ties to other men.	○	○	○	○	○	○
3.	I find it difficult to form a bond with other men.	○	○	○	○	○	○
4.	I don't feel a sense of being "connected" with other men.	○	○	○	○	○	○
5.	In general, I'm glad to be a man.	○	○	○	○	○	○
6.	I often regret that I am a man.	○	○	○	○	○	○
7.	I don't feel good about being a man.	○	○	○	○	○	○
8.	Generally, I feel good when I think about myself as a man.	○	○	○	○	○	○

PAGE 8

Please select the number six for this question, and Yes for the next question. This is to help us filter out random clicking.

	1	2	3	4	5	6	7	
Rarely	○	○	○	○	○	○	○	Frequently

Please select the correct response.

Yes	No
○	○

PAGE 9

What is your age?

_____

Please select your nationality:

_____

You have completed this survey!
We really appreciate your help. Please wait to be redirected to the **Completion Code**.

APPENDIX E – MMR for TFM and SISI for Study 2

Testing the Moderating Role of the TFM Subdimensions

Table 78 presents the results of the Moderated Multiple Regressions (MMR) for the Three-Factor Model (TFM) of Social Identity. The table displays the results for each of the three factors (A. Centrality, B. Ingroup Ties (IT), and C. Ingroup Affect (IA)), and D. TFM Total.

Table 78 MMR Results of Centrality, Ingroup Ties, Ingroup Affect,
and TFM Total on Steak Evaluations by Steak Label

	b	*SE b*	*t*	*p*
A. TFM Centrality				
Constant	7.80	0.16	47.48	0.000
Label	-0.978	0.235	-4.158	0.000
Centrality	0.234	0.139	1.677	0.096
Label x Centrality	-0.19	0.20	-0.96	0.339
B. TFM Ingroup Ties				
Constant	7.81	0.17	47.27	0.000
Label	-0.981	0.236	-4.150	0.000
Ingroup Ties (IT)	0.170	0.152	1.115	0.267
Label x IT	-0.24	0.21	-1.11	0.267
C. TFM Ingroup Affect				
Constant	7.79	0.17	46.91	0.000
Label	-0.96	0.24	-4.05	0.000
Ingroup Affect (IA)	0.18	0.21	0.84	0.400
Label x IA	-0.14	0.28	-0.49	0.623
D. TFM Total				
Constant	7.80	0.16	47.42	0.000
Label	-0.97	0.24	-4.14	0.000
TFM Total	0.34	0.21	1.62	0.107
Label x TFM	-0.33	0.29	-1.16	0.248

TFM Centrality: R^2 = .11
TFM Ingroup Ties: R^2 = .10
TFM Ingroup Affect: R^2 = .10
TFM Total: R^2 = .11
N = 164.

Table 78 A. displays the results of the MMR as it relates to TFM Centrality. The model was significant in predicting *Steak Evaluations*, explaining 11% of the variance, R^2 = .11, F (3, 160) = 6.62, p < .001. However, the individual contribution of the interaction term was non-significant, b = -0.19, ΔR^2 = .01, F change (1, 160) = 0.92, p = .339, indicating that TFM Centrality was not a significant moderator.

Table 78 B. displays the results as they relate to TFM Ingroup Ties (IT). The model itself was significant, explaining 10.4% of the variance in *Steak Evaluations*, F (3, 160) = 6.18, p = .001. However, the interaction was not, b = -0.24, ΔR^2 = .01, F change (1, 160) = 1.24, p = .267. Again, indicating that TFM Ingroup Ties was not a significant moderator.

Table 78 C. displays the above results as they relate to TFM Ingroup Affect (IA). The model was significant in predicting *Steak Evaluations*, explaining 10% of the variance, F (3, 160) = 5.93, p = .001. But the Label x IA interaction as not significant, b = -0.14, ΔR^2 = .00, F change (1, 160) = 0.24, p = .623.

Finally, Table 78 D. displays the results as they relate to the Three-Factor Model composite, TFM Total. The model was significant in predicting *Steak Evaluations*, explaining 11% of the variance, F (3, 160) = 6.62, p < .001. However, the interaction was not significant, b = -0.33, ΔR^2 = .01, F change (1, 160) = 1.35, p = .248. The results reveal that TFM Total was not a significant moderator.

Thus, the results of the MMRs reveal that *none* of the three dimensions of gender-derived social identity were significant moderators in the relationship between *Steak Label* and *Steak Evaluations* of the *10oz Steak*. Likewise, the TFM Total (Composite) was non-significant, also.

Testing the Moderating Role of the Single-Item Social Identification (SISI) Measure

Table 79 displays the results of the MMR as it relates to the Single-Item of Social Identification (SISI). While the model as a whole was significant in explaining 11% of the variance in *Steak Evaluations*, F (3, 160) = 6.77, p < .001, the Label x SISI interaction was not, b = -0.24, ΔR^2 = .01, F change (1, 160) = 1.72, p = .192, suggesting SISI was not a significant moderator.

Table 79 MMR Results of Social Identification as Measured by
the SISI on Steak Evaluations by Steak Label

	b	*SE b*	*t*	*p*
Constant	7.74	0.17	46.20	0.000
Label	-0.91	0.24	-3.83	0.000
SISI	0.26	0.15	1.74	0.080
Label x SISI	-0.24	0.19	-1.31	0.192

R^2 = .10 for Step 1: ΔR^2 = .01 for Step 2.
N = 164.

APPENDIX F – Debrief for Study 3

Thank you for taking part in this study.

Your help with our work is greatly appreciated. It is only with the time and effort provided by participants such as yourself, that research in consumer behaviour is possible. Your participation today has made a genuine contribution to both the University of East Anglia (UEA) and the field of consumer behaviour.

As explained in the Participant Information Sheet, your data is to be used as part of a PhD project. You are reminded that all data is held confidentially and anonymously, though if you decide that you no longer wish to take part, then please contact Ross Cameron within 5 weeks using the email address below. You do not have to provide a reason for withdrawing, but please do provide your Prolific ID so that we can identify your data.

The present study is part of a two-part project. Part 1 was completed one week ago when you participated in a study called "*Creating a New Measure of Gender Identification*". In that study, using several previously developed measures of social identification, we measured your social identity as it relates to your gender. That is, the degree to which you identify with your male identity. Part 2 was completed today. Today, you will have found yourself in one of two conditions: either the *treatment* or *control*. In both conditions we included an identity prime (the *three things* task at the start), a measure of social identity, and the Menu Selection Task. The only difference between the two conditions was that in the *treatment* we primed your gender identity, and in the *control,* we primed your national identity. Following that, everyone took part in the Menu Selection Task.

The objective of the study (Parts 1 & 2) was to determine whether priming gender identity had an effect on evaluations of an outgroup-labelled product, the so-called *Ladies' Cut Steak.* Typically, men will more negatively evaluate a steak option if it is labelled the *10oz Ladies' Cut* (vs. the *10oz Chef's Cut* or *12oz House Cut*). However, it is not yet known whether this is caused by gender identification. To test this, we primed gender identity prior to the Menu Selection Task.

For further reading, we recommend a study by Katherine White and Darren W. Dahl, titled "*To Be or Not Be? The Influence of Dissociative Reference Groups on Consumer Preferences*", published in 2006. Their paper was the first to develop and test the Menu Selection Task. We also recommend a paper by Americus Reed II, titled "*Activating the Self-Importance of Consumer Selves: Exploring Identity Salience Effects on Judgments*", published in 2004. Reeds paper reports on some of the consequences related to identity priming and consumer preferences.

If you wish to know more about the study or have any further questions then please contact Ross Cameron using the details below. Unfortunately, we cannot provide individual feedback on your results.

APPENDIX G – Questionnaire for Study 3 Time II

New Measure of Gender Identification and Piloting of the Menu Selection Task

PAGE 1

Thank you for your interest in this study. Before taking part, please read the Participant Information Sheet **available here**.

The information sheet outlines the purpose of the research, the handling of your data, your rights as a participant, and our contact details should you require further information or wish to withdraw. You are under no obligation to agree to take part, but if you do agree you can withdraw at any time without giving a reason.

Please note that responses provided in under 5 minutes will be considered low-effort and will not be approved.

Please indicate that you understand and agree with the following:

	Yes
• I understand the purpose and nature of the study.	○
• I understand that my participation is voluntary and that I can withdraw at any time without giving a reason	○
• I understand that all information collected as part of the study will be treated as completely confidential, and the data will be anonymised.	○

PAGE 2

Please enter your Prolific ID:

_____

PAGE 3†

What is your gender?

○ Male
○ Female
○ Other (Please Specify)—————————————————————

† In the Control Condition, Gender was asked at the end of the questionnaire, prior to age.

PAGE 4

You selected MALE as your gender. We'd like you to take a moment to think about what you and other men have in common. Please read the instructions below and provide answers where needed.

List up to three things that you and most other men do relatively **often**.
1. _____
2. _____
3. _____

List up to three things that you and most other men do relatively **rarely**.
1. _____
2. _____
3. _____

List up to three things that you and most other men generally do **well**.
1. _____
2. _____
3. _____

List up to three things that you and most other men generally do **badly**.
1. _____
2. _____
3. _____

PAGE 5

Thinking about your gender, to what extent do you agree with the following statements.

	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7
1. I think men have little to be proud of.	○	○	○	○	○	○	○
2. I feel good about being a man.	○	○	○	○	○	○	○
3. I have little respect for other men.	○	○	○	○	○	○	○
4. I would rather not be a man.	○	○	○	○	○	○	○
5. I identify with other men.	○	○	○	○	○	○	○
6. I am like other men.	○	○	○	○	○	○	○
7. Being a man is an important reflection of who I am.	○	○	○	○	○	○	○
8. I would like to continue working with other men.	○	○	○	○	○	○	○
9. I dislike being a man.	○	○	○	○	○	○	○
10. I would rather belong to an alternative gender group.	○	○	○	○	○	○	○

PAGE 6
Thank you. We really appreciate your help in developing our new measure of gender identification. As we explained in the description on Prolific, we're in the process of designing a menu selection task that will feature in a later study on consumer behaviour. Because this is a pilot, we're dependent on your honest responses, so please do read the instructions carefully. Please click **Next Page** to begin the Menu Selection Task.

Time II of Study 3 then proceeded with the MST. See Appendix B Page 3 onwards.

APPENDIX H – Debrief for Study 4

Thank you for taking part in this study.

Your help with our work is greatly appreciated. It is only with the time and effort provided by participants such as yourself, that research in consumer behaviour is possible. Your participation today has made a genuine contribution to both the University of East Anglia (UEA) and the field of consumer behaviour.

As explained in the Participant Information Sheet, your data is to be used as part of a PhD project. You are reminded that all data is held confidentially and anonymously, though if you decide that you no longer wish to take part, then please contact Ross Cameron within 5 weeks using the email address below. You do not have to provide a reason for withdrawing, but please do provide your Prolific ID so that we can identify your data.

The present study is part of a two-part project. Part 1 was completed one week ago when you participated in a study called "*Creating a New Measure of Gender Identification*". In that study, using several previously developed measures of social identification, we measured your social identity as it relates to your gender (i.e. the degree to which you identify with your gender group). Part 2 was completed today. Today, you will have found yourself in one of two conditions – the *treatment* or *control*. The difference between the two was the number of examples required of you behaving like a "real man". Participants in the *treatment* condition were asked to provide ten such examples, while participants in the *control* condition were asked to provide two. This difference operated as our manipulation of gender threat vs. gender affirmation.

To explain the manipulation further, past research has indicated that the ease with which examples of a trait are recalled to memory, influences whether we believe we possess that trait. For example, in a paper by Norbert Schwarz and colleagues, titled "*Ease of Retrieval as Information: Another Look at the Availability Heuristic*", it was found that participants who were asked to provide six (instead of twelve) examples of them having been assertive, evaluated themselves as having greater assertiveness than those who provided twelve examples. That is, participants asked to provide twelve examples believed they were less assertive due to the difficulty of recalling twelve examples.

The objective of our study (Parts 1 & 2) is to determine whether this manipulation has an effect on evaluations of an outgroup-labelled product, the so-called *Ladies' Cut Steak.* Typically, men will more negatively evaluate a steak option if it is labelled the *10oz Ladies' Cut* (vs. the *10oz Chef's Cut* or *12oz House Cut*). However, it is not yet known what impact gender threat or affirmation will have on these evaluations, and whether that impact will in any way be influenced by the degree to which participants identify with their gender group. To investigate this, we intend to combine the data collected today with the data collected last week.

For further reading on the subject, we recommend a study by Katherine White and Darren W. Dahl, titled "*To Be or Not Be? The Influence of Dissociative Reference Groups on Consumer Preferences*", published in 2006. Their paper was the first to develop and test the Menu Selection

Task, which showed that men more negatively evaluate the *Ladies Cut* steak. We also recommend the previously mentioned paper by Norbert Schwarz. Both are currently available online for free.

If you wish to know more about the study or have any further questions then please contact Ross Cameron using the details below. Unfortunately, we cannot provide individual feedback on your results.

Contact Details:

Researcher: Ross Cameron r.cameron@uea.ac.uk

Supervisor: Kenneth Le Meunier Fitzhugh k.le-meunier-fitzhugh@uea.ac.uk

APPENDIX I – Questionnaire for Study 4 Time II

MENU SELECTION TASK

PAGE 1

Thank you for your interest in this study. Before taking part, please read the Participant Information Sheet **available here**.

The information sheet outlines the purpose of the research, the handling of your data, your rights as a participant, and our contact details should you require further information or wish to withdraw. You are under no obligation to agree to take part, but if you do agree you can withdraw at any time without giving a reason.

Please note that responses provided in under 5 minutes will be considered low-effort and will not be approved.

Please indicate that you understand and agree with the following:	Yes
• I understand the purpose and nature of the study. • I understand that my participation is voluntary and that I can withdraw at any time without giving a reason • I understand that all information collected as part of the study will be treated as completely confidential, and the data will be anonymised.	○ ○ ○

PAGE 2
Please enter your Prolific ID:

_____

PAGE 3
What is your gender?

○ Male
○ Female
○ Other (Please Specify)——————————————————————

PAGE 4

Please list 10[†] ways in which you have recently behaved that would be considered typical of a "real man".

We understand that most men are able to provide 12 or more examples. If you wish to provide additional examples, please do so using the box below.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Additional Examples

[†] In the Affirmation Condition, the requirement was 2 examples. The list ran from 1-2 not 1-10. The instructions read: *We understand that most men struggle to think of 1 example. But if you're able to provide 2 then please do so*.

Time II of Study 4 then proceeded with the MST. See Appendix B Page 3 onwards.

APPENDIX J – Publication Design for Studies 5 – 8

emerald**insight**

HOME   JOURNALS & BOOKS   CASE STUDIES   OPEN ACCESS

Resource areas: Emerald Resources ▾

This Journal ▾   🔍

Advanced Search

Need help?

Next Article ❯

Gender Diversity, Leadership, and Performance: Evidence from a National Survey

Author(s):   Stephanie Valdez (Lecturer at the School of Management, London School of Economics (LSE), United Kingdom)

Overview: An investigation into gender diversity and leadership styles on financial performance.

Methods: This is a two-part study. In Part 1 the financial performance and executive teams of 366 public companies were analysed using publicly available data. The data was analysed to establish whether a relationship exists between the financial success of a company and the gender diversity of its executive team. In Part 2 the authors surveyed a national sample of 2,587 respondents comprised of managers and their senior executives. Using self-report questionnaires, both the managers and senior executives responded to questions relating to their own and each other's leadership style, personality traits, social intelligence (i.e. '*people skills*'), and workplace performance.

Results: Part 1 analysis revealed that companies with diverse or predominantly female executive teams outperformed those that were predominantly male. Those in the top-quartile of gender diversity saw a financial benefit of 15% over the industry median, while those that were predominantly female saw a benefit of 17%. The results suggest that as the composition of executives moves from male-to-female dominant, the financial success of the company increases. The authors refer to this phenomenon as the *gender-composition effect*.

Part 2 analysis identified several contributing factors to the gender-composition effect. Women on average reported greater social intelligence than men (scoring 14.70 compared to 11.87 out of a possible 20), and were reported as being less combative. Leadership styles subsequently differed between genders, with men exhibiting more individualistic, authoritative styles, while women reported socially-oriented, supportive styles. Finally, the analysis revealed differences in productivity. While on average men and women report completing 66% of the work assigned to them, women report to have received 10% more work than men. No other significant differences were reported.

Conclusion: The results show that companies benefit from increased representation of women in executive positions. The evidence suggests that women possess greater social intelligence, resulting in a leadership style that is better suited to the profitability of modern-day companies. Productivity is found to be highest among women, owing to their increased workload. Future studies should investigate other contributing factors to gender differences in leadership, and their impact on financial performance.

Keywords: Gender, Leadership, Managers, United Kingdom

Type: Research paper

Publisher: MCB UP Ltd

Article Options and Tools

🔴 PDF   📄 Abstract

Citation and Reference   More ▾

❤ Favourites

🔖 Reprints & Permissions

Journal Information

Women in Management Review

Current Issue | Available Issues

📶 RSS   ◀ ToC Alert

MOST READ   MOST CITED   RELATED

The most popular papers from this tit in the past 7 days:

Gender, gender identity, and aspirations to top management

Gender differences in leadership styles and management skills

Women entrepreneurs: out from under the glass ceiling

Work-role expectations and work family conflict: gender differences in emotional exhaustion

Gender and race differences in leader behaviour preferences in South Africa

See more >

APPENDIX K – Publication Content for Studies 5 – 8

TREATMENT	
Title:	Gender Diversity, Leadership, and Performance: Evidence from a National Survey
Journal:	Women in Management Review
Author:	Dr Stephanie Valdez (London School of Economics (LSE), United Kingdom)

Background:

An investigation into the relationship between gender diversity and workplace performance.

Methods:

This is a two-part study. In Part 1 the financial performance and executive teams of 366 public companies were analysed using publicly available data. The data was analysed to establish whether a relationship exists between the financial success of a company and the gender diversity of its executive team. In Part 2 the authors surveyed a national sample of 2,587 respondents comprised of managers and their senior executives. Using self-report questionnaires, both the managers and senior executives responded to questions relating to their own and each other's leadership style, personality traits, social intelligence (i.e. 'people skills'), and workplace performance.

Results:

Part 1 analysis revealed that companies with diverse or predominantly female executive teams outperformed those that were predominantly male. Those in the top-quartile of gender diversity saw a financial benefit of 15% over the industry median, while those that were predominantly female saw a benefit of 17%. The results suggest that as the composition of executives moves from male-to-female dominant, the financial success of the company increases. The authors refer to this phenomenon as the gender-composition effect.

Part 2 analysis identified several contributing factors to the gender-composition effect. Women on average reported greater social intelligence than men (scoring 14.70 compared to 11.87 out of a possible 20), and were reported as being less combative. Leadership styles subsequently differed between genders, with men exhibiting more individualistic, authoritative styles, while women reported socially-oriented, supportive styles. Finally, the analysis revealed differences in productivity. While on average men and women report completing 66% of the work assigned to them, women report to have received 10% more work than men. No other significant differences were reported.

Conclusion:

The results show that companies benefit from increased representation of women in executive positions. The evidence suggests that women possess greater social intelligence, resulting in a leadership style that is better suited to the profitability of modern-day companies. Productivity is found to be highest among women, owing to their increased workload. Future studies should investigate other contributing factors to gender differences in leadership, and their impact on financial performance.

CONTROL	
Title:	Gender Diversity, Leadership, and Performance: Evidence from a National Survey
Journal:	Women in Management Review
Author:	Dr Stephanie Valdez (London School of Economics (LSE), United Kingdom)

Background:

An investigation into the relationship between gender diversity and workplace performance.

Methods:

This is a two-part study. In Part 1 the financial performance and executive teams of 366 public companies were analysed using publicly available data. The data was analysed to establish whether a relationship exists between the financial success of a company and the gender diversity of its executive team. In Part 2 the authors surveyed a national sample of 2,587 respondents comprised of managers and their senior executives. Using self-report questionnaires, both the managers and senior executives responded to questions relating to their own and each other's leadership style, personality traits, social intelligence (i.e. 'people skills'), and workplace performance.

Results:

Part 1 analysis revealed that companies with diverse or predominantly female executive teams performed as well as those that were predominantly male. Those in the top-quartile of gender diversity saw equal financial benefits to companies with all-male executives. The results suggest that the gender composition of executives has no influence on the financial success of a company.

Part 2 analysis identified several contributing factors. Similarities in social intelligence were reported by male and female respondents. Leadership styles were subsequently similar between genders, with men and women both exhibiting authoritative, yet socially-oriented, and supportive styles. Finally, the analysis revealed similarities in productivity. On average men and women both report completing 66% of the work assigned to them. The analysis revealed no significant differences between male and female executives.

Conclusion:

The results show that companies benefit equally from male and female representation in executive positions. The evidence suggests that men and women report similar levels of social intelligence, resulting in leadership styles that are suited to the profitability of modern-day organisations. Productivity is found to be similar among men and women, also. Future studies should investigate gender differences in leadership outside of the UK, and their impact on financial performance.

CONTROL II*	
Title:	Leadership, and Performance: Evidence from a National Survey
Journal:	Management Review
Author:	Dr Valdez (London School of Economics (LSE), United Kingdom)

Background:

An investigation into the relationship between leadership and workplace performance.

Methods:

This is a two-part study. In Part 1 the financial performance and executive teams of 366 firms was analysed using publicly available data. The data was analysed to establish whether a relationship exists between the number of senior executives employed by a firm and its financial performance. In Part 2 the authors surveyed a national sample of 2,587 respondents, comprised of managers and senior executives. Using self-report questionnaires, both managers and senior executives responded to questions relating to their own and each other's leadership styles, personality traits, social intelligence (i.e. 'people skills'), and workplace performance.

Results:

Part 1 analysis revealed a significant, positive relationship between the number of senior executives and annual financial performance. Firms reported on average a 2.3% financial increase for each additional executive, up to 5 executives. Firms with senior management teams larger than 5 members saw no significant financial benefit.

Part 2 analysis revealed that in teams of 5 or fewer senior executives, social intelligence and leadership styles varied significantly. For larger teams, individual differences became non-significant, suggesting uniformity in leadership or 'groupthink'. Finally, the analysis revealed similarities in productivity of all group sizes, with an average completion of 66% of the work assigned to senior management.

Conclusion:

The results show that on average, firms benefit from each additional member of senior management, up to a total of 5 executives. The findings indicate that teams of 5 or more senior managers suffer from groupthink, which previous research has shown negatively impacts strategic management practices. The authors argue that similarity in leadership in groups of six or more executives, may account for the loss of financial benefit observed in Part 1. Future studies should investigate alternative metrics of organisational performance.

* Control II used in Study 7 only.

APPENDIX L – Debrief for Study 5

<u>Perceptions of Science Under Social Identity Threat</u>

Thank you for taking part in this study.

Your help with our work is greatly appreciated. It is only with the time and effort provided by participants such as yourself, that research in psychology is possible. Your participation today has made a genuine contribution to both the University of East Anglia (UEA) and the field of psychology.

As explained in the Participant Information Sheet, your data is to be used as part of a PhD project. You are reminded that all data is held confidentially and anonymously, though if you decide that you no longer wish to take part, then please contact Ross Cameron within 5 weeks using the email address below. You do not have to provide a reason for withdrawing, but please do provide your Prolific ID so that we can identify your data.

The present study is part of a two-part project. Part 1 was completed three weeks ago when you participated in a study called "Attitudes Toward Social Issues". In that study, we measured the degree to which you identify with your gender, and your views on contemporary social issues.

Part 2 was completed today. The article summary that you read was a work of fiction, designed to make you think either positively or negatively about your gender identity. How you react to that information (i.e. how you evaluated the research topic and author) will depend on the degree to which you identify with your gender group. In the past, research has shown that identity-threatening research is devalued by those who most strongly identify with the threatened identity. In our project, we're investigating whether this is the case for gender identity, and whether people's attitudes toward social issues is in any way linked to their reactions to the threatening information.

For further reading, we recommend a similar study by Peter Nauroth and colleagues titled "*Social Identity Threat Motivates Science-Discrediting Online Comments*", published in 2015. The article is open access so it's free to view online. If you want to know more about this study or have any further questions then please contact Ross Cameron using the details below. Unfortunately, we cannot provide individual feedback on your results.

Contact Details:

Researcher: Ross Cameron r.cameron@uea.ac.uk

Supervisor: Kenneth Le Meunier Fitzhugh k.le-meunier-fitzhugh@uea.ac.uk

APPENDIX M – Questionnaire for Study 5 Time I

Attitudes Toward Social Issues

PAGE 1

Thank you for your interest in this study. Before taking part, please read the Participant Information Sheet **available here**.

The information sheet outlines the purpose of the research, the handling of your data, your rights as a participant, and our contact details should you require further information or wish to withdraw. You are under no obligation to agree to take part, but if you do agree you can withdraw without giving a reason.

Please note that responses provided in under 5 minutes will be considered low-effort and will not be approved.

Please indicate that you understand and agree with the following:	Yes
- I understand the purpose and nature of the study. - I understand that my participation is voluntary and that I can withdraw at any time without giving a reason - I understand that all information collected as part of the study will be treated as completely confidential, and the data will be anonymised.	○ ○ ○

PAGE 2
Please enter your Prolific ID:

_____

PAGE 3
What is your gender?

○ Male
○ Female
○ Other (Please Specify)——————————————————

PAGE 4

You selected MALE as your gender group. We'd like you to take a moment to think about what you and other men have in common. Please read the instructions below and provide answers where needed.

List up to three things that you and other men do relatively **often**.
1. _____
2. _____
3. _____

List up to three things that you and other men do relatively **rarely**.
1. _____
2. _____
3. _____

List up to three things that you and most other men generally do **well**.
1. _____
2. _____
3. _____

List up to three things that you and most other men generally do **badly**.
1. _____
2. _____
3. _____

PAGE 5

Thinking about your gender as a group, to what extent do you agree with the following statements.

	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7
1. I am a worthy member of my gender group.	○	○	○	○	○	○	○
2. I often regret that I belong to my gender group.	○	○	○	○	○	○	○
3. Overall, my gender is considered good by others.	○	○	○	○	○	○	○
4. Overall, my gender has very little to do with how I feel about myself.	○	○	○	○	○	○	○
5. I feel I don't have much to offer my gender group.	○	○	○	○	○	○	○
6. In general, I'm glad to be a member of my gender group.	○	○	○	○	○	○	○
7. Most people consider my gender group to be more ineffective than other groups.	○	○	○	○	○	○	○
8. My gender is an important reflection of who I am.	○	○	○	○	○	○	○
9. I am a cooperative participant in the activities of my gender group.	○	○	○	○	○	○	○
10. Overall, I often feel that my gender group is not worthwhile.	○	○	○	○	○	○	○
11. In general, others respect my gender.	○	○	○	○	○	○	○
12. My gender is unimportant to my sense of what kind of a person I am.	○	○	○	○	○	○	○
13. I often feel I'm a useless member of my gender group.	○	○	○	○	○	○	○
14. I feel good about my gender.	○	○	○	○	○	○	○
15. In general, others think that my gender group is unworthy.	○	○	○	○	○	○	○
16. In general, belonging to my gender is an important part of my self-image.	○	○	○	○	○	○	○
17. I identify with my gender group.	○	○	○	○	○	○	○
18. It is important that you pay attention during this study. Please select 'Strongly Disagree'.	○	○	○	○	○	○	○

PAGE 6						

To what extent do you agree with the following statements.

	Strongly Disagree					Strongly Agree
	1	2	3	4	5	6
1. I often think about the fact that I am a man.	○	○	○	○	○	○
2. Overall, being a man has very little to do with how I feel about myself.	○	○	○	○	○	○
3. In general, being a man is an important part of my self-image.	○	○	○	○	○	○
4. The fact that I am a man rarely enters my mind.	○	○	○	○	○	○

PAGE 7							

Please indicate the extent to which you favour or oppose each idea below. You can work quickly; your first feeling is generally best.

	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7
1. Some groups of people must be kept in their place.	○	○	○	○	○	○	○
2. It's probably a good thing that certain groups are at the top and other groups are at the bottom.	○	○	○	○	○	○	○
3. An ideal society requires some groups to be on top and others to be on the bottom.	○	○	○	○	○	○	○
4. Some groups of people are simply inferior to other groups.	○	○	○	○	○	○	○
5. Groups at the bottom are just as deserving as groups at the top.	○	○	○	○	○	○	○
6. No one group should dominate in society.	○	○	○	○	○	○	○
7. Groups at the bottom should not have to stay in their place.	○	○	○	○	○	○	○
8. Group dominance is a poor principle.	○	○	○	○	○	○	○
9. We should not push for group equality.	○	○	○	○	○	○	○
10. We shouldn't try to guarantee that every group has the same quality of life.	○	○	○	○	○	○	○
11. It is unjust to try to make groups equal.	○	○	○	○	○	○	○
12. Group equality should not be our primary goal.	○	○	○	○	○	○	○
13. We should work to give all groups an equal chance to succeed.	○	○	○	○	○	○	○
14. We should do what we can to equalize conditions for different groups.							
15. No matter how much effort it takes, we ought to strive to ensure that all groups have the same chance in life.	○	○	○	○	○	○	○
16. Group equality should be our ideal.	○	○	○	○	○	○	○

PAGE 8

Below is a series of statements concerning men and women and their relationships in contemporary society. Please indicate the extent to which you agree or disagree with each statement.

	Strongly Disagree				Strongly Agree
	1 2 3 4 5 6				

1. No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman. ○ ○ ○ ○ ○ ○
2. Many women are actually seeking special favors, such as hiring policies that favour them over men, under the guise of asking for "equality". ○ ○ ○ ○ ○ ○
3. In a disaster, women ought not necessarily to be rescued before men. ○ ○ ○ ○ ○ ○
4. Most women interpret innocent remarks or acts as being sexist. ○ ○ ○ ○ ○ ○
5. Women are too easily offended. ○ ○ ○ ○ ○ ○
6. People are often truly happy in life without being romantically involved with a member of the other sex. ○ ○ ○ ○ ○ ○
7. Feminists are not seeking for women to have more power than men. ○ ○ ○ ○ ○ ○
8. Many women have a quality of purity that few men possess. ○ ○ ○ ○ ○ ○
9. Women should be cherished and protected by men. ○ ○ ○ ○ ○ ○
10. Most women fail to appreciate fully all that men do for them. ○ ○ ○ ○ ○ ○
11. Women seek to gain power by getting control over men. ○ ○ ○ ○ ○ ○
12. Every man ought to have a woman whom he adores. ○ ○ ○ ○ ○ ○
13. Men are complete without women. ○ ○ ○ ○ ○ ○
14. Women exaggerate problems they have at work. ○ ○ ○ ○ ○ ○
15. Once a woman gets a man to commit to her, she usually tries to put him on a tight leash. ○ ○ ○ ○ ○ ○
16. When women lose to men in a fair competition, they typically complain about being discriminated against. ○ ○ ○ ○ ○ ○
17. A good woman should be set on a pedestal by her man. ○ ○ ○ ○ ○ ○
18. There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances. ○ ○ ○ ○ ○ ○
19. Women, compared to men, tend to have a superior moral sensibility. ○ ○ ○ ○ ○ ○
20. Men should be willing to sacrifice their own wellbeing in order to provide financially for the women in their lives. ○ ○ ○ ○ ○ ○
21. Feminists are making entirely reasonable demands of men. ○ ○ ○ ○ ○ ○
22. Women, as compared to men, tend to have a more refined sense of culture and good taste. ○ ○ ○ ○ ○ ○

PAGE 9

Please select the number six for this question, and Yes for the next question. This is to help us filter out random clicking.

	1 2 3 4 5 6 7	
Rarely	○ ○ ○ ○ ○ ○ ○	Frequently

Please select the correct response.

Yes	No
○	○

PAGE 10

This section of the questionnaire investigates peoples' opinions and attitudes on a variety of contemporary social issues and attitudes in the United Kingdom. Please indicate your level of agreement with each.

	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7
1. It's great that many young people today are prepared to defy authority.	○	○	○	○	○	○	○
2. What our country needs most is discipline, with everyone following our leaders in unity.	○	○	○	○	○	○	○
3. Students at high schools and at university must be encouraged to challenge, criticize, and confront established authorities.	○	○	○	○	○	○	○
4. Obedience and respect for authority are the most important virtues children should learn.	○	○	○	○	○	○	○
5. Our country will be great if we show respect for authority and obey our leaders.	○	○	○	○	○	○	○
6. People should be ready to protest against and challenge laws they don't agree with.	○	○	○	○	○	○	○
7. Nobody should stick to the "straight and narrow." Instead people should break loose and try out lots of different ideas and experiences.	○	○	○	○	○	○	○
8. The "old-fashioned ways" and "old-fashioned values" still show the best way to live.	○	○	○	○	○	○	○
9. God's laws about abortion, pornography, and marriage must be strictly followed before it is too late.	○	○	○	○	○	○	○
10. There is absolutely nothing wrong with nudist camps.	○	○	○	○	○	○	○
11. This country will flourish if young people stop experimenting with drugs, alcohol, and sex, and pay more attention to family values.	○	○	○	○	○	○	○
12. There is nothing wrong with premarital sexual intercourse.	○	○	○	○	○	○	○
13. Strong, tough government will harm not help our country.							
14. Being kind to loafers or criminals will only encourage them to take advantage of your weakness, so it's best to use a firm, tough hand when dealing with them.	○	○	○	○	○	○	○
15. Our society does NOT need tougher government and stricter laws.	○	○	○	○	○	○	○
16. The facts on crime and the recent public disorders show we have to crack down harder on troublemakers, if we are going preserve law and order.							
17. Our prisons are a shocking disgrace. Criminals are unfortunate people who deserve much better care, instead of so much punishment.							
18. The way things are going in this country, it's going to take a lot of "strong medicine" to straighten out the troublemakers, criminals, and perverts.							

PAGE 11

What is your age?

_____

Please select your nationality:

_____

PAGE 12

You have completed this survey!
We really appreciate your help. Please wait to be redirected to the **Completion Code**.

APPENDIX N – Questionnaire for Study 5 Time II

How We Perceive Science

PAGE 1

Thank you for your interest in this study. Before taking part, please read the Participant Information Sheet **available here**.

The information sheet outlines the purpose of the research, the handling of your data, your rights as a participant, and our contact details should you require further information or wish to withdraw. You are under no obligation to agree to take part, but if you do agree you can withdraw without giving a reason.

Please note that responses provided in under 3 minutes will be considered low-effort and will not be approved.

Please indicate that you understand and agree with the following:

	Yes
- I understand the purpose and nature of the study. - I understand that my participation is voluntary and that I can withdraw at any time without giving a reason - I understand that all information collected as part of the study will be treated as completely confidential, and the data will be anonymised.	○ ○ ○

PAGE 2

Please enter your Prolific ID:

_____

PAGE 3

The next page features the summary of an article that was recently published in Women in Management Review, by Stephanie Valdez.

Women in Management is "*a peer reviewed journal which publishes original, critical and scholarly papers that make theoretical and methodological contributions to our understanding of gender-based issues in management*".

Please take the time to read the summary carefully, paying particular attention to the **Overview**, **Methods**, **Results**, and **Conclusion**.

For the content presented in each condition, see Appendix K

emerald**insight**

HOME   JOURNALS & BOOKS   CASE STUDIES   OPEN ACCESS

Resource areas: Emerald Resources ▼

This Journal ▼   🔍

Advanced Search

Need help?

Next Article ❯

Gender Diversity, Leadership, and Performance: Evidence from a National Survey

Author(s):   Stephanie Valdez (Lecturer at the School of Management, London School of Economics (LSE), United Kingdom)

Overview: An investigation into gender diversity and leadership styles on financial performance.

Methods: This is a two-part study. In Part 1 the financial performance and executive teams of 366 public companies were analysed using publicly available data. The data was analysed to establish whether a relationship exists between the financial success of a company and the gender diversity of its executive team. In Part 2 the authors surveyed a national sample of 2,587 respondents comprised of managers and their senior executives. Using self-report questionnaires, both the managers and senior executives responded to questions relating to their own and each other's leadership style, personality traits, social intelligence (i.e. '*people skills*'), and workplace performance.

Results: Part 1 analysis revealed that companies with diverse or predominantly female executive teams outperformed those that were predominantly male. Those in the top-quartile of gender diversity saw a financial benefit of 15% over the industry median, while those that were predominantly female saw a benefit of 17%. The results suggest that as the composition of executives moves from male-to-female dominant, the financial success of the company increases. The authors refer to this phenomenon as the *gender-composition effect*.

Part 2 analysis identified several contributing factors to the gender-composition effect. Women on average reported greater social intelligence than men (scoring 14.70 compared to 11.87 out of a possible 20), and were reported as being less combative. Leadership styles subsequently differed between genders, with men exhibiting more individualistic, authoritative styles, while women reported socially-oriented, supportive styles. Finally, the analysis revealed differences in productivity. While on average men and women report completing 66% of the work assigned to them, women report to have received 10% more work than men. No other significant differences were reported.

Conclusion: The results show that companies benefit from increased representation of women in executive positions. The evidence suggests that women possess greater social intelligence, resulting in a leadership style that is better suited to the profitability of modern-day companies. Productivity is found to be highest among women, owing to their increased workload. Future studies should investigate other contributing factors to gender differences in leadership, and their impact on financial performance.

Keywords: Gender, Leadership, Managers, United Kingdom

Type: Research paper

Publisher: MCB UP Ltd

Article Options and Tools

📄 PDF   📄 Abstract

Citation and Reference   More ▼

❤ Favourites

Reprints & Permissions

Journal Information

Women in Management Review

Current Issue | Available Issues

RSS   ToC Alert

MOST READ   MOST CITED   RELATED

The most popular papers from this title in the past 7 days:

Gender, gender identity, and aspirations to top management

Gender differences in leadership styles and management skills

Women entrepreneurs: out from under the glass ceiling

Work-role expectations and work family conflict: gender differences in emotional exhaustion

Gender and race differences in leader behaviour preferences in South Africa

See more >

PAGE 5

In your own words, please summarise the article that you've just read.

Please indicate the extent to which you agree with the following statements.

	Not At All True				Very Much True	
	1	2	3	4	5	6
1. I think the results of this research can be meaningfully applied to real-life contexts.	○	○	○	○	○	○
2. I think the author is not very competent.	○	○	○	○	○	○
	○	○	○	○	○	○
3. I think the results of this research are unambiguous (i.e. they are not open to more than one interpretation).						
4. I think author just finds what they want to find.	○	○	○	○	○	○
5. I think the article reports reliable results.	○	○	○	○	○	○
6. I think the article reports important results.	○	○	○	○	○	○
7. I think authors who report in this field are often biased.	○	○	○	○	○	○
8. I think one can draw useful conclusions for real-life from this kind of article.	○	○	○	○	○	○
9. I think this kind of article is not very meaningful.	○	○	○	○	○	○
10. I think the methodology used by the author is fundamentally useless to investigate the topic.	○	○	○	○	○	○

PAGE 6

What is your gender?

○ Male
○ Female
○ Other (Please Specify)————————————————

What is your age?

_____

Please select your nationality:

_____

PAGE 7

You have completed this survey!
We really appreciate your help.

Please read the Participant Debrief **available here**. It explains the true purpose of the study, and our contact details should you have any further questions.

You will shortly be redirected to the Completion Code.

APPENDIX O – Debrief for Study 6
How We Perceive Science

Thank you for taking part in this study.

Your help with our work is greatly appreciated. It is only with the time and effort provided by participants such as yourself, that research in consumer behaviour is possible. Your participation today has made a genuine contribution to both the University of East Anglia (UEA) and the field of consumer behaviour.

As explained in the Participant Information Sheet, your data is to be used as part of a PhD project. You are reminded that all data is held confidentially and anonymously, though if you decide that you no longer wish to take part, then please contact Ross Cameron within 5 weeks using the email address below. You do not have to provide a reason for withdrawing, but please do provide your Prolific ID so that we can identify your data.

The present study is part of a two-part project. Part 1 was completed one week ago when you participated in a study titled "*Attitudes Toward Social Issues*". In that study, we measured your social identity as it relates to your gender (i.e. the degree to which you identify with your gender group), as well as your views on group-based hierarchies and gender roles.

Part 2 was completed today. The article summary that you read was a work of fiction, designed to threaten your identity as it relates to your gender group. This included the suggestion that your group is more combative, less socially intelligent, less productive, and makes for less capable leaders in the workplace, by comparison to the relevant outgroup of *women*. To repeat, this was a work of fiction. In a recent study, we discovered that this gender-threat manipulation (the research article) was more negatively evaluated by male participants than female. However, the evaluations were not moderated by gender identity, as we had expected. That is, low identifying males were just as likely to negatively evaluate it as high identifying males.

To advance our earlier study, we wanted to see whether activating gender identity would have an effect on evaluations of the research article. Today, you will have been in one of two groups. In the first group, participants engaged in a task designed to activate their male identity, by asking them what *three things* they and other men do relatively often, rarely, well, and badly. In the second group, the same task was employed, but instead of male identity being activated, it was personal identity (e.g. "*List up to three things that you personally do relatively often*"). Together with the data obtained from last week, we hope to explore whether activating gender identity causes evaluations of the research article to be moderated by gender identity. It is our expectation that they will. We predict that once gender identity is activated, highly identified males (i.e. those who scored high on last week's measures) will more negatively evaluate the research article, as they will be more inclined to protect the group they identify with.

To help explain why we predict this outcome, we recommend a paper by Peter Nauroth and colleagues, titled "*Social Identity Threat Motivates Science-Discrediting Online Comments*", published in 2015. The article is open access so it's free to view online. If you want to know more about this study or have any further questions then please contact Ross Cameron using the details below. Unfortunately, we cannot provide individual feedback on your results.

APPENDIX P – Questionnaire for Study 6 Time I

Attitudes Toward Social Issues

PAGE 1

Thank you for your interest in this study. Before taking part, please read the Participant Information Sheet **available here**.

The information sheet outlines the purpose of the research, the handling of your data, your rights as a participant, and our contact details should you require further information or wish to withdraw. You are under no obligation to agree to take part, but if you do agree you can withdraw without giving a reason.

Please note that responses provided in under 5 minutes will be considered low-effort and will not be approved.

Please indicate that you understand and agree with the following:	Yes
• I understand the purpose and nature of the study. • I understand that my participation is voluntary and that I can withdraw at any time without giving a reason • I understand that all information collected as part of the study will be treated as completely confidential, and the data will be anonymised.	○ ○ ○

PAGE 2
Please enter your Prolific ID:

_____

PAGE 3
What is your gender?

○ Male
○ Female
○ Other (Please Specify)——————————————————

PAGE 4

We note that you selected MALE as your gender on the previous page. The next few pages require you to answer questions about you and your male identity.

With that in mind, we'd like you to briefly reflect on what you have in common with other men.

    Please enter five things that you have in common with other men.
    1. _____
    2. _____
    3. _____
    4. _____
    5. _____

PAGE 5

Thinking about your gender as a group, to what extent do you agree with the following statements.

	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7
1. I am a worthy member of my gender group.	○	○	○	○	○	○	○
2. I often regret that I belong to my gender group.	○	○	○	○	○	○	○
3. Overall, my gender is considered good by others.	○	○	○	○	○	○	○
4. Overall, my gender has very little to do with how I feel about myself.	○	○	○	○	○	○	○
5. I feel I don't have much to offer my gender group.	○	○	○	○	○	○	○
6. In general, I'm glad to be a member of my gender group.	○	○	○	○	○	○	○
7. Most people consider my gender group to be more ineffective than other groups.	○	○	○	○	○	○	○
8. My gender is an important reflection of who I am.	○	○	○	○	○	○	○
9. I am a cooperative participant in the activities of my gender group.	○	○	○	○	○	○	○
10. Overall, I often feel that my gender group is not worthwhile.	○	○	○	○	○	○	○
11. In general, others respect my gender.	○	○	○	○	○	○	○
12. My gender is unimportant to my sense of what kind of a person I am.	○	○	○	○	○	○	○
13. I often feel I'm a useless member of my gender group.	○	○	○	○	○	○	○
14. I feel good about my gender.	○	○	○	○	○	○	○
15. In general, others think that my gender group is unworthy.	○	○	○	○	○	○	○
16. In general, belonging to my gender is an important part of my self-image.	○	○	○	○	○	○	○
17. I identify with my gender group.	○	○	○	○	○	○	○
18. It is important that you pay attention during this study. Please select 'Strongly Disagree'.	○	○	○	○	○	○	○

PAGE 6

To what extent do you agree with the following statements.

	Strongly Disagree					Strongly Agree
	1	2	3	4	5	6
1. I often think about the fact that I am a man.	○	○	○	○	○	○
2. Overall, being a man has very little to do with how I feel about myself.	○	○	○	○	○	○
3. In general, being a man is an important part of my self-image.	○	○	○	○	○	○
4. The fact that I am a man rarely enters my mind.	○	○	○	○	○	○

PAGE 7						

To what extent do you agree with the following statements.

	Strongly Disagree					Strongly Agree
	1	2	3	4	5	6

1. I have a lot in common with other men. ○ ○ ○ ○ ○ ○
2. I feel strong ties to other men. ○ ○ ○ ○ ○ ○
3. I find it difficult to form a bond with other men. ○ ○ ○ ○ ○ ○
4. I don't feel a sense of being "connected" with other men. ○ ○ ○ ○ ○ ○
5. In general, I'm glad to be a man. ○ ○ ○ ○ ○ ○
6. I often regret that I am a man. ○ ○ ○ ○ ○ ○
7. I don't feel good about being a man. ○ ○ ○ ○ ○ ○
8. Generally, I feel good when I think about myself as a man. ○ ○ ○ ○ ○ ○

PAGE 8*						

Please indicate the extent to which you favour or oppose each idea below. You can work quickly; your first feeling is generally best.

	Strongly Oppose						Strongly Favour
	1	2	3	4	5	6	7

1. Some groups of people must be kept in their place. ○ ○ ○ ○ ○ ○ ○
2. It's probably a good thing that certain groups are at the top and other groups are at the bottom. ○ ○ ○ ○ ○ ○ ○
3. An ideal society requires some groups to be on top and others to be on the bottom. ○ ○ ○ ○ ○ ○ ○
4. Some groups of people are simply inferior to other groups. ○ ○ ○ ○ ○ ○ ○
5. Groups at the bottom are just as deserving as groups at the top. ○ ○ ○ ○ ○ ○ ○
6. No one group should dominate in society. ○ ○ ○ ○ ○ ○ ○
7. Groups at the bottom should not have to stay in their place. ○ ○ ○ ○ ○ ○ ○
8. Group dominance is a poor principle. ○ ○ ○ ○ ○ ○ ○
9. We should not push for group equality. ○ ○ ○ ○ ○ ○ ○
10. We shouldn't try to guarantee that every group has the same quality of life. ○ ○ ○ ○ ○ ○ ○
11. It is unjust to try to make groups equal. ○ ○ ○ ○ ○ ○ ○
12. Group equality should not be our primary goal. ○ ○ ○ ○ ○ ○ ○
13. We should work to give all groups an equal chance to succeed. ○ ○ ○ ○ ○ ○ ○
14. We should do what we can to equalize conditions for different groups.
15. No matter how much effort it takes, we ought to strive to ensure that all groups have the same chance in life. ○ ○ ○ ○ ○ ○ ○
16. Group equality should be our ideal. ○ ○ ○ ○ ○ ○ ○

PAGE 9*						

Below is a series of statements concerning men and women and their relationships in contemporary society. Please indicate the extent to which you agree or disagree with each statement.

	Strongly Disagree					Strongly Agree
	1	2	3	4	5	6

1. No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman. ○ ○ ○ ○ ○ ○
2. Many women are actually seeking special favors, such as hiring policies that favour them over men, under the guise of asking for "equality". ○ ○ ○ ○ ○ ○
3. In a disaster, women ought not necessarily to be rescued before men. ○ ○ ○ ○ ○ ○
4. Most women interpret innocent remarks or acts as being sexist. ○ ○ ○ ○ ○ ○

5.	Women are too easily offended.	○	○	○	○	○	○
6.	People are often truly happy in life without being romantically involved with a member of the other sex.	○	○	○	○	○	○
7.	Feminists are not seeking for women to have more power than men.	○	○	○	○	○	○
8.	Many women have a quality of purity that few men possess.	○	○	○	○	○	○
9.	Women should be cherished and protected by men.	○	○	○	○	○	○
10.	Most women fail to appreciate fully all that men do for them.	○	○	○	○	○	○
11.	Women seek to gain power by getting control over men.	○	○	○	○	○	○
12.	Every man ought to have a woman whom he adores.	○	○	○	○	○	○
13.	Men are complete without women.	○	○	○	○	○	○
14.	Women exaggerate problems they have at work.	○	○	○	○	○	○
15.	Once a woman gets a man to commit to her, she usually tries to put him on a tight leash.	○	○	○	○	○	○
16.	When women lose to men in a fair competition, they typically complain about being discriminated against.	○	○	○	○	○	○
17.	A good woman should be set on a pedestal by her man.	○	○	○	○	○	○
18.	There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances.	○	○	○	○	○	○
19.	Women, compared to men, tend to have a superior moral sensibility.	○	○	○	○	○	○
20.	Men should be willing to sacrifice their own wellbeing in order to provide financially for the women in their lives.	○	○	○	○	○	○
21.	Feminists are making entirely reasonable demands of men.	○	○	○	○	○	○
22.	Women, as compared to men, tend to have a more refined sense of culture and good taste.	○	○	○	○	○	○

PAGE 10*
Please select the number six for this question, and Yes for the next question. This is to help us filter out random clicking.

```
               1   2   3   4   5   6   7
Rarely         ○   ○   ○   ○   ○   ○   ○          Frequently
```

Please select the correct response.

```
            Yes             No
            ○               ○
```

PAGE 11
What is your age?

_____

Please select your nationality:

_____

PAGE 12

You have completed this survey!
We really appreciate your help. Please wait to be redirected to the **Completion Code**.

* Page Order Randomised.

APPENDIX Q – Questionnaire for Study 6 Time II

How We Perceive Science

PAGE 1

Thank you for your interest in this study. Before taking part, please read the Participant Information Sheet **available here**.

The information sheet outlines the purpose of the research, the handling of your data, your rights as a participant, and our contact details should you require further information or wish to withdraw. You are under no obligation to agree to take part, but if you do agree you can withdraw without giving a reason.

Please note that responses provided in under 3 minutes will be considered low-effort and will not be approved.

Please indicate that you understand and agree with the following:

	Yes
• I understand the purpose and nature of the study. • I understand that my participation is voluntary and that I can withdraw at any time without giving a reason • I understand that all information collected as part of the study will be treated as completely confidential, and the data will be anonymised.	○ ○ ○

PAGE 2
Please enter your Prolific ID: _____

PAGE 3[†]
What is your gender?
○ Male ○ Female ○ Other (Please Specify)————————————————

[†] In the Personal Identity Condition, Gender was asked at the end of the questionnaire, prior to age.

PAGE 4¥
You selected MALE as your gender group. We'd like you to take a moment to think about what you and other men have in common. Please read the instructions below and provide answers where needed.

List up to three things that you and other men do relatively **often**. 1. _____ 2. _____ 3. _____
List up to three things that you and other men do relatively **rarely**. 1. _____ 2. _____ 3. _____
List up to three things that you and most other men generally do **well**. 1. _____ 2. _____ 3. _____
List up to three things that you and most other men generally do **badly**. 1. _____ 2. _____ 3. _____

¥ This is an example of the Social Identity Prime condition. In the Personal Identity Prime Condition (i.e. the Control), participants read: "*We'd like you to take a moment to think about who you are, what makes you you. With that in mind, please read the instructions below and provide answers where needed.*" They were then instructed: "*List up to three things that you personally do relatively…*"

PAGE 5
The next page features the summary of an article that was recently published in Women in Management Review, by Stephanie Valdez. Women in Management is "*a peer reviewed journal which publishes original, critical and scholarly papers that make theoretical and methodological contributions to our understanding of gender-based issues in management*". Please take the time to read the summary carefully, paying particular attention to the **Overview**, **Methods**, **Results**, and **Conclusion**.

PAGE 6
For the content, see Appendix K - TREATMENT

PAGE 7
In your own words, please summarise the article that you've just read.

PAGE 8
Please select the sentence that most accurately describes the findings.

- Companies benefit from increased representation of women in executive positions.
- Companies benefit from increased representation of men in executive positions.
- Companies benefit equally from male and female representation in executive positions.

PAGE 9
Please indicate the extent to which you agree with the following statements.

	Not At All True			Very Much True		
	1	2	3	4	5	6
1. I think the results of this research can be meaningfully applied to real-life contexts.	○	○	○	○	○	○
2. I think the article reports reliable results.	○	○	○	○	○	○
3. I think the article reports important results.	○	○	○	○	○	○
4. I think one can draw useful conclusions for real-life from this kind of article.						
5. I think this kind of article is not very meaningful.	○	○	○	○	○	○
6. I think the methodology used by the author is fundamentally useless to investigate the topic.	○	○	○	○	○	○
7. I think the results of this research are unambiguous (i.e. they are not open to more than one interpretation).	○	○	○	○	○	○
8. I think the researcher is not very competent.	○	○	○	○	○	○
9. I think these researchers just find what they want to find.	○	○	○	○	○	○
10. I think researchers who report in this field are often biased.	○	○	○	○	○	○

PAGE 10
Please select the number six for this question, and Yes for the next question. This is to help us filter out random clicking.

	1	2	3	4	5	6	7	
Rarely	○	○	○	○	○	○	○	Frequently

Please select the correct response.

Yes	No
○	○

PAGE 11

What is your age?
_____
Please select your nationality:
_____

PAGE 12
You have completed this survey! We really appreciate your help. Please read the Participant Debrief **available here**. It explains the true purpose of the study, and our contact details should you have any further questions. You will shortly be redirected to the Completion Code.

APPENDIX R – Debrief for Study 7

<u>Perceptions of Science Under Social Identity Threat</u>

Thank you for taking part in this study.

Your help with our work is greatly appreciated. It is only with the time and effort provided by participants such as yourself, that research in consumer behaviour is possible. Your participation today has made a genuine contribution to both the University of East Anglia (UEA) and the field of consumer behaviour.

As explained in the Participant Information Sheet, your data is to be used as part of a PhD project. You are reminded that all data is held confidentially and anonymously, though if you decide that you no longer wish to take part, then please contact Ross Cameron within 5 weeks using the email address below. You do not have to provide a reason for withdrawing, but please do provide your Prolific ID so that we can identify your data.

The present study is part of a two-part project. Part 1 was completed one week ago when you participated in a study called "*Gender in Contemporary Society*". In that study, we measured the degree to which you identify with your gender group, and your views on contemporary social issues as they relate to gender. Part 2 was completed today. Today, you will have found yourself in one of two conditions – the *treatment* or *control*. The difference between the two is the topic of the research article that you were presented with. If you were in the *treatment* group, then you will have been presented with research indicating that women outperform men in leadership positions. If you were in the *control* group, then you will have been presented with a similar article, but with no mention of gender. This difference operated as our manipulation of social identity threat (vs. no threat). Please note, both articles are works of fiction, written for the present study.

To explain further, it has been demonstrated in the past that when research devalues a group that is important to an individual's identity (e.g. by negatively comparing it to another group), then that research is negatively evaluated / discredited. In our project, we want to know whether this translates to *male gender-derived social identity* (i.e. identity as it relates to gender). To do this, we intend to combine Part 1 & 2 data to see whether evaluations of the two articles (the treatment and control) differed as a function of gender identification.

To read up on the subject, we recommend a similar study by Peter Nauroth and colleagues titled "*Social Identity Threat Motivates Science-Discrediting Online Comments*", published in 2015. The article is open access so it's free to view online. If you want to know more about this study or have any further questions then please contact Ross Cameron using the details below. Unfortunately, we cannot provide individual feedback on your results.

APPENDIX S – Questionnaire for Studies 7 – 8 Time I

Gender in Contemporary Society

PAGE 1

Thank you for your interest in this study. Before taking part, please read the Participant Information Sheet **available here**.

The information sheet outlines the purpose of the research, the handling of your data, your rights as a participant, and our contact details should you require further information or wish to withdraw. You are under no obligation to agree to take part, but if you do agree you can withdraw without giving a reason.

Please note that responses provided in under 5 minutes will be considered low-effort and will not be approved.

Please indicate that you understand and agree with the following:

	Yes
• I understand the purpose and nature of the study. • I understand that my participation is voluntary and that I can withdraw at any time without giving a reason • I understand that all information collected as part of the study will be treated as completely confidential, and the data will be anonymised.	○ ○ ○

PAGE 2
Please enter your Prolific ID: _____

PAGE 3
What is your gender?

    ○ Male
    ○ Female
    ○ Other (Please Specify)——————————————————

PAGE 4

You selected MALE as your gender group. We'd like you to take a moment to think about what you and other men have in common. Please read the instructions below and provide answers where needed.

List up to three things that you and other men do relatively **often**.
1. _____
2. _____
3. _____

List up to three things that you and other men do relatively **rarely**.
1. _____
2. _____
3. _____

List up to three things that you and most other men generally do **well**.
1. _____
2. _____
3. _____

List up to three things that you and most other men generally do **badly**.
1. _____
2. _____
3. _____

PAGE 5*

Thinking about your gender as a group, to what extent do you agree with the following statements.

	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7
1. I am a worthy member of my gender group.	○	○	○	○	○	○	○
2. I often regret that I belong to my gender group.	○	○	○	○	○	○	○
3. Overall, my gender is considered good by others.	○	○	○	○	○	○	○
4. Overall, my gender has very little to do with how I feel about myself.	○	○	○	○	○	○	○
5. I feel I don't have much to offer my gender group.	○	○	○	○	○	○	○
6. In general, I'm glad to be a member of my gender group.	○	○	○	○	○	○	○
7. Most people consider my gender group to be more ineffective than other groups.	○	○	○	○	○	○	○
8. My gender is an important reflection of who I am.	○	○	○	○	○	○	○
9. I am a cooperative participant in the activities of my gender group.	○	○	○	○	○	○	○
10. Overall, I often feel that my gender group is not worthwhile.	○	○	○	○	○	○	○
11. In general, others respect my gender.	○	○	○	○	○	○	○
12. My gender is unimportant to my sense of what kind of a person I am.	○	○	○	○	○	○	○
13. I often feel I'm a useless member of my gender group.	○	○	○	○	○	○	○
14. I feel good about my gender.	○	○	○	○	○	○	○
15. In general, others think that my gender group is unworthy.	○	○	○	○	○	○	○
16. In general, belonging to my gender is an important part of my self-image.	○	○	○	○	○	○	○
17. I identify with my gender group.	○	○	○	○	○	○	○
18. It is important that you pay attention during this study. Please select 'Strongly Disagree'.	○	○	○	○	○	○	○

PAGE 6*

Please indicate the extent to which you favour or oppose each idea below. You can work quickly; your first feeling is generally best.

	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7
1. Some groups of people must be kept in their place.	○	○	○	○	○	○	○
2. It's probably a good thing that certain groups are at the top and other groups are at the bottom.	○	○	○	○	○	○	○
3. An ideal society requires some groups to be on top and others to be on the bottom.	○	○	○	○	○	○	○
4. Some groups of people are simply inferior to other groups.	○	○	○	○	○	○	○
5. Groups at the bottom are just as deserving as groups at the top.	○	○	○	○	○	○	○
6. No one group should dominate in society.	○	○	○	○	○	○	○
7. Groups at the bottom should not have to stay in their place.	○	○	○	○	○	○	○
8. Group dominance is a poor principle.	○	○	○	○	○	○	○
9. We should not push for group equality.	○	○	○	○	○	○	○
10. We shouldn't try to guarantee that every group has the same quality of life.	○	○	○	○	○	○	○
11. It is unjust to try to make groups equal.	○	○	○	○	○	○	○
12. Group equality should not be our primary goal.	○	○	○	○	○	○	○
13. We should work to give all groups an equal chance to succeed.	○	○	○	○	○	○	○
14. We should do what we can to equalize conditions for different groups.							
15. No matter how much effort it takes, we ought to strive to ensure that all groups have the same chance in life.	○	○	○	○	○	○	○
16. Group equality should be our ideal.	○	○	○	○	○	○	○

PAGE 7*

As a man yourself, to what extent do you agree or disagree with the following statements:

	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7
1. Men deserve special treatment.	○	○	○	○	○	○	○
2. I will not be satisfied until men get the respect they deserve.	○	○	○	○	○	○	○
3. It really makes me angry when others criticise men.	○	○	○	○	○	○	○
4. If men had a major say in the world, the world would be a much better place.	○	○	○	○	○	○	○
5. The true worth of men is often misunderstood.	○	○	○	○	○	○	○

PAGE 8*

Below is a series of statements concerning men and women and their relationships in contemporary society. Please indicate the extent to which you agree or disagree with each statement.

	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7
1. No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman.	○	○	○	○	○	○	○
2. Many women are actually seeking special favors, such as hiring policies that favour them over men, under the guise of asking for "equality".	○	○	○	○	○	○	○
3. In a disaster, women ought not necessarily to be rescued before men.	○	○	○	○	○	○	○
4. Most women interpret innocent remarks or acts as being sexist.	○	○	○	○	○	○	○
5. Women are too easily offended.	○	○	○	○	○	○	○
6. People are often truly happy in life without being romantically involved with a member of the other sex.	○	○	○	○	○	○	○

7.	Feminists are not seeking for women to have more power than men.	○	○	○	○	○	○	○
8.	Many women have a quality of purity that few men possess.	○	○	○	○	○	○	○
9.	Women should be cherished and protected by men.	○	○	○	○	○	○	○
10.	Most women fail to appreciate fully all that men do for them.	○	○	○	○	○	○	○
11.	Women seek to gain power by getting control over men.	○	○	○	○	○	○	○
12.	Every man ought to have a woman whom he adores.	○	○	○	○	○	○	○
13.	Men are complete without women.	○	○	○	○	○	○	○
14.	Women exaggerate problems they have at work.	○	○	○	○	○	○	○
15.	Once a woman gets a man to commit to her, she usually tries to put him on a tight leash.	○	○	○	○	○	○	○
16.	When women lose to men in a fair competition, they typically complain about being discriminated against.	○	○	○	○	○	○	○
17.	A good woman should be set on a pedestal by her man.	○	○	○	○	○	○	○
18.	There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances.	○	○	○	○	○	○	○
19.	Women, compared to men, tend to have a superior moral sensibility.	○	○	○	○	○	○	○
20.	Men should be willing to sacrifice their own wellbeing in order to provide financially for the women in their lives.	○	○	○	○	○	○	○
21.	Feminists are making entirely reasonable demands of men.	○	○	○	○	○	○	○
22.	Women, as compared to men, tend to have a more refined sense of culture and good taste.	○	○	○	○	○	○	○

PAGE 9*

Please indicate the extent to which you agree or disagree with each statement:

		Strongly Disagree						Strongly Agree
		1	2	3	4	5	6	7
1.	It's fairly easy for a man to lose his status as a man.	○	○	○	○	○	○	○
2.	A male's status as a real man sometimes depends on how other people view him.	○	○	○	○	○	○	○
3.	A man needs to prove his masculinity.	○	○	○	○	○	○	○
4.	A boy needs to become a man; it doesn't just happen.	○	○	○	○	○	○	○
5.	The title of "manhood" needs to be reserved for those who deserve it.	○	○	○	○	○	○	○
6.	You're not a man if you don't like masculine things.	○	○	○	○	○	○	○

PAGE 10*

Please select the number six for this question, and Yes for the next question. This is to help us filter out random clicking.

	1	2	3	4	5	6	7	
Rarely	○	○	○	○	○	○	○	Frequently

Please select the correct response.

Yes	No
○	○

* Page Order Randomised.

PAGE 11
What is your age?
_____
Please select your nationality:
_____

PAGE 12
You have completed this survey! We really appreciate your help. Please wait to be redirected to the **Completion Code**.

APPENDIX T – Questionnaire for Study 7 Time II

How We Perceive Science

PAGE 1

Thank you for your interest in this study. Before taking part, please read the Participant Information Sheet **available here**.

The information sheet outlines the purpose of the research, the handling of your data, your rights as a participant, and our contact details should you require further information or wish to withdraw. You are under no obligation to agree to take part, but if you do agree you can withdraw without giving a reason.

Please note that responses provided in under 5 minutes will be considered low-effort and will not be approved.

Please indicate that you understand and agree with the following:

	Yes
• I understand the purpose and nature of the study. • I understand that my participation is voluntary and that I can withdraw at any time without giving a reason • I understand that all information collected as part of the study will be treated as completely confidential, and the data will be anonymised.	○ ○ ○

PAGE 2

Please enter your Prolific ID:

_____

PAGE 3

The next page features the summary of an article that was recently published in Women in Management Review, by Stephanie Valdez.

Women in Management is "*a peer reviewed journal which publishes original, critical and scholarly papers that make theoretical and methodological contributions to our understanding of gender-based issues in management*".

Please take the time to read the summary carefully, paying particular attention to the **Overview**, **Methods**, **Results**, and **Conclusion**.

PAGE 4
For the content, see Appendix K - TREATMENT and CONTROL II

PAGE 5
In your own words, please summarise the article and its findings. We're interested in how you interpreted the article.

PAGE 6[†]
Please select the sentence that most accurately describes the findings.

- Companies benefit from increased representation of women in executive positions.
- Companies benefit from increased representation of men in executive positions.
- Companies benefit equally from male and female representation in executive positions.

[†] Treatment Condition

PAGE 6[¥]
Please complete the following sentence to reflect the findings of the study.

"Firms financially benefit from each additional senior executive, up to a total of...

- 4 executives."
- 5 executives."
- 6 executives."

[¥] Control Condition

PAGE 7

Please indicate the extent to which you agree with the following statements.

	Not At All True 1 2 3	Very Much True 4 5 6 7
1. I think that this study was a waste of public money.	○ ○ ○	○ ○ ○ ○
2. I think that this study yielded important results.	○ ○ ○	○ ○ ○ ○
3. I think that the methodology is fundamentally useless to investigate leadership styles and organisational success.	○ ○ ○	○ ○ ○ ○
4. I think the researcher knows a lot about leadership styles and work-place performance.	○ ○ ○	○ ○ ○ ○
5. I think the researcher just finds what they want to find.	○ ○ ○	○ ○ ○ ○
6. I was convinced by the findings of the study.	○ ○ ○	○ ○ ○ ○

PAGE 8

Please indicate the extent to which you agree with the following statements.

	Not At All True 1 2 3	Very Much True 4 5 6 7
1. I think that the results of the study are unambiguous (i.e. they are not open to more than one interpretation).	○ ○ ○	○ ○ ○ ○
2. I think that one can draw useful conclusions for real life from this study.	○ ○ ○	○ ○ ○ ○
3. I think that the results of the study are implausible.	○ ○ ○	○ ○ ○ ○
4. I think the researcher is not very competent.	○ ○ ○	○ ○ ○ ○
5. I think the researcher has no idea about what leadership styles work and how they influence organisational success.	○ ○ ○	○ ○ ○ ○
6. Overall, I think the findings of the research are believable.	○ ○ ○	○ ○ ○ ○

PAGE 9

To what extent does the research make you want to:

	Not At All 1 2 3	Very Much 4 5 6 7
1. Confront the researcher about their findings.	○ ○ ○	○ ○ ○ ○
2. Argue with the researcher about their findings.	○ ○ ○	○ ○ ○ ○
3. Oppose the researcher about their findings.	○ ○ ○	○ ○ ○ ○

PAGE 10

Please select the number four for this question, and No for the next question. This is to help us filter out random clicking.

	1 2 3 4 5 6 7	
Rarely	○ ○ ○ ○ ○ ○ ○	Frequently

Please select the correct response.

Yes	No
○	○

PAGE 11

What is your gender?

○ Male
○ Female
○ Other (Please Specify)——————————————

What is your age?

———————————————

Please select your nationality:

———————————————

PAGE 12

You have completed this survey!
We really appreciate your help.

Please read the Participant Debrief **available here**. It explains the true purpose of the study, and our contact details should you have any further questions.

You will shortly be redirected to the Completion Code.

APPENDIX U – MMR for HBI for Study 7

The Moderating Effect of Collective Self-Esteem (CSE), Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Precarious Manhood (PM), and Collective Narcissism (CN) on Hostile Behavioural Intentions (HBI) by Publication Condition

Testing Collective Self-Esteem (CSE) as a Moderator of Hostile Behavioural Intentions (HBI) by Publication Condition

The results reported in Table 80 reveal no significant interactions. However, at Step I it was revealed that CSE Public (b = -0.27, p = .011) had a significant, negative effect on HBI. This indicates that, all else being equal, as CSE Public increased, Hostile Behavioural Intentions decreased. The lack of a significant interaction suggests this effect was similar for both publications.

Table 80 Moderation Results of Collective Self-Esteem (CSE) subscales on Hostile Behavioural Intentions by Publication Condition

	b	$SE\ b$	β	p
Step One				
Constant	2.40	0.12		0.000
Condition	-0.06	0.17		0.712
CSE Membership	-0.07	0.10		0.504
CSE Private	0.06	0.11		0.592
CSE Public	-0.27	0.10		0.011
CSE Importance	0.07	0.07		0.276
Step Two				
Constant	2.40	0.12		0.000
Condition	-0.07	0.17	-	0.697
CSE Membership	-0.02	0.15	-	0.884
CSE Private	0.06	0.16	-	0.715
CSE Public	-0.37	0.16	-	0.023
CSE Importance	-0.03	0.09	-	0.781
Condition x Membership	-0.15	0.21	-	0.475
Condition x Private	0.02	0.22	-	0.914
Condition x Public	0.20	0.21	-	0.349
Condition x Importance	0.21	0.13	-	0.110

R^2 = .05 for Step 1 (p = .074); ΔR^2 = .02 for Step 2 (p = .351).
N = 222.

Testing Social Dominance Orientation (SDO) as a Moderator of Hostile Behavioural Intentions (HBI) by Publication Condition

For reasons of collinearity, the two SDO subdimensions (SDO-D and SDO-E) were analysed in separate MMRs. Table 81 displays the results of the MMR for SDO-D as a moderator in the relationship between publication condition and HBI. Step I explained a significant 3.9% of the variance in Hostile Behavioural Intentions, F (2, 219) = 4.49, p = .012. At Step 2 this increased to 9.2%, F (3, 218) = 7.33, p < .001. The Condition x SDO-D interaction was significant, b = 0.55, p < .001, resulting in ΔR^2 = .05, F change (1, 218) = 12.55, p < .001. Figure 37 displays the interaction.

Table 81 Moderation Results of Social Dominance Orientation (SDO) Pro-Dominance (SDO-D) on the Relationship Between Publication Condition and Hostile Behavioural Intentions (HBI)

	b	$SE\ b$	β	p
Step One				
Constant	2.35	0.12		0.000
Condition	0.03	0.17		0.866
SDO-D	0.24	0.08		0.003
Step Two				
Constant	2.39	0.12		0.000
Condition	0.02	0.16	-	0.883
SDO-D	-0.04	0.11	-	0.699
Condition x SDO-D	0.55	0.16	-	0.000

R^2 = .04 for Step 1 (p = .012); ΔR^2 = .05 for Step 2 (p < .001).
N = 222.

Figure 37 and simple slopes reveal that when SDO-D was relatively low (-1SD) (b = -0.64, SE = 0.25, 95% CI [-1.13, -0.15], p = .011), participants who read the pro-female leadership publication were less inclined to confront, argue with, and oppose the author of the publication, than those presented with the new control. However, when SDO-D was relatively high (+1SD) (b = 0.67, SE = 0.24, 95% CI [0.19, 1.15], p = .007), the pro-female leadership publication resulted in greater hostility toward the author by comparison to the control. Where SDO-D was moderate, no significant difference in hostility was observed (p = .905).

Figure 37 Simple Slopes of Publication Condition (Treatment vs. New Control) for SDO-D on Hostile Behavioural Intentions
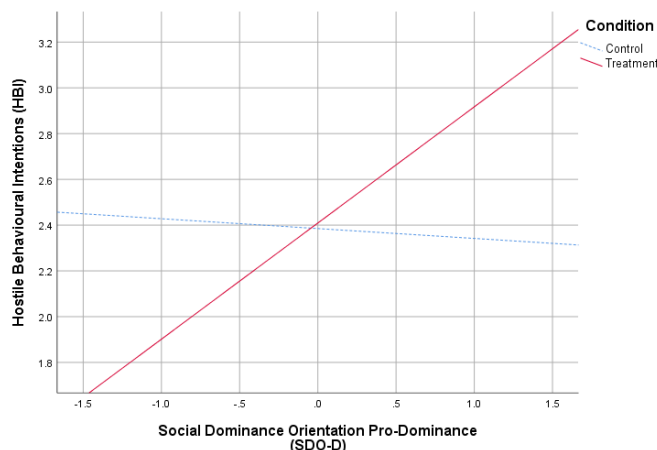
Table 82 displays the results as they relate to SDO-E, i.e. anti-egalitarianism. Table 82 also reveals a significant Condition x SDO-E interaction (b = 0.45, p = .002). The inclusion of the interaction resulted in Step 2 explaining an additional 3.9% of the variance in HBI, owing to ΔR^2 = .04, F change (1, 218) = 9.46, p = .002, with the final model explaining a total of 10.7% of the variance, F (3, 218) = 8.72, p < .001. Figure 38 illustrates the Condition x SDO-E interaction.

Table 82 Moderation Results of Social Dominance Orientation (SDO) Anti-Egalitarianism (SDO-E) on the Relationship Between Publication Condition and Hostile Behavioural Intentions (HBI)

	b	$SE\ b$	B	p
Step One				
Constant	2.35	0.12		0.000
Condition	0.02	0.17		0.895
SDO-E	0.30	0.07		0.000
Step Two				
Constant	2.38	0.12		0.000
Condition	0.02	0.16	-	0.914
SDO-E	0.04	0.11	-	0.702
Condition x SDO-E	0.45	0.15	-	0.002

R^2 = .07 for Step 1 (p < .001); ΔR^2 = .04 for Step 2 (p = .002).
N = 222.

Figure 38 and simple slopes reveal a similar pattern to that observed in Figure 37 (SDO-D). Those with relatively low (-1SD) SDO-E, reported lower HBI toward the author of the treatment article and those with comparative SDO-E who read the new control. The difference in HBI between conditions was significant (b = -0.59, SE = 0.26, 95% CI [-1.09, -0.08], p = .023). However, those with relatively high SDO-E (+1SD) were more inclined to confront, oppose, and argue with the author of the treatment article, than the control. Again, the difference between conditions was significant (b = 0.60, SE = 0.25, 95% CI [0.11, 1.09], p = .017). HBI were not significantly different between conditions when SDO-E was moderate (p = .888).

Figure 38 Simple Slopes of Publication Condition (Treatment vs. New Control) for SDO-E on Hostile Behavioural Intentions
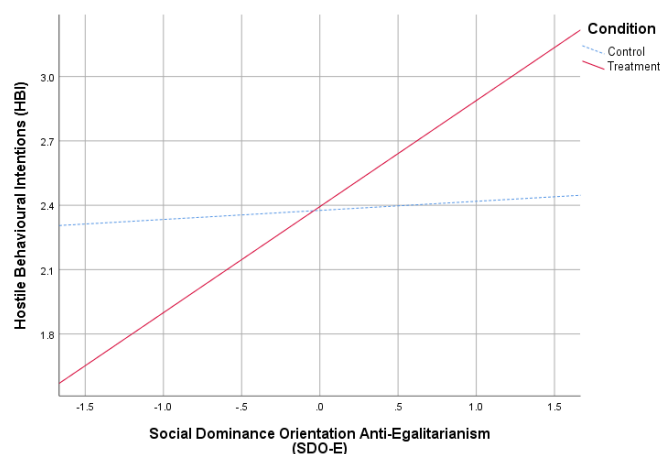
Testing Ambivalent Sexism (AS) as a Moderator of Hostile Behavioural Intentions (HBI) by Publication Condition

Table 83 reveals that for Ambivalent Sexism (AS), the Condition x Hostile Sexism interaction ($b = 0.60$, $p < .001$) was significant, while the Condition x Benevolent Sexism interaction ($b = -0.31$, $p = .078$) approached significance. However, despite *approaching* significance, the Condition x Benevolent Sexism interaction produced non-significant differences at +1 SD and -1SD of Benevolent Sexism. Figure 39 illustrates the non-significant interaction.

Table 83 Moderation Results of Ambivalent Sexism (Hostile and Benevolent) on the Relationship Between Publication Condition and Hostile Behavioural Intentions (HBI)

	b	**SE b**	**B**	**p**
Step One				
Constant	2.37	0.12		0.000
Condition	-0.01	0.16		0.931
Hostile Sexism	0.37	0.07		0.000
Benevolent Sexism	-0.24	0.09		0.008
Step Two				
Constant	2.38	0.11		0.000
Condition	-0.02	0.16	-	0.920
Hostile Sexism	0.02	0.11	-	0.868
Benevolent Sexism	-0.07	0.12	-	0.596
Condition x Hostile	0.60	0.15	-	0.000
Condition x Benevolent	-0.31	0.17	-	0.077

$R^2 = .10$ for Step 1 ($p < .001$); $\Delta R^2 = .07$ for Step 2 ($p < .001$).
N = 222.

Figure 39 Simple Slopes of Publication Condition (Treatment vs. New Control) for Benevolent Sexism on Hostile Behavioural Intentions, Non-Significant

With the Condition x Benevolent Sexism interaction being non-significant, it was removed and the model was run again. Table 84 displays the new model with the Condition x Hostile Sexism interaction.

Table 84 Moderation Results of Hostile Sexism on the Relationship Between Publication Condition and Hostile Behavioural Intentions (HBI)

	b	*SE b*	*B*	*p*
Step One				
Constant	2.37	0.12		0.000
Condition	-0.01	0.16		0.931
Hostile Sexism	0.37	0.07		0.000
Benevolent Sexism	-0.24	0.09		0.008
Step Two				
Constant	2.39	0.11		0.000
Condition	-0.02	0.16	-	0.911
Hostile Sexism	0.08	0.11	-	0.441
Benevolent Sexism	-0.23	0.09	-	0.010
Condition x Hostile	0.49	0.13	-	0.000

$R^2 = .10$ for Step 1 ($p < .001$); $\Delta R^2 = .05$ for Step 2 ($p < .001$).
$N = 222$.

From the simple slopes analysis, it was revealed that HBI towards the authors of the two publications, differed when Hostile Sexism was both relatively low (-1SD) (b = -0.66, SE = 0.24, 95% CI [-1.13, -0.19], p = .006) and relatively high (+1SD) (b = 0.58, SE = 0.23, 95% CI [0.13, 1.02], p = .011). No significant difference was observed when Hostile Sexism was moderate (p = .992). As Figure 40 illustrates, when Hostile Sexism was low, HBI were lower amongst those who read the treatment publication, than those who read the new control. While for those with high Hostile Sexism, HBI were significantly higher amongst those who read the treatment (vs. new control) publication.

Figure 40 Simple Slopes of Publication Condition (Treatment vs. New Control) for Hostile Sexism on Hostile Behavioural Intentions
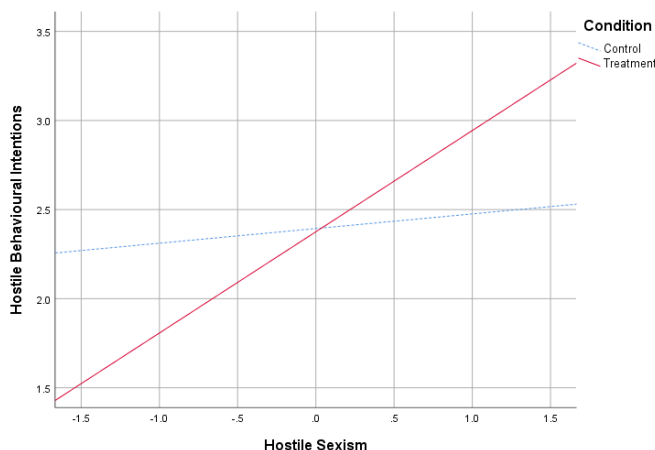
Testing Precarious Manhood (PM) as a Moderator of Hostile Behavioural Intentions (HBI) by Publication Condition
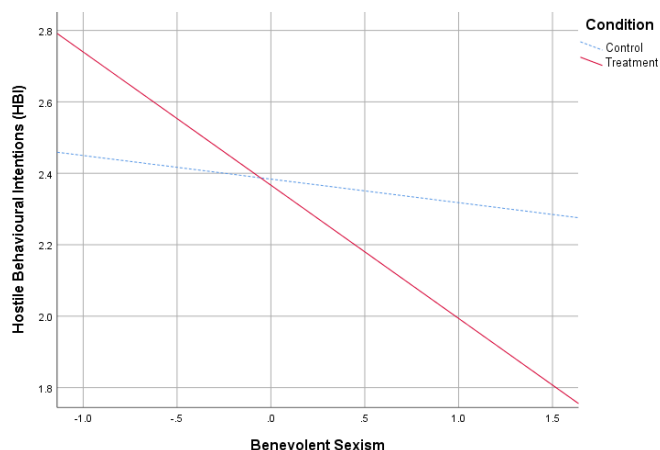
Analysis of the moderating role of Precarious Manhood (PM) in the relationship between publication condition and Hostile Behavioural Intentions (HBI), produced a significant interaction (Condition x Precarious MH: b = 0.30, p = .032) (Table 85), that had non-significant simple slopes (Figure 41). This indicates the values of ± 1SD are not suitable for PM. To explain, simple slopes revealed that when PM was relatively low (-1SD), the difference in HBI caused by the two publications was not significantly different (b = -0.43, SE = 0.26, 95% CI [-0.94, 0.09], p = .102). Likewise, when PM was relatively high (+1SD), no significant difference was observed (b = 0.37, SE = 0.24, 95% CI [-0.10, 0.85], p = .123). Figure 41 plots the interaction, revealing that HBI was lower for the treatment publication than the control publication, when PM was relatively low (-1SD) (p = .102), whereas HBI was higher amongst those who read the treatment article than the control, when PM was relatively high (+1SD) (p = .123), though in both instances the differences were non-significant.

However, in the present thesis -1SD represents the 16th percentile of PM, and +1SD represents the 84th percentile. Thus, by changing these figures to (for example) 5% representing "Very Low PM" and 95% representing "Very High PM", the differences approach significance (Figure 42). For Very Low PM, the treatment publication continued to result in lower HBI than the control (b = - 0.58, SE = 0.32, 95% CI [-1.20, 0.05], p = .070). For Very High PM, the treatment publication continued to result in greater HBI than the control (b = 0.57, SE = 0.31, 95% CI [-0.05, 1.09], p = .070). Therefore, evidence of moderation exists, though at the extreme values of PM, where arguably very few participants are accounted for.

Table 85 Moderation Results of Precarious Manhood on Hostile Behavioural Intentions by Publication Condition

	b	**SE b**	**B**	**p**
Step One				
Constant	2.36	0.12		0.000
Condition	0.00	0.17		0.993
Precarious Manhood	0.15	0.07		0.030
Step Two				
Constant	2.38	0.12		0.000
Condition	0.00	0.17	-	0.992
Precarious Manhood	0.01	0.10	-	0.905
Condition x Precarious MH	0.30	0.14	-	0.032

R^2 = .02 for Step 1 (p = .093); ΔR^2 = .02 for Step 2 (p = .032).
N = 222.

Figure 41 Simple Slopes of Publication Condition (Treatment vs. New Control) for Precarious Manhood on Hostile Behavioural Intentions at 16% (-1SD) and 84% (+1SD)
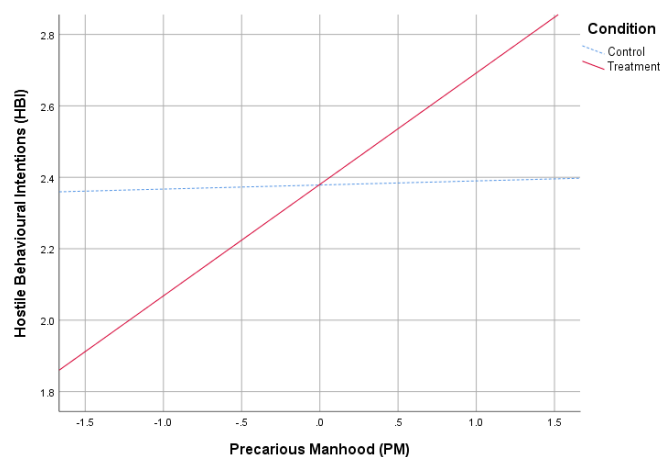
Figure 42 Simple Slopes of Publication Condition (Treatment vs. New Control) for Precarious Manhood on Hostile Behavioural Intentions at 5% and 95%
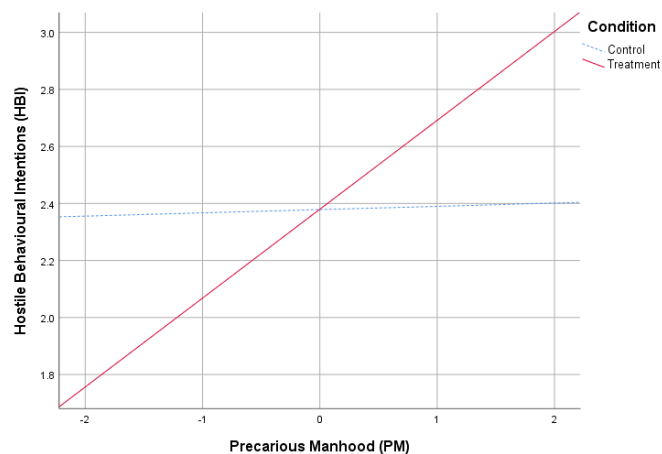
Testing Collective Narcissism (CN) as a Moderator of Hostile Behavioural Intentions (HBI) by Publication Condition

Finally, the moderating role of male-specific Collective Narcissism (CN) was assessed in the relationship between publication condition and Hostile Behavioural Intentions (HBI). Table 86 displays the results. At Step I, the inclusion of both publication condition and CN explained 6.5% of the variance in HBI, F (2, 219) = 7.56, p = .001. This increased to 10.3% at Step 2, F (3, 218) = 8.34, p < .001, owing to ΔR^2 = .04, F change (1, 218) = 9.33, p = .003. The Condition x CN interaction was significant and positive (b = 0.49, p = .003), and is illustrated by Figure 43. The simple slopes analysis revealed a similar pattern Precarious Manhood (PM), whereby relatively low CN (-1SD) was related to lower HBI for the treatment article than the new control (b = -0.55, SE = 0.25, 95% CI [-1.04, 0.06], p = .029), while relatively high CN (+1SD) saw greater HBI aimed toward the treatment publications author than the controls author (b = 0.52, SE = 0.23, 95% CI [0.07, 0.98], p = .024). No significant difference was observed when CN was moderate (p = .820).

Table 86 Moderation Results of Collective Narcissism on Hostile Behavioural Intentions by Publication Condition

	b	*SE b*	*B*	*p*
Step One				
Constant	2.35	0.12		0.000
Condition	0.03	0.17		0.866
Collective Narcissism	0.31	0.08		0.000
Step Two				
Constant	2.38	0.12		0.000
Condition	0.02	0.16	-	0.890
Collective Narcissism	0.05	0.12	-	0.682
Condition x Collective Narc.	0.49	0.16	-	0.003

R^2 = .07 for Step 1 (p = .001); ΔR^2 = .04 for Step 2 (p = .003).
N = 222.

Figure 43 Simple Slopes of Publication Condition (Treatment vs. New Control) for Collective Narcissism on Hostile Behavioural Intentions
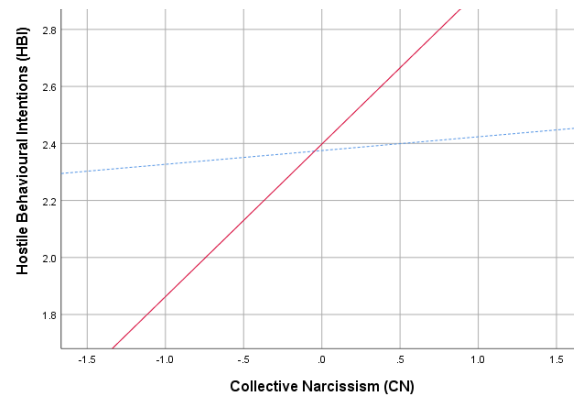
APPENDIX V – Debrief for Study 8

Perceptions of Science Following Group Affirmation

Thank you for taking part in this study.

Your help with our work is greatly appreciated. It is only with the time and effort provided by participants such as yourself, that research in consumer behaviour is possible. Your participation today has made a genuine contribution to both the University of East Anglia (UEA) and the field of consumer behaviour.

As explained in the Participant Information Sheet, your data is to be used as part of a PhD project. You are reminded that all data is held confidentially and anonymously, though if you decide that you no longer wish to take part, then please contact Ross Cameron within 5 weeks using the email address below. You do not have to provide a reason for withdrawing, but please do provide your Prolific ID so that we can identify your data.

The present study is part of a two-part project. Part 1 was completed a week ago when you participated in a study titled "*Gender in Contemporary Society*". In that study, we measured the degree to which you identify with your gender group, and your views on contemporary social issues as they relate to gender. This data will be used to determine whether you are high or low in gender identification, i.e. whether your gender is an important reflection of who you are. Part 2 was completed today. Today's study was designed to test the effects of group affirmation on evaluations of identity-threatening research.

To explain further, it has been revealed that when research devalues a group that is important to an individual's identity (by negatively comparing it to another group), then both the research and researcher are negatively evaluated / discredited by the individual. However, according to *Self-Affirmation Theory*, if that same individual is provided the opportunity to reflect on a value that is important to the devalued group, then they will not react in such a defensive manner, i.e. their evaluations of the research will be less negative.

Today, you will have found yourself in one of two groups. If you were in the control group then at the start of the study you will have been asked to rank eight values in order of personal importance. You will then have immediately progressed to read the fictional study: *Gender Diversity, Leadership, and Performance: Evidence from a National Survey*. However, if you were in the treatment group then you will have been asked to rank those same eight values but in order of importance to men. You will also have been asked to provide three reasons as to why the highest ranked value was important to men, and to provide an example of when men have demonstrated its importance. These differences operated as our manipulation of group-affirmation. It is our prediction that participants in the treatment group will provide on average less negative evaluations of the fictional study.

To read up on the subject, we recommend a similar study by Peter Nauroth and colleagues titled "*Social Identity Threat Motivates Science-Discrediting Online Comments*", published in 2015. The article is open access so it's free to view online. If you want to know more about this study or have any further questions then please contact Ross Cameron using the details below. Unfortunately, we cannot provide individual feedback on your results.

APPENDIX W – Questionnaire for Study 8 Time II

How We Perceive Science

PAGE 1

Thank you for your interest in this study. Before taking part, please read the Participant Information Sheet **available here**.

The information sheet outlines the purpose of the research, the handling of your data, your rights as a participant, and our contact details should you require further information or wish to withdraw. You are under no obligation to agree to take part, but if you do agree you can withdraw without giving a reason.

Please indicate that you understand and agree with the following:

	Yes
• I understand the purpose and nature of the study. • I understand that my participation is voluntary and that I can withdraw at any time without giving a reason • I understand that all information collected as part of the study will be treated as completely confidential, and the data will be anonymised.	○ ○ ○

PAGE 2
Please enter your Prolific ID: _____

PAGE 3[†]
What is your gender?
○ Male ○ Female ○ Other (Please Specify)————————————————

[†] In the Control Condition, Gender was asked at the end, prior to age.

PAGE 4¥

In this section, we're interested in the values that you consider to be important or central to men.

Values are defined as "abstract, desirable end states that people strive for or aim to uphold." They're generalised beliefs about what is and is not important in life.

Below is a list of 8 values. Using the boxes provided, please rank the values from most to least important to men. How you define "men" or "man" is entirely up to you. The values are (in alphabetical order):

- Dependability
- Empathy
- Honesty
- Loyalty
- Relationships (with Family and Friends)
- Reliability
- Respect
- Understanding

Please rank the values:

1 = Most Important to Men
8 = Least Important to Men.

You can copy and paste the values or type them in.

    1. _____
    2. _____
    3. _____
    4. _____
    5. _____
    6. _____
    7. _____
    8. _____

¥ In the Control Condition, participants were asked to "*please rank the values from most to least important to you. The values are (in alphabetical order).*" They were also asked "*Please rank the values: 1 = Most Important to Me. 8 = Least Important to Me.*"

PAGE 5≠

You ranked [TOP VALUE] as #1. Using the boxes below, please provide 3 reasons why you chose this value as being most important to men.

    Reason 1. _____
    Reason 2. _____
    Reason 3. _____

Finally, we'd like you provide an example of when men have demonstrated the importance of [TOP VALUE].

≠ This page was not included in the Control Condition.

PAGE 6

Thank you.

Your contribution today will have a significant impact on our understanding of values in contemporary society.

Please select **Next Page** to begin the Reading Task.

PAGE 7

The next page features the summary of an article that was recently published in Women in Management Review, by Stephanie Valdez.

Women in Management is "*a peer reviewed journal which publishes original, critical and scholarly papers that make theoretical and methodological contributions to our understanding of gender-based issues in management*".

Please take the time to read the summary carefully, paying particular attention to the **Overview**, **Methods**, **Results**, and **Conclusion**.

PAGE 8

For the content, see Appendix K - TREATMENT

PAGE 9

In your own words, please summarise the article and its findings. We're interested in how you interpreted the article.

PAGE 10

Please select the sentence that most accurately describes the findings.

- Companies benefit from increased representation of women in executive positions.
- Companies benefit from increased representation of men in executive positions.
- Companies benefit equally from male and female representation in executive positions.

PAGE 11

Please indicate the extent to which you agree with the following statements.

	Not At All True				Very Much True		
	1	2	3	4	5	6	7
1. I think that this study was a waste of public money.	○	○	○	○	○	○	○
2. I think that this study yielded important results.	○	○	○	○	○	○	○
3. I think that the methodology is fundamentally useless to investigate leadership styles and organisational success.	○	○	○	○	○	○	○
4. I think the researcher knows a lot about leadership styles and work-place performance.	○	○	○	○	○	○	○
5. I think the researcher just finds what they want to find.	○	○	○	○	○	○	○
6. I was convinced by the findings of the study.	○	○	○	○	○	○	○

PAGE 12

Please indicate the extent to which you agree with the following statements.

	Not At All True				Very Much True		
	1	2	3	4	5	6	7
1. I think that the results of the study are unambiguous (i.e. they are not open to more than one interpretation).	○	○	○	○	○	○	○
2. I think that one can draw useful conclusions for real life from this study.	○	○	○	○	○	○	○
3. I think that the results of the study are implausible.	○	○	○	○	○	○	○
4. I think the researcher is not very competent.	○	○	○	○	○	○	○
5. I think the researcher has no idea about what leadership styles work and how they influence organisational success.	○	○	○	○	○	○	○
6. Overall, I think the findings of the research are believable.	○	○	○	○	○	○	○

PAGE 13

To what extent does the research make you want to:

	Not At All				Very Much		
	1	2	3	4	5	6	7
1. Confront the researcher about their findings.	○	○	○	○	○	○	○
2. Argue with the researcher about their findings.	○	○	○	○	○	○	○
3. Oppose the researcher about their findings.	○	○	○	○	○	○	○

PAGE 14

Please select the number four for this question, and No for the next question. This is to help us filter out random clicking.

<table>
<tr><td rowspan="2">Rarely</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td rowspan="2">Frequently</td></tr>
<tr><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
</table>

Please select the correct response.

Yes	No
○	○

PAGE 15

What is your age?

_____

Please select your nationality:

_____

PAGE 16

You have completed this survey!
We really appreciate your help.

Please read the Participant Debrief **available here**. It explains the true purpose of the study, and our contact details should you have any further questions.

You will shortly be redirected to the Completion Code.

APPENDIX X – MMR for HBI for Study 8

The Moderating Effect of Collective Self-Esteem (CSE), Social Dominance Orientation (SDO), Ambivalent Sexism (AS), Precarious Manhood (PM), and Collective Narcissism (CN) on Hostile Behavioural Intentions (HBI) by Affirmation Condition

In line with the main body of the thesis, interpretation of the contribution of specific β values is with *all else being equal* assumed, or ceteris paribus. Its statement here is to further reduce repetition.

Testing Collective Self-Esteem (CSE) as a Moderator of Hostile Behavioural Intentions (HBI) by Affirmation Condition

Table 87 displays the results of a Moderated Multiple Regression (MMR), regressing affirmation condition (I = Group-Affirmation, 0 = Self-Affirmation), the four CSE subdimensions, and their products on Hostile Behavioural Intentions (HBI). Table 87 reveals no significant interactions at Step 2, and so interpretation is restricted to Step I.

Step I explained 6.9% of the variance in HBI, F (5, 211) = 3.15, p = .009. CSE Private (β = 0.23, p = .016) and CSE Importance to Identity (β = 0.18, p = .016) were each significant, positive predictors of HBI, such that increases in CSE Private and Importance increased hostility toward the publications author. CSE Public (β = -0.15, p = .059) approached significance as a predictor of HBI, though in the opposite direction, i.e. as CSE Public increased, hostility toward the author decreased. No other significant main effects were observed, and the lack of significant interactions suggests the observed relationships held somewhat true across affirmation conditions.

Table 87 Moderation Results of Collective Self-Esteem (CSE) on the Relationship Between Affirmation Condition and Hostile Behavioural Intentions (HBI)

	b	*SE b*	*β*	*p*
Step One				
Constant	2.45	0.14		0.000
Condition	0.00	0.20	0.00	0.986
CSE Membership	-0.19	0.12	-0.14	0.118
CSE Private	0.32	0.13	0.23	0.016
CSE Public	-0.23	0.12	-0.15	0.059
CSE Importance	0.19	0.08	0.18	0.016
Step Two				
Constant	2.44	0.14		0.000
Condition	0.00	0.20	-	0.981
CSE Membership	-0.19	0.19	-	0.326
CSE Private	0.39	0.19	-	0.049
CSE Public	-0.25	0.16	-	0.115
CSE Importance	0.13	0.11	-	0.221
Condition x Membership	-0.01	0.25	-	0.983
Condition x Private	-0.16	0.27	-	0.553
Condition x Public	0.05	0.24	-	0.827
Condition x Importance	0.12	0.15	-	0.424

R^2 = .07 for Step 1 (p = .009); ΔR^2 = .00 for Step 2 (p = .928).
N = 217.

Testing Social Dominance Orientation (SDO) as a Moderator of Hostile Behavioural Intentions (HBI) by Affirmation Condition

Table 88 displays the results an MMR as it relates to Social Dominance Orientation (SDO). Table 88 reveals no significant interactions at Step 2. Step I explained 12.5% of the variance in HBI, F (3, 213) = 10.18, $p < .001$. Both SDO-D ($β$ = 0.20, p = .059) and SDO-E ($β$ = 0.18, p = .077) approached significance, indicating that as each increased, so too did hostility toward the author.

Table 88 Moderation Results of Social Dominance Orientation (SDO) on the Relationship Between Affirmation Condition and Hostile Behavioural Intentions (HBI)

	b	*SE b*	*β*	*p*
Step One				
Constant	2.53	0.13		0.000
Condition	-0.16	0.19	-0.05	0.406
SDO-D	0.24	0.13	0.20	0.059
SDO-E	0.24	0.13	0.18	0.077
Step Two				
Constant	2.54	0.13		0.000
Condition	-0.16	0.19	-	0.404
SDO-D	0.26	0.18	-	0.159
SDO-E	0.31	0.19	-	0.106
Condition x SDO-D	-0.03	0.25	-	0.906
Condition x SDO-E	-0.14	0.27	-	0.596

R^2 = .13 for Step 1 (p < .001); ΔR^2 = .00 for Step 2 (p = .608).
N = 217.

Testing Ambivalent Sexism (AS) as a Moderator of Hostile Behavioural Intentions (HBI) by Affirmation Condition

Table 89 displays the results of an MMR as it relates to Ambivalent Sexism (AS). Step I explained 18.9% of the variance in HBI, F (3, 213) = 16.57, p < .001. This increased to 21.3% at Step 2, F (5, 211) = 11.45, p < .001, owing to ΔR^2 = .02, F change (2, 211) = 3.25, p = .041. For exploratory purposes, the Condition x Benevolent Sexism (b = 0.34, p = .087) was further analysed by removing the non-significant Condition x Hostile Sexism (b = 0.17, p = .254) interaction, and running the model again.

Table 89 Moderation Results of Ambivalent Sexism on the Relationship Between Affirmation Condition and Hostile Behavioural Intentions (HBI)

	b	*SE b*	*β*	*p*
Step One				
Constant	2.47	0.13		0.000
Condition	-0.03	0.18	-0.01	0.849
Hostile Sexism	0.48	0.08	0.42	0.000
Benevolent Sexism	0.06	0.10	0.04	0.546
Step Two				
Constant	2.47	0.13		0.000
Condition	-0.04	0.18	-	0.839
Hostile Sexism	0.39	0.11	-	0.000
Benevolent Sexism	-0.10	0.14	-	0.486
Condition x Hostile	0.17	0.15	-	0.254
Condition x Benevolent	0.34	0.20	-	0.087

R^2 = .19 for Step 1 (p < .001); ΔR^2 = .02 for Step 2 (p = .041).
N = 217.

Table 90 displays the results of the new model. Step I is not included as it is previously reported in Table 89. With the new model, the total explained variance was 20.9%, F (4, 212) = 13.97, p < .001. The Condition x Benevolent Sexism interaction subsequently reached significance (b = 0.42, p = .024). Figure 44 displays the interaction. As Figure 44 indicates, HBI differed between the two affirmation conditions when HBI was Low and High. However, simple slopes analysis revealed that despite the difference in slopes, the difference only approached significance when HBI was relatively low (-1SD) (b = -0.48, SE = 0.26, 95% CI [-0.99, 0.04], p = .072). When Low, HBI were lower in the Group Affirmation condition than the Self-Affirmation condition. When relatively high (+1SD) (b = 0.40, SE = 0.26, 95% CI [-0.11, 0.92], p = .124), the differences in HBI failed to reach significance. No significant difference was observed at moderate HBI (p = .936).

Table 90 Moderation Results of Hostile Sexism on the Relationship Between Affirmation Condition and Hostile Behavioural Intentions (HBI)

	b	*SE b*	*β*	*p*
Step Two				
Constant	2.46	0.13		0.000
Condition	-0.04	0.18	-	0.843
Hostile Sexism	0.48	0.08	-	0.000
Benevolent Sexism	-0.14	0.13	-	0.295
Condition x Benevolent	0.42	0.18	-	0.024

ΔR² = .02 for Step 2 (p = .024).
N = 217.

Figure 44 Simple Slopes of Affirmation Condition (Group vs. Self) for Benevolent Sexism on Hostile Behavioural Intentions
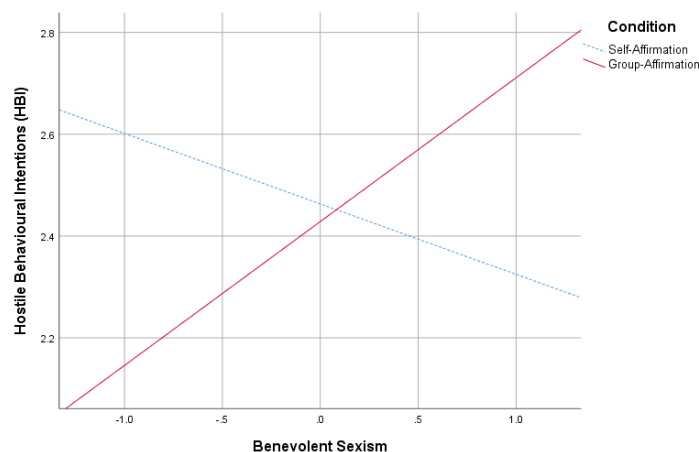
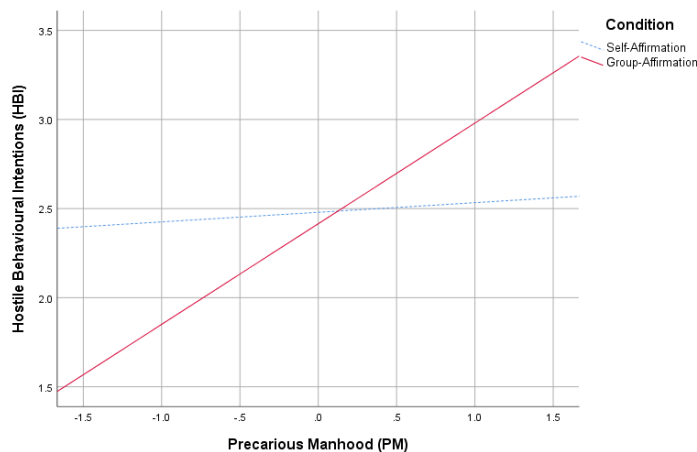## Testing Precarious Manhood (PM) as a Moderator of Hostile Behavioural Intentions (HBI) by Affirmation Condition

Table 91 displays the results of the MMR as it relates to Precarious Manhood (PM). At Step I the total variance explained was 6.2%, $F(2, 214) = 7.12$, $p = .001$. This increased to 10.1% at Step 2, $F(3, 213) = 8.00$, $p < .001$. The Condition x Precarious Manhood interaction was revealed to be significant ($b = 0.51$, $p = .003$). Figure 45 displays the interaction. Inspection revealed that differences in HBI toward the author were significant when PM was relatively low (-1SD) ($b = -0.75$, $SE = 0.29$, 95% CI [-1.33, -0.17], $p = .012$), at which point HBI were lower for those in the Group-Affirmation (vs. Self-Affirmation) condition. And differences were significant when PM was relatively high (+1SD) ($b = 0.53$, $SE = 0.27$, 95% CI [-0.01, 1.06], $p = .054$). No significant difference was observed when PM was moderate ($p = .933$).

Table 91 Moderation Results of Precarious Manhood on the Relationship Between Affirmation Condition and Hostile Behavioural Intentions (HBI)

	b	SE b	β	p
Step One				
Constant	2.48	0.14		0.000
Condition	-0.06	0.19	-0.02	0.739
Precarious Manhood	0.32	0.09	0.25	0.000
Step Two				
Constant	2.48	0.13		0.000
Condition	-0.06	0.19	-	0.735
Precarious Manhood	0.05	0.12	-	0.659
Condition x Precarious MH	0.51	0.17	-	0.003

$R^2 = .06$ for Step 1 (p = .001); $\Delta R^2 = .04$ for Step 2 (p = .003).
N = 217.

Figure 45 Simple Slopes of Affirmation Condition (Group vs. Self) for Precarious Manhood on Hostile Behavioural Intentions

Testing Collective Narcissism (CN) as a Moderator of Hostile Behavioural Intentions (HBI) by Affirmation Condition

Table 92 displays the results of the MMR as it relates to Collective Narcissism (CN). Step 2 reveals no significant interaction. Interpretation is limited to Step I Main Effects. At Step I the total variance explained by the model was 18.7%, F (2, 214) = 24.57, $p < .001$. Collective Narcissism (CN) was revealed to be a significant predictor of Hostile Behavioural Intentions (HBI) (β = 0.43, $p < .001$), such that higher CN predicted greater HBI. The lack of significant interaction at Step 2 indicates this held true across both affirmation conditions.

Table 92 Moderation Results of Collective Narcissism on the Relationship Between Affirmation Condition and Hostile Behavioural Intentions (HBI)

	b	*SE b*	*β*	*p*
Step One				
Constant	2.44	0.13		0.000
Condition	0.01	0.18	0.00	0.949
Collective Narcissism	0.55	0.08	0.43	0.000
Step Two				
Constant	2.45	0.13		0.000
Condition	0.01	0.18	-	0.957
Collective Narcissism	0.46	0.12	-	0.000
Condition x Collective Narc.	0.17	0.16	-	0.276

R^2 = .19 for Step 1 (p < .001); ΔR^2 = .01 for Step 2 (p = .276).
N = 217.