

**Threat and Emotion: Using Target-specific Contact Processes to Explain Diverse
Intergroup Behaviours**

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Memorandum

The research for this thesis was conducted while the author was a full-time postgraduate student in the school of Psychology at the University of East Anglia, Norwich (January 2018 – June 2022) on a studentship from the University of East Anglia.

The theoretical and empirical work herein is independent work. The author has not been awarded a degree by this university or any other university for the work included in this thesis.

Sections of both the empirical and theoretical work presented within the thesis are included within jointly authored publications obtained during the course of study. These sections are identified within the footnotes in the main text.

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Abstract

To date, the research on intergroup contact has undoubtedly yielded important insights into the effects of positive and negative intergroup contact on prejudice attitudes. Unfortunately, using this generalized approach to understand the effects of contact on prejudice, we cannot identify the fine-grained emotional mechanisms responsible for the effects of contact on separate minority groups. Indeed, contact research rarely has considered how contact processes may unfold differently in different groups. Across six studies, this thesis investigates how the relationships between outgroup threat, positive and negative intergroup contact experiences, and specific intergroup emotions might explain why individuals vary their prejudicial behaviour according to their target. The first part of this thesis integrates five intergroup relation theories to form the novel *threat-matching hypothesis*, which predicts that the emotional processes underlying the effects of contact depend on the specific threat posed by the outgroup. Based on this hypothesis it was proposed that past experiences of positive contact with a target group would be associated with a reduction in the specific negative emotions that can motivate specific negative threat-coping behaviours. Negative contact, meanwhile, was expected to be associated with an increase in the specific negative emotions that might motivate the same negative intergroup behaviours. The second and empirical part of the thesis tested the threat-matching hypothesis. Results support the conclusion that past experiences of intergroup contact with a specific outgroup can predict discrete and functional intergroup emotions that in turn can predict specific intergroup behaviour tendencies. The present findings leave us optimistic that diversity training interventions with focus on intergroup emotions and behaviour tendency have the potential to bring about important social change.

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Chapter 1: Introduction and Overview

“Just because an animal is large, it doesn’t mean he doesn’t want kindness; however big Tigger seems to be, remember that he wants as much kindness as Roo.”

A.A. Milne, Winnie-the-Pooh

Introduction

For more than a century, researchers have sought to understand what causes people to harbour and express prejudice against outgroups, yet prejudicial attitudes continue to destroy human lives. In Britain according to official statistics from the Home Office (The Home Office, 2021), increases in hate crimes were seen around the times of the EU referendum in June 2016 and the terrorist attacks in 2017. Similarly, the 2021 report notes that the COVID-19 pandemic was met with a surge of anti-Chinese violence and racism and that hate crimes increased during the summer of 2020, following the widespread Black Lives Matter protests and far-right counter-protests (The Home Office, 2021). Sustained attention to the topic of prejudice reflects that – across time and geography – stereotyping, discrimination, and xenophobia manifest as multiple forms of prejudicial behaviour. In response, policymakers look to social science for evidence-based methods to reduce such prejudice (Myrdal, 2015), and intergroup contact, that is contact between members of different social groups, has arguably become the foremost strategy for improving intergroup relations (Brown & Hewstone, 2005). Extensive evidence supports the assumption that contact between different social groups reduces prejudice (Barlow et al., 2012; Lemmer & Wagner, 2015; Paluck et al., 2019). Contact theory shows that prior contact experiences work to attenuate or exacerbate prejudice most strongly through affective pathways. Though, as Paluck and colleagues (2019) reveal through their meta-analysis, the extent to which contact diminishes prejudice appears to vary according to the target. Contact appears to work well as a strategy in reducing prejudice towards people with disabilities, such that when such studies are excluded, the meta-analytic estimate remains significant but diminishes from 0.39 standard deviations to

0.20. Therefore, it appears that the processes underpinning the effects of contact on prejudicial behaviour, may vary by outgroup. However, after decades of research, we have not moved beyond the considering effect of contact on prejudice towards a homogenous outgroup. In turning our attention to the nuances of the effects of contact beyond generalized prejudicial attitudes, we can better understand the diverse array of feelings aroused and potential actions people take when faced with members from different outgroups.

Prejudicial attitudes can lead to negative feelings about various outgroups and distinct discriminatory behaviours (Cottrell & Neuberg, 2005). For example, groups like immigrants can be perceived to threaten ingroup resources and may arouse anger (Classen, 2016). This manifestation of prejudice may lead to aggressive behaviours. Similarly, disgust plays a significant role in keeping ingroups and outgroups apart, especially when those in the ingroup believe the outgroup could contaminate them (Reicher, 2016). One approach to tackling prejudice is to identify the types of emotions people feel towards a particular group and to develop an understanding of how cross-group contact experiences may mould those feelings and shape future intergroup behaviours.

Considering these concerns, this thesis explores what might account for differences in prejudicial behaviour. It focuses on how discrete emotional processes underpinning contact effects may depend on outgroup-specific threats, which in turn can motivate specific intergroup behaviours. This research seeks to understand the role of contact on specific emotional experiences in intergroup relationships, with a view to support the design of more effective bias reduction intervention strategies. If we study emotion as a psychological system influencing prejudice, tools that guide individuals to think differently about a negative or threatening event may be effective at reducing negative emotions individuals associate with people different to themselves.

The Emotional Nature of Prejudice

Through decades of prejudice research, psychologists like Allport have proposed multiple explanations for the nature and existence of prejudice, including explicit learning from authoritative figures, a need to conform with a social group, the influences of personality and identity, and so forth (Allport, 1954). Prejudice is multifaceted and includes components such as preferences, feelings, emotions, beliefs, expectations, judgments, appraisals, values, principles, opinions, and intentions (Eagly & Chaiken, 1998). Today, prejudice is perceived by intergroup researchers as an attitude comprising cognition (beliefs and learned associations), affect (specific emotional responses and general evaluations), and behaviour (preferences and discrimination), which tend to converge and operate together with synchronicity (Cuddy, Fiske, & Glick, 2008; Frijda, 1986). Within that tripartite view of prejudice as cognition, affect, and behaviour, one's emotional reactions towards outgroup members represent the affective component of attitude. Nonetheless, while the tripartite nature of intergroup bias is widely accepted, prior studies have failed to understand the specific functions of intergroup affect in weakening (or strengthening) intergroup prejudices (Neuberg & Cottrell, 2003). Indeed, many researchers have conceived the affective component of an attitude to merely be a favourable or unfavourable evaluation of the attitude object (Dijker, 1986). Thus, instruments to measure outgroup attitudes have frequently relied on participants' liking or levels of warmth towards the target group, ignoring measures of specific affective experiences, such as fear, anger, or admiration.

Given the importance of affective experiences, it is important to understand the role of emotion in cross-group relationships. Simply put, emotions play important roles in people's lives (Cannon, 1927; Darwin & Darwin, 1890; W. James, 1890). Emotions help inform human identity (Tooby & Cosmides, 2008), relationships (Elfenbein & Ambady, 2002), and behaviour in social interactions (Marsh et al., 2005). Importantly, in terms of understanding

prejudice, emotions help organise interpersonal relationships and play an important role in the cultural functioning of human societies (Matsumoto et al., 2008).

Specific emotions prepare humans for behaviour (Frijda, et al., 1989). When evoked, emotions coordinate a number systems, including perception, attention, inference, learning, memory, goal choice, physiological reactions, motor behaviour, and behavioural decision-making (Tooby & Cosmides, 2008). The specific emotion perspective posits that each specific emotion (e.g., anger, fear, joy) corresponds to a unique profile of experience, physiology and behaviour (Ekman, 2016). For instance, fear responses shut down temporarily unneeded digestive processes, resulting in saliva reduction (a dry mouth) or even vomiting or the loosening of bowels; blood flows disproportionately to the lower half of the body; the visual field expands; and air is breathed in, all preparing the body to flee. Anger, on the other hand, is regarded as a high-arousal emotion that is instead associated with approach motivational tendencies (Carver & Harmon-Jones, 2009). When one experiences anger, systolic blood pressure increases, compromising the efficiency of cognitive processing (Garfinkel et al., 2016). This reaction prepares a person for aggressive behaviour (Zillmann, 1988). These differences clearly suggests that emotional responses are important predictors of intergroup behaviour and prejudiced interactions between groups (Haddock et al., 1993). Not only do emotions prepare bodies for an acute immediate reaction, but they also motivate future behaviour (Mellers & McGraw, 2001). Acute immediate emotional reactions are situationally created and likely transient in nature, relating to a specific context with outgroup members. In a chronic form, intergroup emotions involve stable and lasting reactions towards social groups and their members (Smith, 1993), which likely underpin the emotional nature of prejudice (Paolini et al., 2006).

Comparatively little research focus has been placed on the emotional mechanisms behind prejudice, perhaps because of outdated misconceptions about emotion. Emotions were

originally considered to be irrational and to work against one's best interests (Smith & Mackie, 2005). Moreover, because of their subjective nature, some basic emotions (e.g., sadness, anger, fear) are difficult to study in the laboratory. (LeDoux, 2000). Yet in summarising recent neuroscience on prejudice, Kubota et al. (2012) found that the brain area most often reported to be active in studies of racial attitudes and decision-making is the amygdala, which is known for its role in governing the emotion of fear through fear conditioning and fear learning (LeDoux, 2000). Everyday discussions of prejudice are highly saturated with emotional language, such as fear, anger, and lack of trust (Kubota et al., 2012), so it is not surprising that the amygdala is heavily involved in the neurology of prejudice. If prejudice's nature has a core emotional component, it is key to broaden our understanding of the emotional processes involved in prejudice to confront intergroup bias, especially in order to understand the processes that drive specific prejudicial approach or avoidance behaviours.

Intergroup contact theory

In addition to understanding the emotional nature of prejudice, the interactions between people in ingroups and outgroups can be well understood in terms of intergroup contact theory. Intergroup contact theory proposes that contact between people from different groups can reduce prejudice (Brown & Hewstone, 2005; Pettigrew & Tropp, 2008). One of the major developments since Allport's (1954) ground-breaking contact hypothesis has been the work studying mediating variables to understand "how" or "why" contact works effectively to alter outgroup attitudes. Multiple mechanisms have been proposed to account for how contact reduces prejudice: learning about the outgroup, changing behaviour, generating affective ties, and ingroup reappraisal (Pettigrew, 1998). Researchers suggest that contact experiences (at least positive ones) work to reduce prejudice most strongly through affective pathways by diminishing anxiety and threat and by inducing empathy (Tausch et al., 2010). Notably, such changes are not cognitive (e.g., stereotype change; (Aberson, 2015;

Tropp & Pettigrew, 2005). Intimate intergroup contact, especially cross-group friendship has been shown to play a special role in reducing negative reactions towards outgroup members because it builds strong affective ties (Pettigrew & Tropp, 2011; Schmid et al., 2012).

Allport (1954, p. 261) warned, however, that contact is not a universal cure for prejudice; sometimes the most destructive human behaviour takes place across social divides, despite regular social interaction. Everyday life teaches that not all cross-group contact experiences are positive and that frequent contact does not necessarily insulate society from devastating forms of prejudice. Take for instance the tragic, unlawful killing of the 18-year-old Black British high-achieving student, Stephen Lawrence. Lawrence was killed in a completely unprovoked racist attack by five young White men in 1993. prejudice was not only evident in the attack but in the police's handling of the case. The ensuing police investigation was marred by the "institutional racism" in the police force (MacPherson of Cluny, 1999), which failed to bring the perpetrators to justice for 19 years. Still, nearly 30 years after Stephen Lawrence's murder, the UK government Home Affairs Committee calls again for "urgent action to tackle deep rooted and persistent racial disparities in policing" (Home Affairs Committee, 2021). Given that the killing was in London, a multi-cultural metropolis, the perpetrators, and especially the met- police would be expected to have had intergroup contacts as part of their life. The continued need for action to tackle racial disparities in policing further points to the insufficiency of contact in an ambiguous manner for reducing prejudice.

Research shows that while positive contact is associated with improving attitudes, negative contact experiences appear to worsen intergroup attitudes (Barlow et al., 2012; Paolini et al., 2010). Contact can exacerbate intergroup prejudice and conflict, especially if it involves feeling threatened by a social group (Pettigrew & Tropp, 2011). Perceived intergroup threats can lead to negative behaviour intentions toward outgroups including

aggression and discrimination. However, threat perception varies between people. These differences in threat perception means meeting someone from an outgroup can evoke anger in some but joy in others. Take for example the recent racially motivated murder of the Black American jogger Ahmaud Arbery, who was pursued and killed by three White Americans while he was out exercising (Laughland, 2021). Arbery regularly ran through the mostly White Brunswick neighbourhood, pleasantly interacting and waving good morning to those he passed by (Shah, 2020). This same happy scene was later unpleasantly described by one of the White men's defense lawyers like this: a Black man running "in his khaki shorts with no socks to cover his long, dirty toenails" (Hogue, 2021). These two different descriptions of the same scene arouse distinctly different emotions, which likely help explain distinctly different intergroup behaviours (one heartbreakingly so). Differences in intergroup threat appraisal may help explain the arousal of admiration to inspire the friendly waves in some yet stimulate dehumanizing contempt in others that likely instigated Arbery's pursuit and murder.

Appraisal theory of emotion

Besides intergroup contact theory, the appraisal theory of emotion is also effective for understanding why different emotions are triggered by the same situation for different people. Frijda's (1986; 1989) appraisal theory of emotion builds on the work of Arnold (1960), Lazarus (1966), and Lazarus, Averill, and Opton, (1970). It may help explain the relevance of emotion to the field of intergroup relations (Dijker, 1987). Frijda (1986) defines emotion as a change in readiness for action and describes emotion as a process, not a state. He proposes that cognition and emotion converge when information is viewed in the light of motivation, creating an impulse for action to change the current environment (e.g., take flight when experiencing fear or attack or aggress when angry). Frijda's (1986) theory assumes emotions are a sequence of adaptive responses that rely on an appraisal of the person–environment interaction. These responses have both a somatic component, with distinct physiological

reactions, and a motor component, both of which drive behaviour (Moors et al., 2013). Such appraisals for risk and opportunity rely on information from events in an individual's context, including the individual's concerns, history, and other sensitivities. These variables mediate the significance of events for an individual's well-being, and they trigger a readiness for goal-driven behaviour (Moors et al., 2013). This process explains why different emotions may be aroused from appraisals of the same event, in different individuals, and on different occasions.

Summary and conclusions

Several theories suggest that researchers need to look beyond generalised prejudice to explain differences in intergroup behaviour. First, contact theory posits that prior contact experiences work to attenuate or exacerbate prejudice most strongly through affective pathways; however, it is unable to explain how contact experiences might lead to different feelings and biased behaviour intentions towards dissimilar outgroups, beyond that of generalised prejudice. Second, intergroup emotion theories indicate that prejudice can appear as a specific pattern of emotional responses, depending on the threat perceived. However, one criticism of intergroup emotion models, such as Cottrell and Neuberg's (2005) socio-functional model of prejudice, is that while the models have clear implications for emotion in intergroup relations, they have not been developed and tested in the context of contact (Paolini et al. 2006). Considering the effectiveness of intergroup contact in improving intergroup relationships, it is important intergroup emotion theory can account for the effects of intergroup contact, to be viewed as valid.

Intergroup contact research customarily assesses the consequences of intergroup feelings. Positive feelings from pleasant intergroup interactions predict positive intergroup judgments; negative feelings from unpleasant interactions predict negative judgments (e.g., more intergroup bias and increased stereotyping: Kunda et al., 2002; Pettigrew and Tropp,

2008). Such effects indicate that specific emotions underpin contact processes: Feelings of admiration and sympathy towards an outgroup partner predict less outgroup bias, whereas anger, disgust, and anxiety about the outgroup partner predict more bias (Seger et al., 2017; Hayward et al., 2017; Kauff et al., 2017). Despite this demonstrated primacy of emotion in explaining the relationship between contact and bias, the role of specific emotions (e.g., anger, fear, and disgust) beyond intergroup anxiety (Stephan et al., 2002) have rarely been studied. Instead, the research focus has been predominately on general outgroup attitude as an outcome, so differences in outcomes stemming from specific negative emotions have been missed (Barlow et al., (2019) and Seger et al., (2017) provide recent exceptions). To investigate the role contact plays in relation to specific intergroup behaviour tendencies (e.g., attack versus avoid), it is necessary to explore the interplay between discrete emotions and contact experiences with specific groups.

Thesis Overview

To date, the research on intergroup contact has undoubtedly yielded important insights into the effects of positive and negative intergroup contact on prejudice attitudes. However, contact research rarely has considered how contact processes may unfold differently in different groups. A notable exception is the work of Paolini et al. (2010) on contact valence and group threat. Paolini and colleagues found that negative contact makes individual's more aware of their respective group memberships through emotional pathways, and that these effects are relatively long lasting and lead to a tendency to expect future negative interactions with other members of the same outgroup. These findings emphasise the importance of investigating the effects of contact on both intergroup threat and intergroup emotion.

Intergroup emotion researchers, however, have helped explain the emotional consequences of intergroup threat perception on intergroup behaviours. While intergroup emotion theory can explain differences in bias behaviours, we know little about how the

processes underpinning the effects of intergroup contact might work to transform the emotional processes of intergroup threat perception, which guide these behaviours. To fill this gap in the literature, this thesis looks beyond generalised prejudice. This research systematically investigates how the effects of an individual's history of intergroup contact experiences may help shape the specific emotional and behavioural responses towards people different to themselves.

The following chapters begin with a critical review of the existing explanations of how and why contact with different social groups might differentially affect intergroup behaviours. First, chapter 2 synthesises literature on intergroup contact, emotions, and threat to consider the impact of intergroup contact on threat perception, discrete emotions, and intergroup behaviours. Based on this theoretical analysis, it considers how specific emotions elicited by contact may not only depend on the threat posed by the contacted group but also be functional in driving distinct intergroup behaviours. It is argued that only by considering both contact valence and the specific nature of the perceived threat, can we increase our understanding of the role emotion plays in explaining how contact may shape specific intergroup behaviours. The chapter concludes by building on this theoretical foundation to propose a novel threat-matching hypothesis. The hypothesis draws on the models of outgroup-specific social perception to predict that the emotional processes underlying contact effects depend on the specific threat posed by the outgroup. Then, across four empirical chapters, this thesis analyses the influence of intergroup contact experiences on the specific emotions of anger, fear, and disgust. In so doing, it considers how these effects may vary in relation to the threat posed by an outgroup, and it considers the subsequent relationship with discriminatory behaviour tendencies (e.g., attack or avoid) targeted towards specific outgroups.

Testing overarching theoretical model

Researchers often wrestle with the idea that an observed relationship, (e.g., positive, and negative contact on behaviour intention) may be part of a more complicated chain of effects and that these indirect effects (e.g., emotional responses) may be carriers or mediators of information that informs the observed relationship. Similarly, researchers may also consider that an observed relationship may be also part of a more complex but qualified system. For example, prior contact experiences may thwart or exacerbate the intergroup threat - emotion relationship, which in turn predict behaviour intentions. Existing intergroup contact literature and theory predicts that the network of relationships between intergroup contact, threat, emotion, and behaviour intention weave a complex web. Figure 1 provides a visual representation of this complex web of relationships. It depicts the influence of threat on the associations between contact, specific emotions, and bias behaviour tendencies. The figure provides a roadmap to show: (1) The investigated the relationships between contact → functionally specific emotion to explain target specific behaviour in the context of specific outgroup threats; and (2) the role of positive and negative contact in shaping the specific threat → specific emotion → target specific behaviour relationship.

To reduce complexity and aid the interpretation of results, tests of the thesis' theoretical model are completed in two parts using two separate analytical methods. Each set of studies tests a single part of the greater model. Dividing the model into two parts means that in the studies 2a, 2b and 3 the SEM model threat is assumed, and emotion is tested as the mediator of the contact behaviour relationship, whereas in study 4a and 4b, contact is tested as a moderator of threat effects via emotion on behaviour. Specifically, studies 2a, 2b and 3 investigate the relationships between contact → functionally specific emotion to explain target specific behaviour in the context of specific outgroup threats (Figure 1, blue highlight) using Structural Equation Modelling (SEM). Secondly, Studies 4a and 4b investigate the role

of positive and negative contact experiences in shaping the specific threat → specific emotion → target specific behaviour relationship (Figure 1 red highlight) using Hayes (2019) Process Analysis.

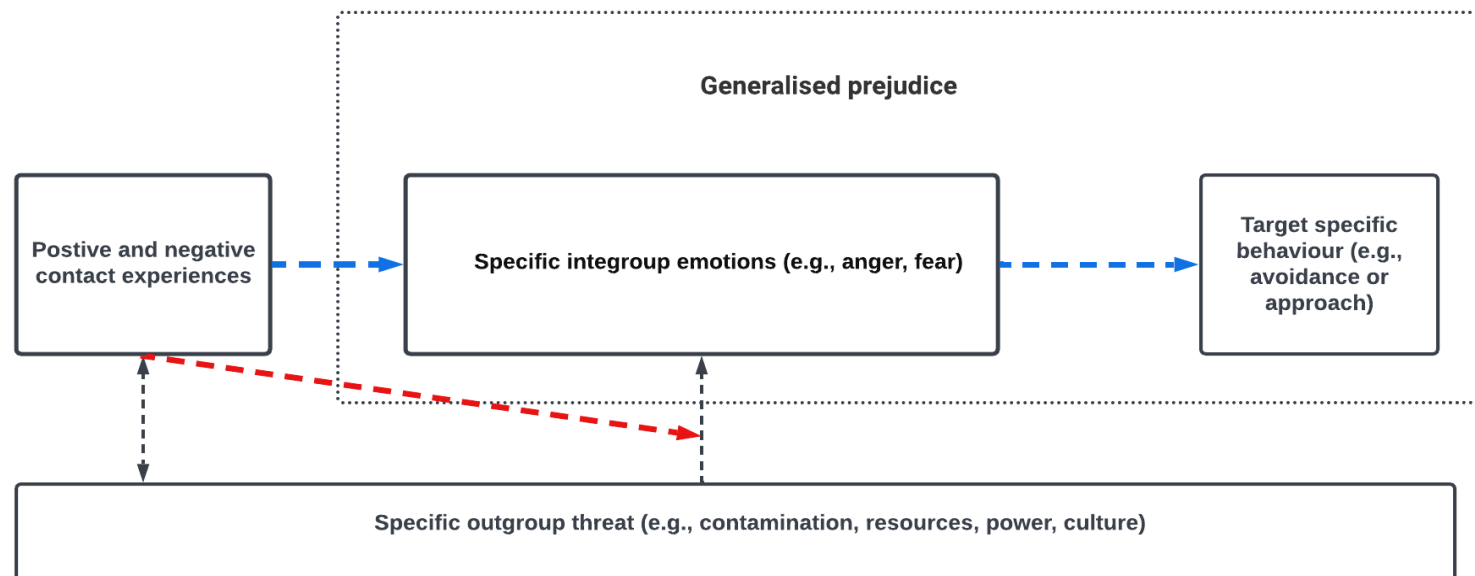
A structural equation modelling (SEM) framework enables researchers to easily set up and reliably test hypothetical relationships among theoretical constructs as well as those between the constructs and their observed indicators, a few technical and theoretical issues arise. Namely, SEM analyses with smaller numbers of participants or large numbers of parameters have been shown to be problematic (Deng et al., 2018), therefore parsimonious models are likely to have greater explanatory predictive power. In early versions of the SEM model, I included threat and specific emotion as serial mediators of the contact behaviour relationship. Threat was included in a form of manipulation check (e.g., if welfare threat is predicted by contact, then fear should be the dominate reaction). However, the including specific threat meant there were multiple pieces in the model, making the results difficult to interpret, which meant I could not clearly demonstrate the effects of contact via emotion on behaviour. Thus, studies 2a, 2b and 3 all include measures threat and explore the relationships between threat and the specific emotions, but threat is specifically excluded from each model for methodological reasons.

Nonetheless, there is substantial evidence that links between contact, outgroup threats and affective dimensions of prejudice exists. Most work focusing on Intergroup Threat Theory (ITT) employs affective measures (e.g., intergroup anxiety) focused on favourability of outgroups and finds substantial relationships between threat and affective dimensions of prejudice across a wide range of samples. ITT specifies that feeling threatened by outgroups drives prejudice and ITT predicts that contact experiences increase (or decrease) feelings of threat that in turn increase (or decrease) prejudice. Therefore, to understand the role of emotion as a mediator, it became important to test the role of contact as a moderator of the

threat emotion relationship. This two-stage process, overcomes methodological difficulties and allows me to test the effects of contact in two ways thus advancing both intergroup contact and intergroup threat literature.

Figure 1 A visual representation of the expected relationships between threat → contact → emotion → target specific behaviour:

Studies 2a, 2b and 3 investigate the relationships between contact → functionally specific emotion to explain target specific behaviour in the context of specific outgroup threats (blue highlight). Studies 4a and 4b investigate the role of positive and negative contact experiences in shaping the specific threat → specific emotion → target specific behaviour relationship (red highlight). Black arrows represent previously evidenced relationships between contact → threat, and threat → emotion.



Chapter 3 reports a test of the “affect-matching” hypothesis (Barlow et al., 2019), which posits that positive contact experiences disproportionately predict positive emotion towards an outgroup, whereas negative contact disproportionately predicts negative affect. It extends the original study of Barlow et al. (2019) by comparing the strength of association between positive and the strength of association of negative contact as a predictor of four discrete emotions (anger, disgust, fear, and respect) held towards four different social groups. Robust evidence was obtained for the effect of “affect matching”.

Chapter 4 reports two tests of a novel “threat-matching” hypothesis that draws on models of outgroup-specific social perception to predict that the emotional processes underlying contact effects depend not only on contact valence but also on the perceived threat posed by the outgroup. The studies explore the role of emotion as a mediator of the intergroup contact and intergroup behaviour relationship in two different contexts – a global pandemic and the 2020 US presidential elections. The findings suggest that by investigating the structural relationship between positive and negative contact, specific intergroup emotions, and nature of the perceived threats, it is possible to determine the mechanism(s) responsible for contact effects, thus simultaneously achieving a differentiated and an integrated view of the process and of the outcome of intergroup contact.

Chapter 5 provides further support for the “threat-matching” hypothesis. Using a multigroup design, it adopts three of Cottrell and Neuberg’s (2005) threat–emotion–behaviour profiles (safety–fear–passive harm, contamination–disgust–passive harm, and obstacle–anger–active harm) to test if specific emotions (i.e., fear, disgust, and anger) can explain the relationship between two specific threat coping tendencies and contact experiences with groups that pose distinct safety, contamination, and obstacle threats. While the findings do not perfectly align with the three Cottrell and Neuberg (2005) threat–emotion–behaviour profiles, the evidence does suggest that specific emotions can help

explain the effects of prior contact with a threatening outgroup, on specific threat-coping behaviour tendencies.

After establishing evidence for the threat-matching hypothesis, chapter 6 draws on the appraisal theory of emotion (Arnold, 1960; Frijda, 1986; Lazarus, 1968; Roseman, 1984; Scherer, 1984) and questions whether the effects of individuals' prior contact experiences (e.g., quality, valence) have agency to mould the emotional consequences of threat perception that likely shape intergroup behaviours. This notion is explored over two studies that investigated the extent to which both positive and negative contact experiences can explain the variability in the threat–emotion–behaviour relationship. The results from these two studies show how integrating intergroup contact theory with intergroup emotion and the consequences of threat appraisal on behaviour intentions can provide a fine-grained understanding of how prior contact experiences may shape the way specific threats and emotions might drive intergroup behaviour tendencies. This finding implies that our history of positive and negative intergroup contact encounters may mould the way we appraise intergroup threats, which in turn may exacerbate or attenuate specific emotions that predict the avoidance or approach nature of our intergroup behaviour intentions.

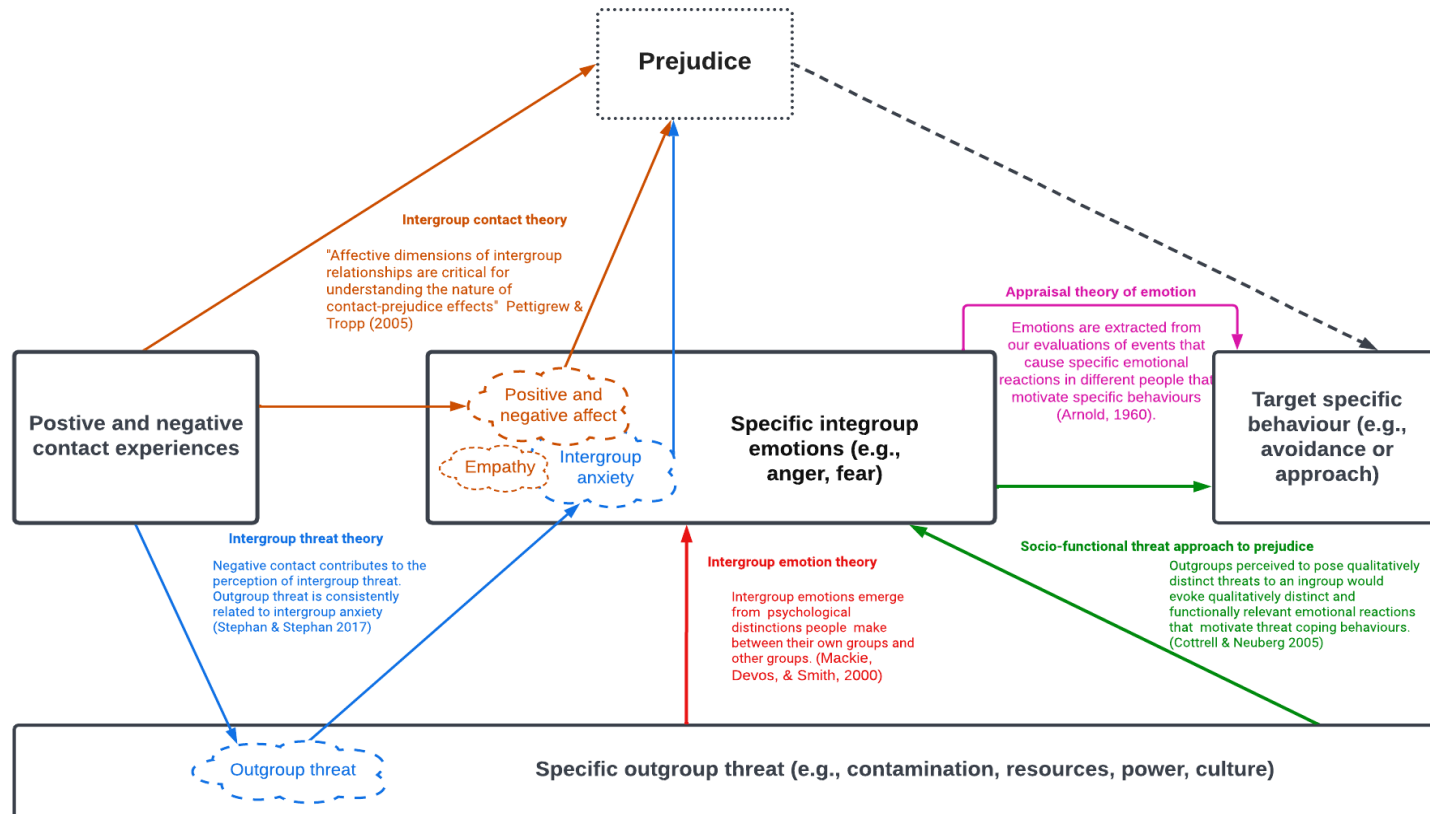
Chapter 7. The final chapter provides a summary of the work presented within this thesis. Following a brief review of the theoretical background that underlined the aims of the thesis, the main empirical findings are summarised. Potential limitations that affect the external validity of the conclusions are discussed. The theoretical implications and applied potential of the threat-matching hypothesis, which predicts that the emotional processes underlying contact effects depend on the specific threat posed by the outgroup, are considered. The chapter concludes by proposing a programme for future research.

Chapter 2: Literature Review

Intergroup contact research remains unable to explain how group-specific contact might account for different forms of prejudice toward different target groups. This chapter reviews the literature that establishes the links between intergroup contact, threat, emotion, and behaviour. The intergroup literature is extensive, and several important theoretical models exist to explain some the links between contact, threat, emotion, and behaviour. Figure 2 builds on Figure 1 to create a roadmap that illustrate where prior intergroup relationship theories indicate existing relationships between these key variables. Then follows an overview of the literature on the frequency, relationships between, and effects of both positive and negative contact. Next, I summarise the current evidence on the emotional consequences of both positive and negative contact on prejudice. I then consider the contribution from two other strands of social psychology literature: intergroup threat theory (ITT; Stephan et al., 2002; Stephan & Stephan, 1985) and intergroup emotion theory (IET; Mackie, Devos, & Smith, 2000).

ITT provides a useful framework to understand the role group-specific threat perception plays in the genesis of generalised prejudice. However, while Stephan et al. (2015) recognise that different types of minority groups may elicit distinct threat perceptions, ITT also does not account for the different kinds of prejudice experienced by different outgroups. IET, on the other hand, describes a threat-based social categorisation process that elicits diverse intergroup emotions towards different target outgroups (Mackie et al., 2016). Intergroup emotions can be defined as functionally adaptive outgroup-specific responses that play a role in regulating intergroup reactions (Neuberg & Cottrell, 2016). However, while IET considers the effects of outgroup-specific threat on intergroup emotion and behaviour, this model ignores the effects of intergroup contact. Finally, I build on this theoretical foundation and propose a novel threat-matching hypothesis, which draws on the models of

Figure 2 A visual representation of the existing theoretical base to explain the relationships between threat - contact – emotion – target specific behaviour. *Note: Each colour represents a current theoretical approach*



outgroup-specific social perception to predict that the emotional processes underlying contact effects depend on the specific threat posed by the outgroup.

The different effects of positive and negative intergroup contact

One well-established path to improve relationships between diverse groups is intergroup contact. The publication of Allport's (1954) influential book, *The Nature of Prejudice*, has focused social psychology's attention on intergroup contact for more than 70 years. Intergroup researchers have built a wealth of knowledge concerning the consistency and robustness of the association between intergroup contact and intergroup outcomes as many meta-analyses show (e.g., Davies et al., 2011; Lemmer & Wagner, 2015; and Pettigrew & Tropp, 2006). Early contact research focused on the positive effects of intergroup contact on reducing prejudice, but more recently negative contact has become the centre of researchers' attention. As Allport (1954) points out, an individual can experience a range of intergroup contact: Such events can be experienced as positive (pleasant or friendly) and others as negative (unpleasant or unfriendly). Researchers have shown that negative contact experiences foster hostility, whereas positive contact reduces it (Pettigrew & Tropp, 2011). These findings indicate that positive and negative contact experiences have unique elements and therefore may have differential impacts on the cognition, affect, and behaviour of those involved.

However, research indicates that the effects of negative contact may not simply be the opposite of the effects of positive contact (Barlow et al., 2012, 2019). Notably, studies that measure both positive and negative contact find little to no relationship between the two constructs (Aberson, 2015). Barlow et al. (2012) revealed evidence to support the separability of positive and negative contact. In their data, they found asymmetries in intergroup categorisation; namely, increased frequency of negative contact predicted greater prejudice and avoidance behaviours in White Australian and American citizens than frequency of

positive contact predicted a reduction. This finding suggests an asymmetry effect in that the prejudice-increasing effects of negative contact appear to be stronger than the prejudice-reducing effects of positive contact (Barlow et al., 2012). Indeed, intergroup conflict may endure because negative contact prompts intergroup hostility more powerfully than positive contact facilitates harmony (Paolini et al., 2014). Both experimental and longitudinal data show that negative contact causes higher category salience (i.e., highlighting group differences) than positive contact (Paolini et al., 2010). Discrete contact experiences have been demonstrated to only change responses towards the whole outgroup when category salience is high (Voci & Hewstone, 2003). For change in intergroup relations towards the whole outgroup to take place, the contact partners must be aware of their corresponding group memberships, notice intergroup differences, and view the other as a typical representative of the target group (R. Brown & Hewstone, 2005). The relationship between negative contact and category salience likely accounts for the positive-negative valence asymmetry effect because negative contact, in most circumstances, emphasises group differences.

Despite those findings supporting the positive-negative valence asymmetry, the evidence is mixed. There are exceptions to findings supporting this “bad is stronger than good” principle (Baumeister et al., 2001). For instance, the role of positive contact may be relatively more critical than negative contact in conflict settings (Bagci & Turnuklu, 2019), where positive contact perhaps is more rare. The effects of positive contact can also be maximised in intimate relationships (Fuochi, 2020), where forgiveness often thrives (Tam et al., 2007). Moreover, some research has found no difference in the effects of positive and negative contact (Árnadóttir et al., 2018; Mazziotta et al., 2015), and some studies have even found the effects of positive contact to be stronger than negative intergroup contact (Mähönen & Jasinskaja-Lahti, 2016; Reimer et al., 2017). One factor that may account for

these differences is that positive contact is generally more frequent than negative contact (Pettigrew & Tropp, 2006, 2011). When assessing the everyday intergroup contact experiences of people from five peaceful European countries, Graf et al. (2014) established that although negative contact was more influential than positive contact in shaping outgroup attitudes, positive contact experiences were twice as frequent as negative contact experiences. There is also some evidence that positive contact might buffer the adverse effects of negative intergroup contact. Pettigrew and Tropp (2011, pg., 191-192) found that German participants who reported both positive and negative contact with immigrants demonstrated almost as much acceptance as people only reporting positive contact. These divergent results indicate that the effects of negative contact are not simply the inverse of positive contact, and that the context matters in group relations.

Although the research is thus mixed, recent reviews of negative contact have reached some useful conclusions on the diverse effects of positive and negative contact (Pettigrew, 2021b; Schäfer, et al., 2021). Schäfer et al. (2021) found that multiple factors can influence the effects of positive and negative contact. For instance, past positive outgroup contact can inoculate against the harmful effects of present negative contact experiences (Paolini et al., 2014). Experiments carried out in areas of conflict (Northern Ireland, the Arizona border with Mexico, and Cyprus) found that that valence-salience effects of contact are moderated by individuals' prior history of intergroup contact (Paolini et al., 2014). Schäfer et al. (Schäfer, Kros, et al., 2021) also found that the valence of a person's past contact experiences moderated the effects of contact in a game of cooperation. These findings indicate that an individual's history of intergroup contact experiences can be crucial in determining whether such experiences are negative or positive.

Conclusions are also relatively clear in the context of intimate relationships (i.e., with romantic partners, family, and friends): Positive contact leads to more positive attitudes than

in casual or formal intergroup encounters. Indeed, intimacy has been shown to protect against the effects of negative contact. And negative contact in intimate relationships has a smaller effect on intergroup attitudes than negative contact in non-intimate relationships (Fuochi et al., 2020). Intensity of contact events also matters, at least for positive contact. Schäfer et al. (2021) found evidence indicating that the intensity of the contact experience has divergent effects in positive and negative contact situations. Across three experiments, only positive (not negative) contact was found to be affected by an increase in the intensity of the contact experience, which in turn explained the effects of contact on outgroup attitudes (Schäfer et al., 2021). Identifying that positive and negative contact experiences are not necessarily related is important because it suggests that they might be diversely influenced. If the effects of positive and negative contact vary by contact history, contact frequency, and encounter intensity, it indicates that positive and negative contact are best studied simultaneously.

Affect Matching: The independent effects of positive and negative contact on positive and negative emotions.

Positive and negative contact not only separately impact intergroup attitudes, but recent evidence also suggests that positive and negative emotions and valence-consistent contact are closely related. Barlow et al. (2019) investigated the premise that negative contact has a greater association with increased anger than reduced warmth and that positive contact has a greater association with increased warmth than decreased anger. The researchers describe this phenomenon as *affect matching*. In this novel theory, Barlow et al. (2019) propose that experiences of positive and negative intergroup affect are based on the nature of prior intergroup contact experiences. In other words, positive contact experiences are expected to lead to more warmth and, as such, have a stronger relationship with increased warmth towards an outgroup than with reduced anger. Likewise, negative contact is expected to be more strongly associated with increased anger towards an outgroup than with decreased

warmth. This affect-matching hypothesis is grounded in social-cognition research showing not only that people recall more information that matches their mood (Bower, 1987) but also that affective states may exert a judgment-specific effect (Gasper & Danube, 2016). Gasper and Danbue (2016) investigated how naturally occurring positive, negative, and neutral affective states altered positive, negative, and neutral judgments among Amazon Mechanical Turk (MTurk) participants. The results showed positive affect was most strongly associated with positive judgments, negative affect with negative judgments, and neutral affect with neutral judgments. Consequently, it might be expected that positive affect would be most strongly associated with positive intergroup contact experiences – and not necessarily an equally strong decrease in negative emotion. Likewise, negative affect would be more strongly associated with negative contact experiences and not necessarily with a similar decline in positive emotion. Identifying that positive and negative contact experiences are not necessarily related is important because it suggests that they might be diversely influenced. If the effects of positive and negative contact vary by contact history, contact frequency, and encounter intensity, it indicates that positive and negative contact are best studied simultaneously.

The processes underpinning the effects of contact

In addition to exploring the differences in the effects of positive and negative contact, intergroup contact research has bloomed into a complex theory that considers multiple forms of contact with numerous mediating factors (Pettigrew, 2021a). Each mediating factor seeks to explain how contact works to alter intergroup attitudes. These mediating factors can be divided into two groups: cognitive factors, like knowledge of an outgroup, and affective factors, like feelings towards an outgroup. The effects of knowledge about an outgroup as a mediator have been shown to be small (Pettigrew & Tropp, 2008). Nonetheless, Brown and Hewstone (2005) stress the importance of knowledge of the outgroup as a moderator of the

contact–prejudice relationship. Knowledge about an outgroup is necessary to categorise another as an outgroup member. Without classifying an individual as an outgroup member, it is not possible for the effect of contact with one outgroup member to generalise from contact experiences with towards the whole outgroup. Intergroup emotion, on the other hand, has been shown to play a crucial mediating role in explaining the effects of contact (Pettigrew, 2008). Pettigrew and Tropp (2008) conducted a meta-analysis on three mediators of the contact–prejudice relationship: knowledge, anxiety, and empathy / perspective taking. They found that the mediational value of anxiety reduction and increased empathy / perspective taking were stronger than the mediational value of enhancing knowledge about the outgroup.

Empathy

In the context of these questions about mediating variables, it is important to note that empathy is not an emotion; however, it is frequently listed as an affective mediator in intergroup literature, where the construct is fused with feelings of “warmth” , “sympathy”, and “pity” (E.g., Grütter et al., 2018; Selvanathan et al., 2018; Tapias et al., 2007). Emotion researchers differentiate between two forms of empathy: affective and cognitive empathy. *Cognitive empathy* is the cognitive process of adopting another’s psychological point of view (Davis et al., 1994, p. 45). *Affective empathy* is the capacity to experience affective reactions to the observed experience of others (Davis, 1994, p. 45). In an intergroup context, empathy for an outgroup involves taking the outgroup’s perspective as well as experiencing emotions like sympathy and compassion. Such empathy is associated with positive outcomes in group relations. Comparatively less attention has focused on the mediating effect of empathy in the contact literature (Pettigrew & Tropp, 2008). Nonetheless, Armstrong et al. (2016) found that empathy explains the effect of students’ contact and attitudes towards peers with disability. Johnston and Glasford (2018) also found that empathy explains the connection between contact and increases in outgroup helping. However, these findings are not consistent. For

instance, empathy did not emerge as a significant mediator of heterosexuals' contact experiences with sexual minorities and LGBT activists (Fingerhut, 2011).

Intergroup Anxiety

Besides empathy, intergroup anxiety has been extensively investigated in the intergroup contact literature (Paolini, 2016). Intergroup anxiety is a negative affective process that is experienced when anticipating future, or expecting actual, contact with outgroup members (Stephan & Stephan, 1985). The experience of intergroup anxiety is distinct from chronic or trait measures of anxiety (Britt et al., 1996). Intergroup anxiety is known to be related to intergroup threat and this line of research posits that intergroup anxiety predicts prejudice towards any given outgroup (Stephan & Stephan, 2000; Stephan et al., 1998). I will return to discuss intergroup anxiety in relationship to intergroup threat later, in the section on Intergroup Threat Theory. For now, it is important to note that positive contact has been shown to reduce anxiety that individuals experience towards outgroups, leading people to adopt more favourable attitudes towards outgroup members (Islam & Hewstone, 1993). Evidence supports the role of intergroup anxiety as a mediator of the contact–prejudice relationship. For example, Techakesari et al. (2015) tested intergroup anxiety as a mediator of both positive and negative contact on prejudice attitudes among White Americans and Black Americans (Study 1); Hong Kong Chinese and Mainlanders in Hong Kong (Study 2); and Buddhist Thais and Muslim Thais (Study 3). Across these three Western and non-Western contexts, intergroup anxiety emerged as a robust mediator of the relationships between both positive and negative contact and prejudice.

Research to explain the effects of intergroup anxiety has shown that anxiety predicts avoidance behaviours towards outgroup members. For instance, White people display greater non-verbal behavioural manifestations of stress (e.g., closed body posture, averted gaze, leaning away) during interracial than racially homogenous interactions (Richeson &

Trawalter, 2008; Trawalter et al., 2012). Intergroup anxiety may have a negative effect on narrowing attention which appears to heighten threat-based appraisals of outgroup-initiated contact (Van Zomeren, Fischer, & Spears, 2007). Across three studies, these authors found that increased threat appraisal explained how the amplification of intergroup anxiety increased individual's negative and offensive responses. Interestingly, the results show that intergroup anxiety can also translate into offensive approach behaviours, as well as avoidance responses, especially when outgroup-initiated contact is outside the accepted social norm. Taken together, the Van Zomeren and colleagues (2007) findings and the Richeson and Trawalter (2008) results indicate that intergroup anxiety is associated with diverse approach and avoidance behaviours. This suggests that intergroup anxiety is not a specific emotion but instead a complex construct that describes an array of negative threat-based feelings that are associated with both approach and avoidance intergroup behaviours.

When considering the nature of intergroup anxiety, it is worth investigating how it is measured. The Stephan and Stephan (1985) scale is the most popular approach to assessing intergroup anxiety. Participants are asked to imagine how they would feel if they were the only person from their social ingroup interacting with people from a different outgroup. Participants are then asked to report the extent to which they would feel awkward, self-conscious, happy (reverse-scored), certain (reversed-scored), accepted (reverse-scored), confident (reverse-scored), irritated, impatient, defensive, suspicious, and careful. The full 11-item scale provides a wide range of adjectives that helpfully describe anxious feelings one might experience during an intergroup encounter. However, some criticism has been cast on the content validity of the measure (Lolliot et al., 2015) as not all the items seem applicable to feelings of anxiety about cross-group encounters. Feelings of being 'irritated' or 'impatient' are more likely relate to annoyance than anxiety. A further criticism is that Stephan and Stephan (1985) do not report their exploratory factor analysis for the scale,

meaning it is difficult to assess the scale's validity. Other researchers (Paolini et al., 2004; Turner et al., 2008) have chosen instead to rely on a shortened six-item version of the scale that removes the items 'careful', 'certain', 'suspicious', 'irritated', and 'impatient'. This abridged version of the scale has a greater focus on anxiousness and has demonstrated metric invariance across samples and time intervals (Greenland et al., 2012). As such, intergroup anxiety cannot explain the whole array of intergroup emotions experienced when people from different social groups interact.

In drawing the intergroup contact literature together, it can be shown that while intergroup anxiety and empathy increased empathy / perspective taking are important mediators of the contact – prejudice relationship, these constructs are unable to explain the diversity in negative intergroup behaviours. The literature lacks sophistication in reference to specific or discrete emotions as mediators (Seger et al., 2017). There are a few exceptions. Admiration and sympathy for an outgroup partner predict less outgroup bias, whereas anger, disgust, and anxiety about an outgroup partner predict more bias (Hayward et al., 2017; Kauff et al., 2017). Hayward et al. (2017) also examined the affective mediators involved in both positive and negative contact – prejudice relationship. They found that intergroup anger played a significant role in explaining the association between negative contact and intergroup avoidance. Positive intergroup contact is not only associated with reduced prejudice through decreased intergroup anxiety but also via reduced anger. For instance, Tam et al. (2007) revealed intergroup contact between Unionist/Loyalist and Republican/Nationalist communities in Northern Ireland as a potential means of reducing anger towards the outgroup and improving attitudes such as increased intergroup forgiveness. These valence-congruent effects indicate that discrete emotions during contact are key in explaining differences in specific intergroup behaviours. It can be concluded that while contact theory research shows that prior contact experiences work to attenuate or exacerbate

prejudice most strongly through affective pathways, it does not consider how contact experiences might be able to account for the different feelings and bias behaviours (beyond generalised prejudice) held towards different outgroups.

Intergroup threat theory

An alternative strand of social psychology to the intergroup contact literature is the body of work on intergroup threat theory. While intergroup contact theory proposes that contact can promote positive intergroup relations (Allport, 1954; Pettigrew, 1998), intergroup threat theory posits that feelings of intergroup threat can increase prejudicial behaviour (Aberson & Gaffney, 2009; Stephan & Renfro, 2002). Intergroup threat theory (ITT; Stephan & Renfro, 2002) postulates that any threat associated with an outgroup can increase negative attitudes and bias behaviour via intergroup anxiety. Threat theories propose that outgroup attitudes are impacted by the presence of outgroup members, in the large part because of perceived resource competition (Sherif et al., 1961). As discussed above, research from an intergroup contact perspective has established intergroup anxiety as a key underlying cause of contact avoidance (Pettigrew & Tropp, 2006). Intergroup threat is experienced when members of one group perceive that another group may cause them harm. The perceived harm might relate to physical harm, infection, a loss of resources, or even compromised integrity or validity of an ingroup's moral values. ITT distinguishes between two types of threat: realistic threat and symbolic threat. Realistic threats manifest when an outgroup is perceived to cause tangible harm (e.g., economic loss, physical harm, exposure to infection). Symbolic threats involve less concrete harm (e.g., moral values, belief systems, or social norms). Perceived intergroup threats may lead to a range of behaviour intentions towards different outgroups, including aggression and discrimination or nonhostile behavioural responses (e.g., negotiation, compromise, deterrence), and the cognitive and affective

responses to threat are likely to be negative (Stephan & Stephan, 2019). However, ITT does not predict ingroup responses to specific outgroup threats.

There is substantial evidence that positive contact relates to reduced threat and that negative contact relates to increased threat (Aberson et al., 2021) and ITT holds that threat is a mediator between contact and prejudice and studies conducted from an ITT perspective reliably report relationships between intergroup contact and perceived threats. For example, positive contact experiences are associated with reduced feelings of threat in studies involving White students' reactions to African Americans (Aberson, 2015) and in studies involving Dutch employees' responses to immigrant workers (Curşeu et al., 2007). Relatedly, negative contact predicted greater threat perceptions in Indigenous Canadians and White Canadians' evaluations of each other (Corenblum & Stephan, 2001) and in Americans and Mexicans' perceptions of each other (Stephan et al., 2000). This view that threat mediates the relationship between contact and measures of prejudice is widely accepted by intergroup contact researchers. However, in their Temporally Integrated Model of Intergroup Contact and Threat (TIMICAT), Abrams and Eller (2016) argue that threat and contact can have independent, additive, ordered and interactive effects on measures of outgroup attitudes because these effects depend on the contact/threat context specifics. For instance, past threats (e.g., former wars) may have a different relationship with contact compared to an imminent threat (e.g., change in immigrate rules); and single incidents of contact may interact differently with threat compared to continuous contact (e.g., intermingling of people such as international students at university), each evidencing that both contact and threat can vary over time and in relation to one another. The implication of the TIMICAT approach is that the threat-prejudice relationship can be both independent and additive to the contact-prejudice relationship, threat may interact with contact, and threat can be a both an antecedent and

consequence of contact. It is therefore it is important that we consider all the roles threat plays in the different stages of the contact-prejudice relationship.

While ITT provides a useful framework to consider the relationship between threat and prejudice, intergroup threat and intergroup anxiety alone cannot explain the great variation in bias behaviours towards outgroups. These behaviours range from taking flight when experiencing fear to avoiding contact when experiencing moral disgust to attacking or aggressing when outraged. As Dijker (1987) has shown, fear and anxiety uniquely drive avoidance behaviours that motivate precautionary measures and negotiation attempts – as opposed to attack or confrontation behaviours with a threatening group. In contrast, groups experiencing intergroup anger report a strong desire to approach or confront the anger-inducing situation or outgroup (Claassen, 2014). This range of effects indicates that intergroup threat appraisals can lead to an array of specific emotions that depend on information from events in their context, including people's individual concerns, histories, and sensitivities and that depend on the risk and opportunity the context presents (Frijda, 1986, 1989). In order to understand how this array of emotions helps to explain the variation in bias behaviours (e.g., aggression vs. avoidance), we must expand intergroup threat theory (Stephan & Renfro, 2002) to encompass more emotions beyond intergroup anxiety and by including specific emotions such as anger, fear, and disgust.

Intergroup emotion theory

In addition to intergroup contact and intergroup threat theory, a third important body of research has investigated how feelings of intergroup threat stemming from an outgroup can shape intergroup relations and attitudes (see Mackie & Smith, 2017). Intergroup contact research typically measures generalized liking and disliking toward an outgroup as the key outcome variable (Pettigrew & Tropp, 2011; Stark et al., 2013). The effect of this focus on prejudice-as-general-attitude potentially obscures a range of discrete and functionally distinct

emotions felt towards outgroups. Intergroup emotion theorists (Mackie et al., 2000) have demonstrated that prejudice towards outgroups can appear as specific emotional responses (e.g., anger, fear, disgust, pity, guilt), and these emotions function to direct and regulate different intergroup behaviours (Fiske et al., 2002; Mackie & Smith, 2018). An example of how prejudice towards various outgroups can manifest as quite different emotional profiles is illustrated by the UK National Survey of Prejudice (Abrams and Houston, 2006). In the survey, Muslims, gay men, and lesbians were found to evoke anger. However, disgust was more often indicated in relation to gay men and lesbians, and fear was more often indicated in relation to Muslims. Both older people (70+) and disabled people were somewhat admired but also more likely to attract pity. These findings further illustrate that prejudice is not simply a global negative attitude emerging from a single global threat. Instead, feelings towards outgroups are contextual and likely determined by the specific threat the outgroup represents for the ingroup in the current context.

The socio-functional approach to explain prejudice

In a helpful addition to both intergroup threat and intergroup emotion theory, Cottrell and Neuberg (2005) neatly draw these two intergroup theories together and propose their socio-functional model to explain prejudice. According to the socio-functional model of intergroup affect (Cottrell & Neuberg, 2005), social groups can elicit distinct patterns of emotion according to the salient threat they pose to the perceiver. In turn, these threat-specific emotions can predict distinct threat-coping behaviour responses. For instance, Cottrell and Neuberg (2005) posit that when an outgroup poses a physical threat, individuals are likely to experience fear, provoking an avoidance reaction and self-protective behaviours. On the other hand, when an outgroup poses a threat to economic resources, individuals are more likely to experience anger, prompting confrontational behaviour directed at removing the obstacle to desired outcomes. Cottrell and Neuberg's (2005) socio-functional approach indicates that

prejudice could be better described as a group of emotions elicited by perceived threats posed by other groups, rather than a generalised prejudice attitude. This theoretical approach posits that intergroup emotions are distinct psychological mechanisms, developed in humans through biological and cultural evolution, to enable individuals to profit from and protect themselves from the benefits and perils of group living. Discrete emotion theorists' postulate that a set of basic emotions, such as fear, anger, and joy, are characterised by several fundamental adaptive responses – for example, fear or flight in response to an attack by a powerful enemy and disgust or avoidance in response to dead animals (Scherer et al., 2001). Cottrell and Neuberg (2005) argue that discrete emotions are goal-relevant because they direct attention, motivation, memory, and behaviour towards exploiting benefits or addressing threats related to an individual's ability to thrive (Carver & Scherer, 1990; Ekman, 1992).

Cottrell and Neuberg (2005) found that different social outgroups are associated with significantly different profiles of affect. The authors tested their hypothesis that dissimilar groups can arouse qualitatively unique profiles of emotional reactions dependent on the threat the group poses by asking European American undergraduate psychology students about their affective reactions and perceptions of the threats posed by nine different ethnic, religious, and ideological groups.¹ The results showed, as predicted, that different groups are associated with significantly different profiles of affect. The authors highlight two subsets of outgroups: ethnic groups (African Americans, Asian Americans, and Native Americans) and ideological groups (activist feminists, fundamentalist Christians, and gay men). The ethnic subset findings show markedly different discrete emotional profiles between the three ethnic groups (African, Native and Asian Americans) and that the patterns of specific emotions within the profiles differed greatly across these groups. For example, they found that African Americans

¹ Activist feminists, African Americans, Asian Americans, European Americans, fundamentalist Christians, gay men, Mexican Americans, Native Americans, and non-fundamentalist Christians. Affective reactions and threat perceptions relating to European Americans and non-fundamentalist Christians were included to act as a comparative baseline for comparison with other groups

uniquely evoked fear and anxiety; that African Americans and especially Native Americans evoked pity, guilt, sadness, and disgust; and that all three groups, particularly African Americans, evoked some degree of anger and resentment (Neuberg & Cottrell, 2016). Threat perception also significantly differed across the ethnic groups: African Americans were distinctively perceived as threatening to physical safety, property, personal freedoms, and social coordination; both Native Americans and African Americans were similarly seen as threatening reciprocity, but the African Americans were seen as both choosing to and being unable to contribute their share, whereas Native Americans were viewed as being unable to reciprocate in kind (Neuberg & Cottrell, 2016). Further, Asian Americans and Native Americans (but not African Americans) were seen as threats to American values, and Asian Americans (but not Native Americans) were seen as a threat to America's economic security (Neuberg & Cottrell, 2016).

Cottrell and Neuberg's (2005) ideological subset similarly show significantly different discrete emotional profiles between the ideological groups and significantly differing patterns of threats across these groups. For example, gay men are seen to elicit greater disgust and pity (but less fear and anger) than activist feminists and fundamentalist Christians, whereas fundamentalist Christians evoke similar anger and resentment to activist feminists but more fear and anxiety than either gay men or activist feminists. Similarly, perceived threat profiles significantly differed between the three ideological groups: Activist feminists aroused greater concerns about social coordination than fundamentalist Christians, who provoked greater unease in relation to personal rights and freedom. However, both groups were perceived as holding values that were inconsistent with most those of American citizens.

Unlike the intergroup threat theorists, Cottrell and Neuberg's (2005) findings illustrate that prejudice is not simply a global negative attitude emerging from realistic or symbolic threats; instead, prejudicial feelings towards outgroups are more contextual and determined

by the specific threat the outgroup represents for an ingroup. Accordingly, prejudice may be better described as a group of emotions elicited by perceived threats posed by other groups rather than a generalised prejudice attitude. When prejudice is described as a global feeling, it masks the variety of emotions felt towards outgroups (e.g., fear, anger, disgust) and obscures the relationship between prejudice and different bias behaviours (e.g., attack or avoidance). In contrast, the socio-functional model of prejudice identifies several basic intergroup threats and relates each of these to a primary functional emotional reaction and an expected (prejudicial) behavioural tendency. To reflect these tendencies, the theory prescribes several threat–emotion–behaviour profiles.

The socio-functional approach's threat–emotion–behaviour profiles

The obstacle–anger–aggression profile proposes that when an outgroup represents an obstacle to attaining an ingroup goal, anger emerges and motivates aggressive behaviours aimed at removing the obstacle (Berkowitz, 2012; Carver & Harmon-Jones, 2009).

Cottrell and Neuberg (2005) identify several specific anger-provoking *obstacle threats*, which include the following: (1) threats to an ingroup's economic resources, (2) threats to an ingroup's property, (3) threats to personal freedoms and rights, (4) outgroup threatens poor reciprocation with the ingroup, (5) outgroup threatens social coordination, and (6) ingroup holds outgroup in low trust. Faced with an outgroup posing an obstacle threat, the socio-functional approach predicts a motivation to act aggressively to remove the obstacle. Alternatively, the contamination–disgust–rejection profile posits that disgust is aroused when people encounter perceived physical or moral contaminants, which motivate contamination-avoidance behaviour. Disgust motivates rejection behaviour intended to protect the self (Haidt et al., 1997). The authors propose that when an outgroup (1) is perceived as a source of disease or (2) or maintains alternative beliefs (moral contamination), it threatens to contaminate the ingroup. Threats of contamination are expected to lead to avoidance and

rejection behaviours aimed at precluding ingroup adulteration. The safety–fear–escape profile emerges when people perceive physical endangerment, which motivates escape behaviours (LeDoux, 2000). The socio-functional model proposes that when an ingroup’s physical safety is threatened by an outgroup, fear is elicited, motivating ingroup members to flee to safety.

In sum, Cottrell and Neuberg’s socio-functional theoretical framework for prejudice reinforces the importance of measuring discrete emotions as outcomes from intergroup contact. However, one criticism of intergroup emotion models, such as Cottrell and Neuberg’s (2005) socio-functional model of prejudice, is that while the models have clear implications for emotion in intergroup relations, they have not been developed and tested in the context of contact (Paolini et al, 2006). This thesis intends to fill this gap by examining the associations between contact and Cottrell and Neuberg’s (2005) threat–emotion–behaviour profiles.

The relationships between contact and specific emotions

While Cottrell and Neuberg’s (2005) work on the socio-functional theoretical framework for prejudice highlights the likely role threat-based emotions play in predicting diverse negative behaviours, intergroup contact theorists have generally neglected the role of specific intergroup emotions in cross-group relationships. The exceptional few studies have primarily considered intergroup emotion as consisting of either positive emotion or negative emotion, not specific emotions such as anger and fear or joy and gratitude. For instance, Kauff et al. (2017) found support for the idea that both positive and negative contact are associated with episodic positive and negative emotions during cross group encounters and that these episodic emotions can in turn predict chronic intergroup emotion. Chronic intergroup emotions are described by Paolini et al. (2006) as the enduring and stable affective components of attitudes towards outgroups, which are influenced by repeatedly experienced emotions (or episodic emotions) in specific intergroup interactions. In study 1 of Kauff et al.

(2017), positive contact was more strongly associated with positive emotions (happiness and satisfaction) than with the negative emotions (angry, irritated, anxious, and helplessness), while negative contact was more strongly associated with the same negative emotions than with positive emotions.

Somewhat differently to the Kauff et al.,(2017) study, Aberson (2015) investigated whether positive or negative contact experiences between an American White majority and a Black minority would differentially predict cognitive or affective dimensions of prejudice. His results revealed that negative contact was a stronger predictor only of cognitive (not affective) dimensions of prejudice, whereas positive and negative contact had an equal ability to predict affective prejudice. However, the affective items used in the Aberson (2015) study (i.e., “acceptance”, “dislike”, and “superior to”) arguably reflect positive and negative attitudes held rather than the emotion experienced. These two studies indicate a likely relationship between contact and specific intergroup emotions to explain the quality of cross-group relationships.

The relationships between intergroup contact, specific emotions, and behaviours

Bearing in mind the relationship between contact and specific emotions, it is important to also consider the relationship between specific emotions and behaviours. As the Cottrell and Neuberg (2005) found that specific emotions are likely correlated with specific behaviours, combining specific emotions into positive and negative emotion constructs means the nuanced understanding of how these specific emotions drive intergroup contact effects may be lost. Feelings of disgust, anger, anxiety, or sympathy towards an outgroup, for example, might lead to very different action tendencies (DeSteno et al., 2004).

Few studies have considered the relationships between contact, specific emotions, and behaviours. One rare exception is the research of Kenworthy et al. (2016). In study 2 the authors found that, among Catholic and Protestant university students, positive (cheerful and

happy) and negative (anger, contempt, and anxiety) intergroup emotions mediated the relationship between cross-group friendship and positive and negative behaviour tendencies. Observing cross-group friendships can serve as an additional and vicarious means of measuring contact or the extent to which ingroup individuals interact with outgroup members (Davies et al., 2011). In the results of the Kenworthy et al. study (2016), positive emotions (cheerful and happy) were collapsed into a single construct; they positively predicted positive behavioural tendencies and outgroup attitudes and negatively predicted avoidance tendencies (though to a lesser degree). Importantly, however, the negative emotions were maintained as separate constructs. Anger most strongly predicted confrontation tendencies, more strongly than avoidance tendencies. Anger was not associated with positive tendencies (such as the desire to talk to outgroup members and find out more about them). Contempt predicted both confrontation but not avoidance tendencies, and anxiety predicted avoidance but not confrontation tendencies. These findings illustrate that exploring the specific emotional consequences of intergroup contact would allow not only for evaluating emotional valence but also for predicting a range of behavioural reactions to an outgroup (e.g., approach and affiliation, confrontation and attack, or avoidance and separation).

Similarly, in study 2 Kauff et al. (2017) found that chronic intergroup emotions among German nationals were directly associated with both approach (i.e., aggression) and avoidance action tendencies towards Turkish migrants living in Germany. Chronic anger was directly associated with aggression and avoidance tendencies among the outgroup participants. Chronic fear was only directly associated with avoidance tendencies. Again, these results reveal that different intergroup emotions predict different behavioural reactions to the outgroup. These studies underline the importance of considering discrete intergroup emotions for understanding the effects of intergroup contact experiences on behaviour directed at outgroup members. Taken together, this research raises the question of whether

negative contact works the same pathways as positive contact or whether specific emotional processes (such as anger, fear, and disgust) explain negative contact effects.

In response to this question one study has begun to investigate the link between target-specific emotions and prior contact history. Seger et al. (2017) hypothesised that specific emotions are likely to be group specific and related to contact experiences and as such might account for the processes underlying the effect of contact on prejudice. When investigating contact as a predictor of prejudice towards gay men, Seger et al. (2017) found that the relationship between contact and prejudice was only mediated by increased levels of a positive emotion (admiration) and decreased levels of a threat-based emotion (disgust). Other negative emotions, such as fear and anger, were not significant mediators of this effect. Whereas in the case of ethnic intergroup relationships, only increased levels of a positive emotion (admiration) and decreased levels of the negative emotion anger (not fear nor disgust) mediated the contact–prejudice relationship. These findings indicate not only that outgroup-threat-specific emotions (e.g., anger or disgust) mediate effects of contact on attitudes toward those outgroups (with several different target groups) but also those positive emotions have a role to play in the same relationship.

Summary and conclusions

In summary, the literature from intergroup contact, intergroup threat, and intergroup emotion theory as well as the literature on the socio-functional approach to prejudice indicate that specific (discrete) emotions are likely to be group specific and related to contact experiences. Taken altogether, one might conclude that target- or outgroup-specific emotions may account for the processes underlying the effect of contact and that these emotions could account for diverse target-specific intergroup behaviours. Additionally, recent developments in intergroup contact research indicate that the effects of negative contact are not simply the inverse of those of positive contact; the phenomenon appears to be more complicated

(Barlow et al., 2012, 2019; Schäfer, Kros, et al., 2021). For example, evidence from Barlow et al.'s (2019) threat matching hypothesis suggest that specific positive and negative feelings about out-groups may be tied to qualitatively distinct contact experiences. It is therefore important further research considers the independent effects of both positive and negative contact when clarifying when and which emotions people rely on to infer how they feel and how they may behave towards a specific outgroup.

There is some agreement that affective mechanisms underlie the effects of intergroup contact on behaviour intentions (Pettigrew & Tropp, 2006; Swart et al., 2011), especially in the case of intergroup anxiety (Stephan et al., 2002). However, little attention has been paid to the possibility that these affective mechanisms could be target specific. This possibility must be considered because specific emotions likely drive specific behaviour intentions that function to deal with the threat at hand. In other words, threat-based (specific) emotions lead to different negative behaviours intended to support people to thrive and meet their ingroup goals.

The threat-matching hypothesis

As the preceding research illustrates, the relationships between contact, specific emotion and behaviour have been neglected. To remedy this neglect, I propose a novel the threat-matching hypothesis. The threat-matching hypothesis draws on the models of outgroup-specific social perception discussed, to predict that the emotional processes underlying contact effects depend on the specific threat posed by the outgroup. Evidence from the socio-functional approach to prejudice (Cottrell & Neuberg, 2005) indicates that rather than reducing global negative feelings (e.g., disliking) emerging from a universal threat, intergroup contact processes are more nuanced and are determined by the target outgroup. Also, prior research has established that a history of positive intergroup contact generally reduces threat perception (Aberson, 2019). The threat-matching hypothesis expects

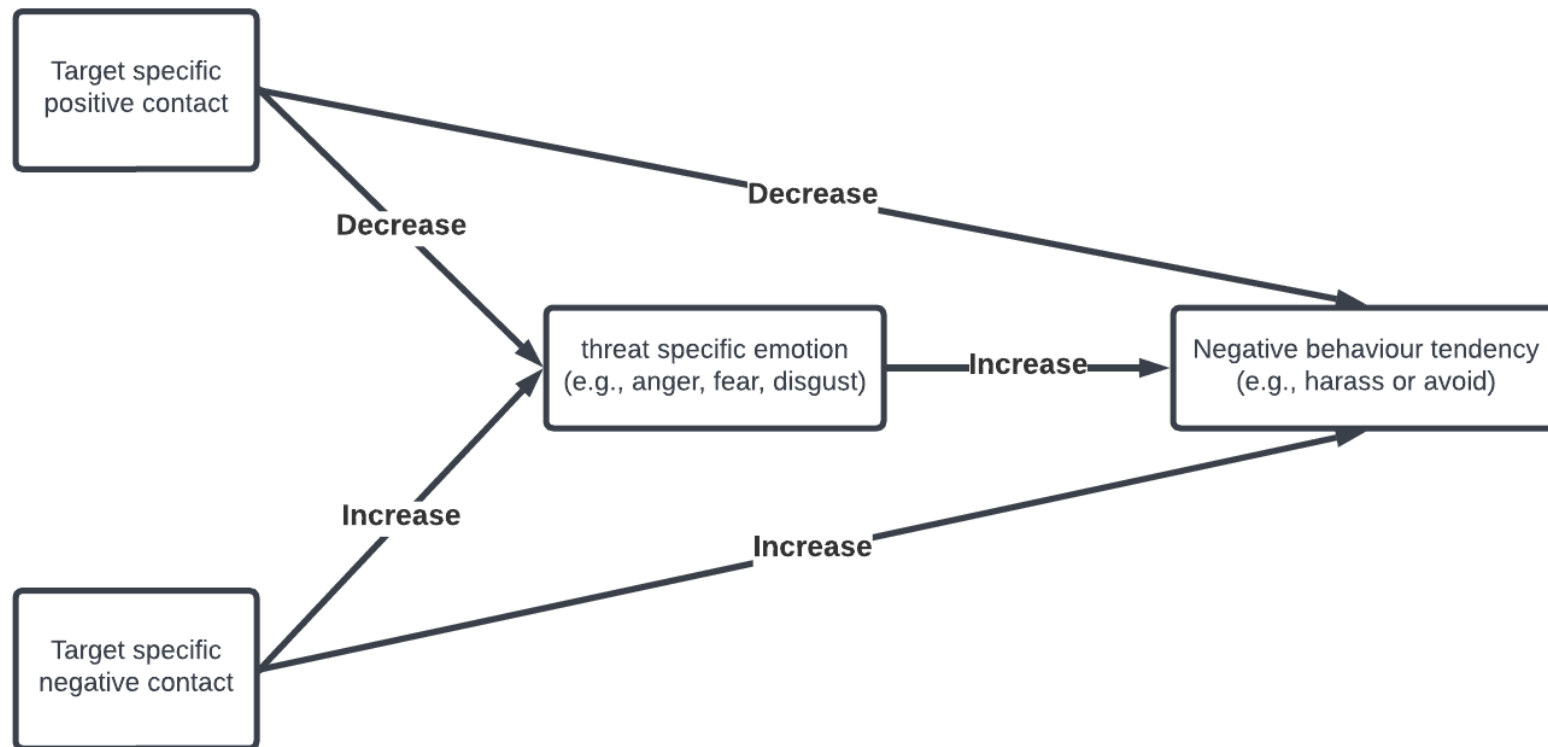
that past experiences of positive contact with a target group will be associated with a reduction in the specific negative emotions that can motivate specific negative threat-coping behaviours. Negative contact, meanwhile, is expected to be associated with an increase in the specific negative emotions that may motivate the same negative intergroup behaviours. The pathways of this threat-matching hypothesis are illustrated using a simple mediation model in Figure 3.

Affect matching and threat matching

To investigate threat matching, it is also necessary to first consider affect-matching. The initial affect-matching evidence from Barlow et al., (2019) Kauff et al., (2017) and Vistin et al., (2017) all indicate that different strength of associations of positive and negative contact with positive and negative emotions likely exist. By investigating the structural relationships between positive and negative contact, specific intergroup emotions, and threats in this way – affect matching, then threatening matching, it becomes possible to identify the fine-grained mechanism(s) responsible for contact effects. This process simultaneously achieves both a target-specific and an integrated view of the process and of the outcome of intergroup contact, helping to explain target-specific negative behavioural tendencies.

Figure 3

The process model of threat-matching, illustrating the role of threat specific emotions as a mediator of the relationship between the target-specific contact and the behaviour tendency



Aims of Thesis

One of the most consistent findings in intergroup contact research is the effect positive contact has on prejudice (Hewstone & Swart, 2011; Lemmer & Wagner, 2015; Pettigrew & Tropp, 2006). Contact theory shows that one's contact history works to attenuate or exacerbate prejudice most effectively through emotional pathways. Yet after more than 70 years of research, contact theory cannot explain why humans can feel motivated to behave in different ways with different outgroups. The aim of this thesis is to move beyond generalised prejudice by investigating the role target-specific contact plays in shaping specific intergroup behaviour tendencies. Over the following chapters, I describe how I tested the novel threat-matching hypothesis. I systematically investigated how the effects of a person's historical group-specific contact experiences might shape emotional responses to the unique threats different outgroups are perceived to pose. In so doing, I ultimately determine the nature of human bias behaviours towards the different target groups.

The critical review of the intergroup relations literature presented in this chapter challenges the generalised prejudice approach to intergroup relations. When we place sole emphasis on the relationship between contact and prejudice, we overlook the distinctions in how the effects of contact may depend on the specific threat posed by the outgroup, and we neglect how our threat-based reactions might shape our behaviour intentions. In simple terms, the generalised approach to prejudice cannot explain for example, why gay men face heterosexual disgust and social avoidance behaviours (Morrison et al., 2019) while Gypsies, Travellers, and Roma people endure White European anger in the form of violent and abusive treatment (James, 2007). This review draws on and synthesises literature from intergroup threat and intergroup emotion literature to provide a more nuanced understanding of how specific threats and emotions drive intergroup contact effects, which likely shape specific intergroup behaviours. Based on this theoretical analysis, the novel threat-matching

hypothesis is proposed: The emotional processes underlying contact effects depend on the specific threat posed by the outgroup.

Before testing the threat-matching hypothesis, chapter 3 provides initial tests to explore the relationships between intergroup contact and intergroup emotion. Empirical support is found, congruent with Cottrell and Neuberg's (2005) socio-functional approach to prejudice, that different outgroups elicit specific positive and negative ingroup emotions. In line with the "affect matching" hypothesis of Barlow et al. (2019), negative contact with a range of outgroups was found to be more strongly associated with increased negative affect than it was with reductions in positive affect. Conversely, positive contact was associated with greater positive affect than reductions in negative affect. Given these findings, it is argued that the effects of positive and negative contact are separable and uniquely meaningful phenomena and that specific emotional factors are likely at the heart of contact processes and likely explain the effect of specific kinds of outgroup contact on behaviour intentions. Providing support for the threat-matching prediction is the main empirical aim of the present thesis.

Chapters 4 and 5 provide empirical support for the threat-matching hypothesis, which predicts that the emotional processes underlying contact effects depend not only on contact valence but also on the perceived threat posed by the outgroup. The proposed model (see Figure 2) is tested in multiple contexts. Attention is then turned to consider positive and negative contact as moderators of the Cottrell and Neuberg (2005) threat–emotion–behaviour profiles in two separate contexts in chapter 6.

Chapter 3: Initial tests: Testing the relationships between contact and emotion

This chapter presents study 1, which used two empirical tests to explore the relationships between intergroup contact and intergroup emotion. The first tested the affect-matching hypothesis from Barlow et al. (2019). This hypothesis predicts that positive intergroup contact has a stronger association with positive emotions (i.e., admiration) and that negative contact has a stronger association with negative emotions (i.e., anger, disgust, and fear). In other words, positive contact is likely to be more effective at increasing positive feelings than working to reduce negative feeling; contrariwise, negative contact is more likely to increase negative feelings than reduce positive feeling. The second test replicates tests of Cottrell and Neuberg's (2005) hypothesis that different social groups can evoke qualitatively different profiles of emotional reactions. Data from a cross-sectional study of 1200 European American MTurk participant was used to determine how positive and negative contact with four outgroups (Black, Muslim, immigrant people, and Gay men) predicts admiration, anger, fear, and disgust feelings towards those groups. In the first empirical test, the data show strong support for Cottrell and Neuberg's (2005) hypothesis, that social groups arouse different profiles of both positive and negative emotion. Second, the results provide robust support for Barlow et al.'s (2019) affect-matching" hypothesis, and they extend these finding to show not only that positive and negative emotions are affected by contact valence but also that more nuanced, specific emotions are too. For all four outgroups, positive contact was more strongly associated with increased admiration than it was with reduced anger, disgust, and fear. Meanwhile, negative contact was more strongly associated with increased negative affect than it was with reductions in positive affect. Results reinforce the importance of measuring discrete emotions as outcomes in intergroup contact.

Introduction

As discussed in chapter 2, research suggests that intergroup emotion is a critical factor underlying the effects of contact (Pettigrew & Tropp, 2008). Intergroup emotions refer to the specific emotional reactions humans feel towards a particular social group and its members. Prejudice and intergroup emotions are closely related but separate concepts. Prejudice generally describes a person's overall attitude towards a group, such as liking or disliking, whereas intergroup emotions refer to specific feelings towards a group (e.g., anger, fear, or respect). For example, younger people may express a positive prejudice towards elderly people but report feeling the intergroup emotion of pity towards them (Cuddy et al., 2005). Compared to generalised prejudicial attitudes, specific intergroup emotions can reveal a more nuanced, differentiated picture of how a person feels about a particular social group. To understand how contact processes work in relationship with prejudicial behaviours, it is necessary to investigate the associations between prior contact experiences and specific emotional arousal in a diverse range of intergroup relationships. The discrete nature of specific intergroup emotions may help us understand the differences in discriminatory behaviour – for example, explaining why the same individual prejudicial attitudes lead to socially isolating a disabled colleague but verbally abusing an immigrant worker.

Specific intergroup emotions function to direct social interactions

As set out in chapter 2, the socio-functional approach to prejudice (Cottrell & Neuberg, 2005) builds on social identity theory (Tajfel & Turner, 1986) and intergroup emotion theory. Tajfel and Turner's (1986) social identity theory explains that intergroup emotions emerge from the psychological distinctions people tend to make between their ingroup and various outgroups. Intergroup emotion theorists (Fiske et al., 2002; Mackie et al., 2000; Mackie & Smith, 2018) argue that these emerging emotions are functional because they play important roles in directing the social interactions between individuals belonging to

different groups. Different specific emotional reactions are expected to prompt different behavioural reactions. For instance, anger towards members of a social group may provoke an individual to behave aggressively towards members of that group, whereas respect towards members of a social group may stimulate an individual to pursue mutually beneficial interactions with members of that group (Mackie et al., 2000). The socio-functional approach to prejudice proposes that between-group psychological distinctions can manifest as outgroup threat. Cottrell and Neuberg (2005) found that outgroup threat is associated with ingroup-specific, goal-relevant emotional reactions and propose that these reactions function to motivate goal-orientated behaviour to manage the threat at hand. The literature on intergroup emotion theory and the socio-functional approach to prejudice provides compelling evidence that intergroup emotions are functional because they play important roles in the social interactions between individuals belonging to different groups. Nevertheless, the theories do not consider the role of intergroup contact in this process. Yet a plethora of intergroup contact research shows that contact (at least positive contact) works to reduce prejudice most strongly through emotional pathways (Pettigrew & Tropp, 2008; Swart et al., 2011). Taking these classic social psychological theories together, if intergroup contact reduces perceptions of a particular type of outgroup threat, we might expect a decrease in the specific corresponding threat-based emotion. Similarly, if negative contact increases outgroup threat perception, we might expect an increase in the specific threat-based emotion. Therefore, this literature suggests that specific intergroup emotions are functional in directing specific intergroup behaviours.

Positive intergroup emotions broaden social attention.

A key idea in many emotion theories, including Cottrell and Neuberg (2005), is the link between each emotion and a “specific action tendency” (Frijda, 1986; Frijda et al., 1989; Lazarus, 1991). However, positive emotion is less likely to occur in threatening intergroup

situations, and on the surface, positive emotion does not present the same obvious adaptive value as negative-emotion-driven tendencies (Ekman, 1992; Fredrickson, 1998; Lazarus, 1991). Conversely, the broaden-and-build theory of positive emotion (Fredrickson, 1998) posits that positive emotions serve to broaden an individual's momentary thought-action repertoire, potentially building an individual's physical, intellectual, and social resources. Positive emotion may play an important role in the effects of contact on group relationships; broadened social attention has been shown to reduce distinctions between different groups (Dovidio et al., 1998). However, positive emotions are fewer and less differentiated than negative emotions (de Rivera, 1989), an imbalance that is reflected in English-language emotion expressions (Averill, 1980). It is challenging to find discrete positive intergroup emotional terms participants can readily identify with. Regardless of that difficulty, Miller et al. (2004) found that prior positive intergroup contact experiences were associated with a reduction in negative emotions and an increase in positive emotions. While contact may reduce threat-related emotions like fear or anger, it is also likely to increase positive emotions and friendly approach behaviours. Intergroup friendship particularly has a known association with feelings of sympathy and admiration towards a friend's social group (Davies, Tropp, et al., 2011). Logically, it can be expected that positive emotions, like admiration for members of a social group, may stimulate an individual to pursue mutually beneficial interactions with members of that group.

Initial tests of the theoretical framework

A first step in testing in the relationship between prior contact experiences, outgroup threat, and emotional responses is to set aside prior contact experiences and simply test whether a range of outgroups are assumed to pose unique threats – that is, whether various outgroups can evoke qualitatively different profiles of both positive and negative emotional reactions in ingroup members. The study in this chapter builds on the findings of Cottrell and

Neuberg (2005), in which thinking about a particular group and its members aroused qualitatively different emotions, compared to thinking about other social groups. The study tested the extent to which emotions differ when ingroup members think about meeting people from different outgroups. Unlike Cottrell and Neuberg (2005), the current study considers both positive and negative emotion arousal. As discussed above, threat-based emotions are not the only emotions relevant in intergroup relations; positive emotions are important too. Following Seger et al. (2017), the current study considered the role of one positive intergroup emotion: admiration. In intergroup emotion theory, *admiration* is considered a positive social emotion that group members feel towards outgroups that are perceived as allies (Cuddy et al., 2007) and is one of the emotions linked to forming cross-group friendships (Pettigrew, 1998). Logically, it was expected that the participants would experience both positive and negative specific intergroup emotions.

Intergroup contact and intergroup researchers measure affective outcomes in distinct ways. Contact research typically assesses the emotions experienced within an actual or imagined contact situation, by asking how one would feel when interacting with an individual outgroup member (e.g., Binder et al., 2009; Turner et al., 2007). Intergroup emotion studies, in contrast, have measured more general emotions towards an outgroup – for example, the extent to which one feels angry, afraid, or disgusted about the group as a whole, driven by appraisals of the group (Cottrell & Neuberg, 2005; Miller et al., 2004). Although likely related, these two measurement approaches are not directly comparable. Contact is a key component of threat-matching theory. In the current study, instead of asking participants to think about a social group and its members, participants were asked to what extent they might feel specific positive and negative emotions when meeting a member of a particular social group.

In testing their affect-matching hypothesis, Barlow et al. (2019) explored how both positive and negative contact experiences across racial groups might predict the intergroup emotions of warmth and anger by testing three rival hypotheses. In their first hypothesis, it was supposed that negative contact would be more strongly related to both less warmth and more anger compared to positive contact. Barlow (2012) and Paolini et al. (2010) indicate that there is a negative asymmetry between the impact of positive and negative contact in that negative contact has a stronger effect on prejudice than positive contact. Secondly as Aberson (2015) found, it was alternatively hypothesised that both types of contact are similarly predictive of affective dimensions of prejudice and that there would be no asymmetry. Finally, the third hypothesis theorised that there would be “affect matching”. In other words, negative affect would be strongly associated with negative intergroup contact experiences and likewise, positive effect would be more strongly associated with positive contact.

The three competing hypotheses were tested using data from a large cohort, four-wave survey: the New Zealand Attitudes and Values Study. Survey participants included people who self-identified as Maori, Pacific Islander, Asian, or European, which together closely reflected the New Zealand population ethnic mix. These participants were asked each year for a 4-year period to assess the frequency of “positive/good” and “negative/bad” contact experiences they had with each ethnic group. Intergroup warmth was measured using a feelings thermometer for each participant’s feelings towards each group. Intergroup anger was assessed by asking participants to rate feelings of anger held towards each group. Barlow et al. (2019) carried out 176 asymmetry analyses on their data set using the equation $t = (b_1 - b_2) / SE_{(b_1 - b_2)}$ (Barlow et al., 2012). They compared affect elicited during positive contact and negative contact between each of the four ethnic groups over the four time periods. In almost every analysis, positive contact was found to be more predictive of increased warmth than negative contact was of decreased warmth. Contrariwise, negative contact performed

better as a predictor of increased anger than decreased warmth. Taken together, the evidence for affect matching (Barlow et al., 2019; Hayward, Tropp, et al., 2017; Kauff et al., 2017; Visintin et al., 2017) shows that positive and negative contact experiences do not compete; instead, they can be considered as separable and uniquely meaningful (Barlow et al., 2019), with each valence of contact experience associated with a specific array of emotion. The Barlow and colleagues (2019) findings raise the question of whether negative contact works the same pathways as positive contacts and whether specific emotional process (e.g., anger, fear, disgust, or admiration) can explain negative contact effects.

Overview of the present research

The aim of the first study of this thesis was to conduct two initial empirical tests of key elements relating to the theoretical framework. The theoretical framework supports the proposition that we may explain differences in intergroup behaviour intention because the emotional processes underpinning contact experiences may depend on the specific threat posed by an outgroup. First, the study establishes, in line with Cottrell and Neuberg's (2005) socio-functional approach to intergroup emotion, that outgroups presumed to pose a threat do indeed arouse an array of specific ingroup emotions. These emotions were expected to vary significantly depending on the outgroup considered. Second, the study investigated the emotional mechanisms through which both positive and negative contact exert their effects on outgroup stances to establish whether the effects of positive and negative contact are dissimilar, as Barlow et al.'s (2019) affect-matching hypothesis proposes. A single study was used to test these two theoretical elements. The study considered the relationships between participants' positive and negative contact experiences with four different outgroups (Black people, Muslims, gay men, and immigrants) and the arousal of four specific intergroup emotions (anger, fear, disgust, and respect).

The first test builds on the Cottrell and Neuberg (2005) and seeks to replicate Cottrell and Neuberg (2005) findings that different groups arouse qualitatively arrays of specific intergroup emotions (admiration, fear, anger, and disgust) experienced when thinking about meeting people from one of four different outgroups (Black people, Muslims, Gay men, and immigrants). In line with the socio-functional-threat-based approach to prejudice, prior research has found that certain groups are heuristically associated with safety threat in relation to their perceived ability to exert physical harm; such groups include Muslims (Abrams et al., 2017) and Black people (Cottrell & Neuberg, 2005). It was expected that these two outgroups would elicit fear in a White, non-Muslim American population. In different ways, gay men have been seen as posing a contamination threat towards heterosexual Americans, arousing disgust (Cottrell & Neuberg, 2005; Morrison et al., 2019). Likewise, because immigration is controversial in the United States and because many Americans believe that immigrants pose threats to a particular way of life and to valued resources (jobs, health, safety, and money), Cottrell and Neuberg (2005) suggest that immigrants are likely to elicit anger in Americans. Moreover, recent theoretical and empirical work has highlighted the potential role of admiration in intergroup relations (Sweetman et al., 2013). Seger et al. found that admiration for several different respondent and target groups explained the effects of contact on prejudice. Therefore, it was expected that when ingroup members thought about meeting people from different outgroups, the array of positive and negative emotions elicited would differ significantly between groups as a response to the presumed threat or opportunity posed by the outgroup considered.

The second test investigated the emotional mechanisms by which both positive and negative contact exert their effects on outgroup stances. This study explored and extended Barlow et al.'s (2019) affect-matching phenomenon in two ways: First, this study tested participants' emotional reactions to a range of outgroup targets beyond ethnic groups (i.e.,

immigrant, homosexual, and Muslim people as well as ethnic minorities, such as Black Americans). Second, this study considered a broader range of specific positive and negative emotions (i.e., admiration, anger, fear, and disgust). The test probed the strength and direction of both positive and negative contact as independent predictors of a range of positive and negative emotions held towards diverse outgroups. It sought to understand if negative contact works the same pathways as positive contact or if specific emotional processes (i.e., anger, fear, disgust, and admiration) explain negative contact effects. The test analysed the ability of positive and negative contact experiences to predict a significantly different array of emotions held towards each of the four outgroups.

Hypothesis 1

If different groups are perceived to pose different threats, they should evoke qualitatively different emotional reactions. In replicating and testing Cottrell and Neuberg's (2005) hypothesis that different groups can evoke qualitatively different profiles of emotional reactions, it is predicted that when ingroup members think about meeting people from different outgroups, the array of positive and negative emotions elicited will differ significantly between groups, reflecting the threat and opportunity posed by the outgroup considered.

Hypothesis 2

In line with the affect-matching hypothesis, it was predicted that prior positive intergroup contact experiences would have a disproportionately stronger relationship with (increasing) the positive emotion admiration than with (decreasing) negative emotion towards a range of outgroups. Similarly, it was predicted that negative contact experiences would have a disproportionately stronger association with (increasing) the negative emotions anger, disgust, and fear than with (decreasing admiration, felt towards a range of outgroups (Barlow et al. 2019).

Method

Participants

A power analysis was conducted in G*Power (Faul et al., 2009) to determine the sample sizes necessary for the study. The linear multiple regression was selected: fixed model, R^2 increase option to specify a model with two tested predictors and eight total predictors. Assuming a small-to-medium effect size ($f^2 = .04$) and a desired power of 80%, we sought to recruit > 976 participants (244 participants per target outgroup). A total of 1551 participants, 764 males, 786 females, and nine ‘prefer not to disclose sex’ individuals were recruited from Amazon’s MTurk system, under the restriction that they were US residents, spoke English as their first language, and had at least a 95% task approval rating for their previous tasks (known as Human Intelligence Tasks – HITs). A total of 365 participants were excluded from the study; details of specific participant characteristics and exclusions can be found in Table 1. Participants ($N = 1186$) were randomly assigned to evaluate one in four of the target outgroups and were paid \$0.20 upon a successfully completed HIT. The age range for the total sample was 18–87 years ($M = 38.10$, $SD = 12.16$, 594 females).

Table 1*Participant characteristics by target group*

Target group	Participants	Age range	Mean	Std Dev.	Exclusions
Gay men	270 (161 male)	18–71	36.37	11.05	37 participants were excluded as stated they were homosexual or bisexual
Black people	513 (248 male)	18–72	38.00	12.24	176 participants were excluded as stated they had non-White ethnicities.
Immigrant people	357 (145 male)	18–77	37.44	11.69	118 participants were excluded as stated they has an immigrant status
Muslim people	411 (210 males)	18–87	37.01	12.36	4 participants were excluded as reported an Islamic faith.

Procedure

The study was advertised as a survey exploring social attitudes and experiences of meeting people. All participants responded to an identical questionnaire of 29 multiple choice questions, for which only the target outgroup (gay men, Black people, immigrants, and Muslims) varied. First, participants were asked to report their experiences of both positive and negative contact with the target outgroup. These experiences were measured as two separate constructs using three items adapted from Meleady and Vermue (2019). Positive intergroup contact was measured by participants indicating how often they had experienced positive interactions with the target outgroup (from 1 = *never* to 7 = *very often*) specifically: *pleasant contact*, *positive experiences*, and *friendly contact*. Likewise, negative intergroup contact was measured by participants reporting how frequently they had had negative interactions with the target outgroup, including *unpleasant contact*, *negative experiences*, and *unfriendly contact*. Positive and negative contact items were presented to participants in randomized order. The reliability of the positive and negative contact scales had good internal consistency, as shown in Table 2.

Table 2

Cronbach alpha coefficients for the positive and negative contact scales by condition

Target outgroup	Cronbach Alpha Coefficient	
	Positive Contact Scale	Negative Contact Scale
Gay men	.93	.94
Black people	.93	.93
Immigrants	.96	.95
Muslims	.94	.94

Next, participants reported how they would feel if they were to meet a person from the target group by recording to what extent they anticipated feeling four discrete emotions (*admiration*, *anger*, *fearful* and *disgust*). Cottrell & Neuberg (2005) designed these affect questions with two related emotion labels in the same question (e.g., respect and admiration to measure the construct *admiration*) to gain the conceptual breadth and reliability of a multi-item scale. This study followed the approach of Seger et al. (2017), where each emotion construct was measured using two separate items, one in each question, with the phrasing “In general, to what extent do you anticipate feeling [*admiration*] if you were to meet a [*person from the target outgroup*]?” with a response scale anchored at 1 (*not at all*) and 7 (*very much*). The pairs measured were *admiration* (admiration + respect); *anger* (anger + resentful); *fear* (fearful + anxious); and *disgust* (disgust + sickened). The order of the emotion measures was randomized for each respondent.

Data preparation

In data preparation, a Pearson correlation between items was carried out to investigate the strength of the relationship for each pair of emotion items in each study. Descriptive statistics and the results of these correlations are set out in the table 3.

Table 3 *Descriptive statistics and Pearson product moment correlations for all studies and emotion variables*

Outgroup	Variables	Mean	(SD)	1	2	3	4	5	6	7
Gay	1. Admiration	3.64	(1.82)							
	2. Respect	4.79	(1.70)	.63**						
	3. Anger	1.85	(1.57)	.21**	-.08					
	4. Resentful	1.84	(1.49)	.27**	-.01	.83**				
	5. Fearful	1.92	(1.61)	.19**	-.06	.89**	.89**			
	6. Anxious	2.21	(1.70)	.14*	-.09	.72**	.74**	.75**		
	7. Disgust	2.10	(1.73)	.0	-.24**	.83**	.73**	.78**	.71**	
	8. Sicken	1.98	(1.65)	.08	-.17**	.84**	.78**	.84**	.75**	.86**
Black	1. Admiration	3.77	(1.71)							
	2. Respect	4.88	(1.57)	.57**						
	3. Anger	2.02	(1.67)	.16**	-.11*					
	4. Resentful	2.06	(1.66)	.19**	-.09	.83**				
	5. Fearful	2.31	(1.65)	0.08	-.09	.80**	.73**			
	6. Anxious	2.52	(1.71)	0.09	-.12*	.71**	.66**	.77**		
	7. Disgust	1.93	(1.62)	.18**	-.07	.89**	.84**	.79**	.71**	
	8. Sicken	1.93	(1.68)	.21**	-.03	.86**	.85**	.74**	.69**	.90**
Immigrant	1. Admiration	4.4	(1.71)							
	2. Respect	3.64	(1.74)	.67**						
	3. Anger	1.99	(1.54)	-.38**	-.20**					
	4. Resentful	2.13	(1.66)	-.42**	-.24**	.86**				
	5. Fearful	2.15	(1.52)	-.27**	-.11	.78**	.74**			
	6. Anxious	2.4	(1.60)	-.23**	-.11	.64**	.57**	.78**		
	7. Disgust	1.88	(1.48)	-.34**	-.18**	.86**	.85**	.80**	.64**	

Muslim	8. Sicken	1.76	(1.42)	-.28**	-.14*	.81**	.77**	.76**	.58**	.85**
	1. Admiration	4.33	(1.74)							
	2. Respect	3.25	(1.73)	.59**						
	3. Anger	2.21	(1.64)	-.22**	0					
	4. Resentful	2.35	(1.75)	-.18**	.04	.82**				
	5. Fearful	2.51	(1.70)	-.30**	-.07	.73**	.68**			
	6. Anxious	2.77	(1.81)	-.26**	-.06	.67**	.65**	.73**		
	7. Disgust	2.16	(1.70)	-.25**	-.03	.81**	.82**	.70**	.66**	
	8. Sicken	2.15	(1.67)	-.21**	.05	.83**	.80**	.66**	.62**	.84**

Notes: ** $p > 0.01$ level (2-tailed), * $P > 0.05$ level (2-tailed). **Bold text** highlights planned emotion pairs

There is some disagreement in the literature about how to measure two-item test reliability (Eisinga et al., 2013). Eisinga and colleagues (2013) argue Cronbach's alpha underestimate reliability, sometimes dramatically and prefer the Spearman-Brown split-half reliability as a more appropriate measure of reliability for two-item tests. Sixteen (four per study) Spearman-Brown split-half reliability tests were carried out to investigate the strength of the relationship for each pair of emotion items (*anger + resentful*, *fearful + anxious*, *disgust + sicken*) and compared to the Pearson product movement correlation co-efficient (table 4).

Table 4: Two- item test reliability for pairing emotion items

Variable Pairs	Gay Men		Black People		Immigrants		Muslim People	
	Coefficients							
	Pearson Product	Spearman-Brown	Pearson Product	Spearman-Brown	Pearson Product	Spearman-Brown	Pearson Product	Spearman-Brown
Admire & Respect	.63	.78	.57	.72	.67	.80	.59	.74
Anger & Resent	.83	.91	.83	.91	.86	.93	.82	.89
Fear & Anxious	.75	.86	.77	.87	.78	.88	.73	.84
Disgust & Sicken	.86	.92	.90	.95	.85	.92	.84	.91

This comparison of coefficients reveals strong relationships between four item pairs: *anger + resentful*, *fear + anxiety*, *disgust + sickened*, but only a strong to moderate relationship between *respect + admire* in the Black and Muslim people condition. The decision was made to take a mean score for each emotional pair to use in the further analysis. Hereafter the emotion variables are identified by the first term in each emotion item pair: *admire* (admire + respect), *anger* (anger + resent), *fear* (fear + anxious) and *disgust* (disgust + sicken).

Identifying specific emotion factors. It was important to both hypotheses that discrete, specific emotions could be investigated. Prior research suggests that emotion can be meaningfully separated into factors, and evidence suggests that unique nervous system responses differentiate the basic emotions (Ekman, Levenson, & Friesen, 1983). Taking Cottrell and Neuberg's (2005) findings that different groups arouse qualitatively different emotions as a theoretical base, confirmatory factor analysis (CFA) was used to compare one-factor and three-factor models of negative emotion. To investigate the interrelationships among the six negative emotion items, the variable target outgroup was set aside, meaning the participants were treated as a single group. The six negative emotion items (i.e., angry, resentful, anxious, fearful disgusted, and sickened) were treated as continuous observed variables. Again, the variable target outgroup was set aside, meaning the participants were treated as a single group. Descriptive statistics for the emotion items, across all conditions, are set out in Table 5. Initial exploratory data analysis revealed that the negative emotion item variables were not normally distributed; therefore, a decision was taken to use a robust maximum likelihood estimator for the analyses.

Table 5

Descriptive statistics for all participants (N = 1,186)

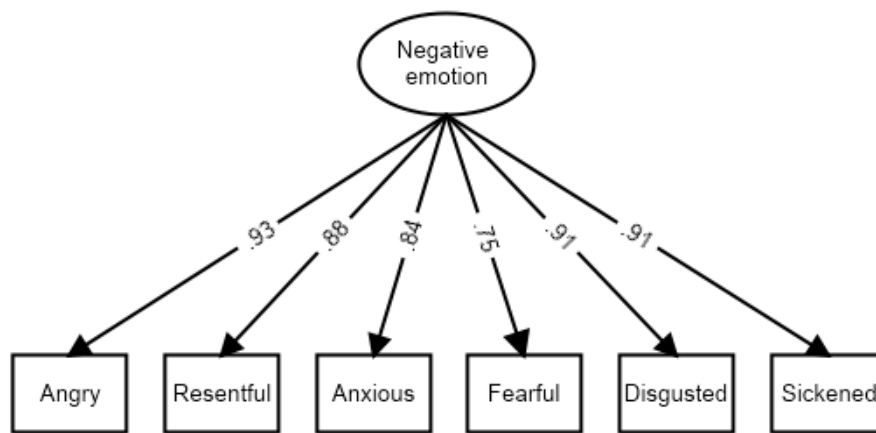
Variable	Mean	SD
Angry	2.04	1.62
Resentful	2.13	1.67
Anxious	2.52	1.73
Fearful	2.27	1.64
Disgust	2.03	1.65

The models were fitted using lavaan version 0.6-5 (Rosseel, 2012a) in R version 3.6.1. The one-factor model proposed that all six negative emotion items form a sign factor for negative emotion, whereas the three-factor model indicated that the six items form pairs that could clearly be differentiated into three factors: *anger*, *fear*, and *disgust*. In terms of the fit indices χ^2/df , *Robust RMSEA*, and *Robust CFI*, the two-factor model was a better fit. The statistics for both models are set out in Figure 4. Taken together, these CFA results and model comparison are consistent with discrete emotion theory, indicating that negative emotion can be meaningfully separated into the three factors: disgust, anger, and fear.

Figure 4

Measurement models, empirical fit for a single-factor model of negative emotion compared to a three-factor model for negative emotion

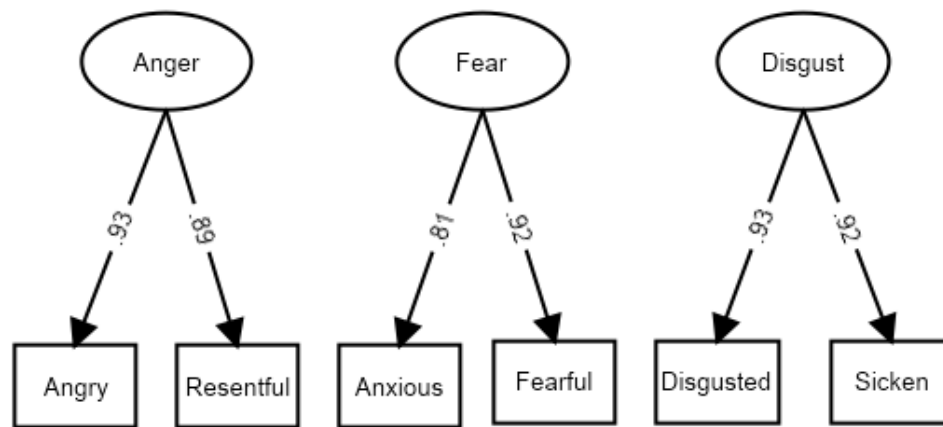
Single-factor model of negative emotion



Fit statistics: Robust $\chi^2 = (9, N = 1,186) = 68.29, p = .00, \chi^2/df = 7.59$, Robust CFI = .97,

Robust RMSEA = .14 90% CI [.11 to .17].

Three-factor model of negative emotion



Fit statistics: Robust $\chi^2 = (6, N = 1,186) = 3.27, p = .78, \chi^2/df = .54$, Robust CFI = 1.00, Robust RMSEA = .00 90% CI [.00 to .05]. *Note. Coefficients are standardized*

Results

Anticipating contact with different outgroups elicits qualitatively dissimilar patterns of ingroup emotional reaction.

In this study, following Cottrell & Neuberg's (2005) hypothesis that people report qualitatively different profiles of emotional reactions towards different groups, a significant interaction between target outgroup and emotion experienced would reveal that four different outgroups can elicit qualitatively different patterns of ingroup emotional reaction. A two-way (outgroup x emotion experienced) analysis of variance (ANOVA) on the mean emotion intensity ratings was conducted. The outgroup factor had four levels (gay men, Black people, immigrants, and Muslims), and the emotion-experienced factor had four levels (admiration, anger, fear, and disgust). Table 6 presents the means and standard deviations for both positive and negative contact and four emotion variables by target outgroup. The dependent variable was the anticipated emotion-experienced intensity score (1 = *not at all*, 7 = *very much*). As

predicted, there was a statistically significant interaction between target outgroup and emotion experienced on the intensity of emotion evoked, $F(9, 3546) = 9.618, p < .001$, partial $\eta^2 = .024$, 90% CI [.01, .03]. Figure 3 illustrates the discrete patterns of emotional reactions elicited by participants towards specific outgroups. Across all four conditions, participants reported different patterns of emotional reactions towards specific outgroups. These findings support the hypothesis of Cottrell and Neuberg (2005) that different groups can evoke discrete emotional reactions.

Figure 5

Discrete patterns of emotional reactions towards specific outgroups

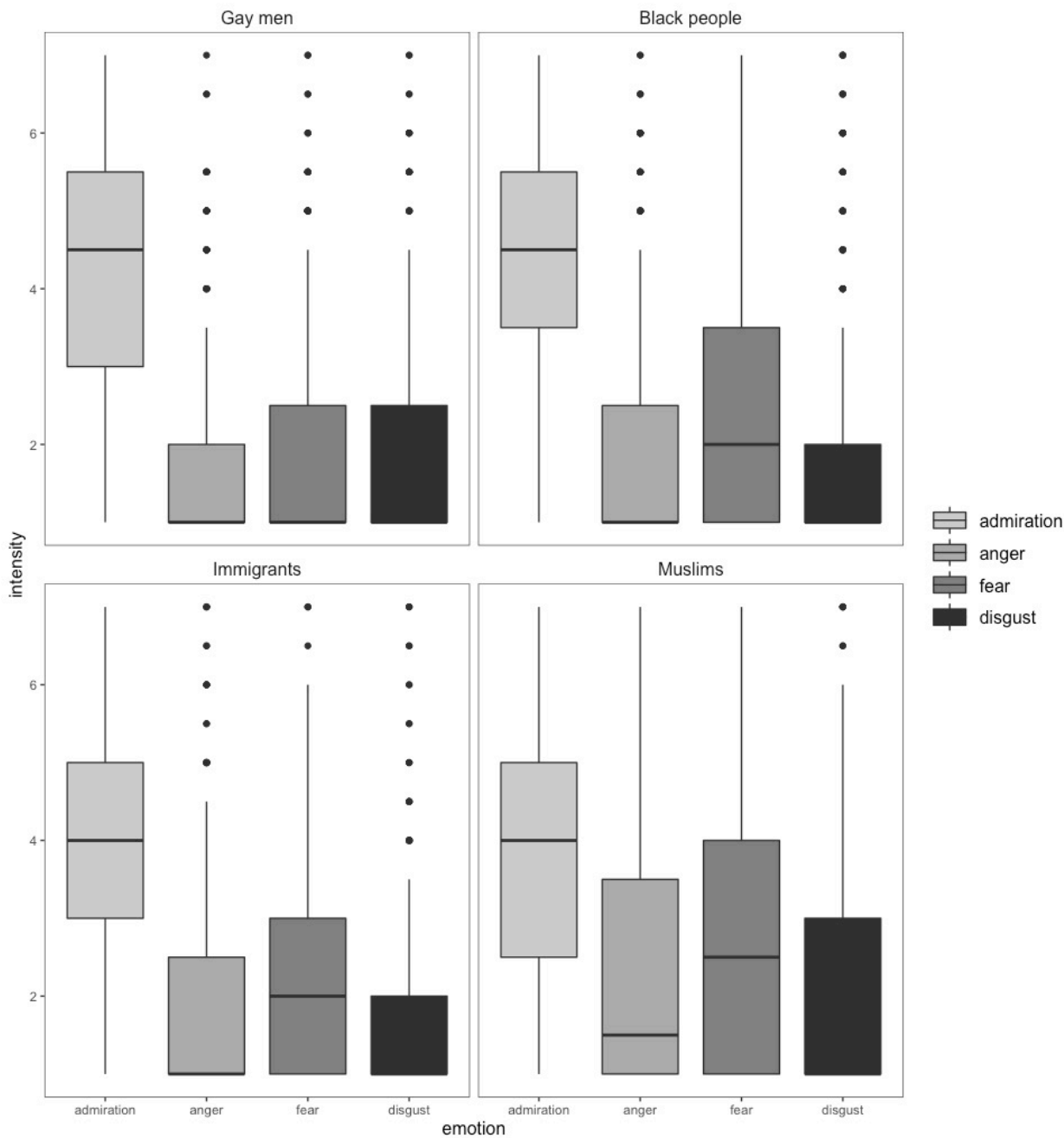


Table 6

Means and standard deviations for both positive and negative contact and four emotion variables by target outgroup

	Gay men		Black people		Immigrants		Muslims	
	<i>N</i> = 233		<i>N</i> = 301		<i>N</i> = 239		<i>N</i> = 413	
Variables	Mean	(<i>SD</i>)	Mean	(<i>SD</i>)	Mean	(<i>SD</i>)	Mean	(<i>SD</i>)
(1) Positive Contact	4.46	(1.55)	5.21	(1.38)	4.35	(1.59)	3.92	(1.72)
(2) Negative Contact	2.28	(1.48)	2.81	(1.38)	2.40	(1.43)	2.36	(1.52)
(3) Admiration	4.21	(1.59)	4.32	(1.45)	4.02	(1.58)	3.79	(1.54)
(4) Anger	1.84	(1.47)	2.04	(1.59)	2.05	(1.54)	2.29	(1.62)
(5) Fear	2.07	(1.55)	2.41	(1.58)	2.26	(1.45)	2.64	(1.63)
(6) Disgust	2.04	(1.63)	1.93	(1.61)	1.81	(1.37)	2.15	(1.61)

Note. *SD* = Standard deviation.

The array emotions aroused are associated with target outgroup contacted.

In line with hypothesis 1, that different groups can evoke qualitatively different profiles of emotional reactions, it was predicted that when ingroup members think about meeting people from different outgroups, the array of positive and negative emotions elicited will differ significantly between groups, reflecting the threat and opportunity posed by the outgroup considered.

Admiration. An ANOVA (analysis of variance) revealed a significant difference in feelings of admiration between the different outgroup targets $F(3, 1182) = 8.15, p < .001$, partial $\eta^2 = .02$. The ANOVA used post-hoc pairwise comparisons with Bonferroni adjustment for multiple comparisons (see Table 7). Participants reported having significantly more admiration for gay men and Black people than Muslims. There was no difference in admiration for gay men and Black people nor for immigrants. There was no difference in

admiration for Black people and immigrants nor for immigrants and Muslims. Black people were the most-admired group, and Muslims were the least-admired group.

Anger. An ANOVA revealed a significant difference in feelings of anger between the different outgroup targets $F(3, 1182) = 4.24, p = .005$, partial $\eta^2 = .01$. Using post-hoc pairwise comparisons with Bonferroni adjustment for multiple comparisons (see Table 6). Participants reported significantly more anger towards Muslims than gay men. There were no significant differences in anger arousal between any other groups.

Fear. An ANOVA revealed a significant difference in feelings of fear between the different outgroup targets $F(3, 1182) = 7.39, p < .001$, partial $\eta^2 = .02$. Using post-hoc pairwise comparisons with Bonferroni adjustment for multiple comparisons (see Table 7). Participants reported significantly more fear towards Black people and Muslims than gay men, and significantly more fear of Muslims than immigrants. There were no significant differences in fear arousal between any other groups. Gay men aroused the least amount of fear, and Muslim people aroused the greatest amount of fear.

Disgust. An ANOVA revealed a significant difference in feelings of disgust between the different outgroup targets $F(3, 1182) = 2.86, p = .036$, partial $\eta^2 = .01$. Using post-hoc pairwise comparisons with Bonferroni adjustment for multiple comparisons (see Table 8). Participants reported significantly more disgust towards Muslim people than immigrants. There were no significant differences in disgust arousal between any other groups. Immigrants aroused the least amount of disgust; Muslims aroused the greatest amount of disgust.

Table 7:

Descriptive statistics and pairwise comparisons for strength of ingroup admiration arousal by each outgroup

Post Hoc Comparisons – Admiration by Outgroup

Comparison								
Outgroup	Outgroup	Mean Difference	<i>SE</i>	<i>df</i>	<i>t</i>	<i>p</i> _{tukey}	Cohen's <i>d</i>	
Gay men	- Black people	-.11	.13	1182.00	-.83	.841	-.07	
	- Immigrants	.20	.14	1182.00	1.40	.500	.13	
	- Muslims	.43	.13	1182.00	3.39	.004	.28	
Black people	- Immigrants	.31	.13	1182.00	2.32	.094	.20	
	- Muslims	.54	.12	1182.00	4.62	< .001	.35	
Immigrants	- Muslims	.23	.12	1182.00	1.83	.259	.15	

Note. Comparisons are based on estimated marginal means. *SE* = Standard error and *df* = degrees freedom

Table 8:*Descriptive statistics and pairwise comparisons for strength of ingroup anger arousal by each outgroup*

Post Hoc Comparisons – Anger by Outgroup

Comparison								
Outgroup	Outgroup	Mean Difference	<i>SE</i>	<i>df</i>	<i>t</i>	<i>p</i> _{tukey}	Cohen's <i>d</i>	
Gay men	- Black people	-.20	.14	1182.00	-1.46	.462	-.13	
	- Immigrants	-.20	.14	1182.00	-1.42	.488	-.13	
	- Muslims	-.44	.13	1182.00	-3.45	.003	-.28	
Black people	- Immigrants	.00	.14	1182.00	-.04	1.000	.00	
	- Muslims	-.24	.12	1182.00	-2.05	.170	-.16	
Immigrants	- Muslims	-.24	.13	1182.00	-1.87	.240	-.15	

Note. Comparisons are based on estimated marginal means. *SE* = Standard error and *df* = degrees freedom

Table 9: *Descriptive statistics and pairwise comparisons for strength of ingroup fear arousal by each outgroup*

Post Hoc Comparisons – Fear by outgroup

Comparison								
Outgroup	Outgroup	Mean Difference	<i>SE</i>	<i>df</i>	<i>t</i>	<i>p</i> _{tukey}	Cohen's <i>d</i>	
Gay men	- Black people	-.35	.14	1182.00	-2.54	.054	-.22	
	- Immigrants	-.19	.14	1182.00	-1.34	.538	-.12	
	- Muslims	-.57	.13	1182.00	-4.47	< .001	-.37	
Black people	- Immigrants	.15	.14	1182.00	1.14	.666	.10	
	- Muslims	-.23	.12	1182.00	-1.90	.228	-.14	
Immigrants	- Muslims	-.38	.13	1182.00	-2.99	.015	-.24	

Note. Comparisons are based on estimated marginal means. *SE* = Standard error and *df* = degrees freedom

Table 10:*Descriptive statistics and pairwise comparisons for strength of ingroup disgust arousal by each outgroup*

Post Hoc Comparisons – Disgust by outgroup

Comparison								
Outgroup		Outgroup	Mean Difference	<i>SE</i>	<i>df</i>	<i>t</i>	<i>p</i> _{tukey}	Cohen's <i>d</i>
Gay men	-	Black people	.11	.14	1182.00	.81	.850	.07
	-	Immigrants	.24	.14	1182.00	1.63	.364	.15
	-	Muslims	-.12	.13	1182.00	-.91	.801	-.07
Black people	-	Immigrants	.12	.14	1182.00	.91	.798	.08
	-	Muslims	-.23	.12	1182.00	-1.91	.223	-.15
Immigrants	-	Muslims	-.35	.13	1182.00	-2.76	.030	-.22

Note. Comparisons are based on estimated marginal means. *SE* = Standard error and *df* = degrees freedom

Which groups do American participants have the most contact with?

Positive contact. An ANOVA revealed a significant difference in positive contact between the different outgroup targets $F(3, 1182) = 39.29, p < .001$, partial $\eta^2 = .09$. Using post-hoc pairwise comparisons using Bonferroni adjustment for multiple comparisons (see Table 9). Participants reported having significantly more positive contact with Black people than any other group and the least positive contact with Muslim people.

Negative contact. An ANOVA revealed a significant difference in negative contact between the different outgroup targets $F(3, 1182) = 7.85, p < .001$, partial $\eta^2 = .02$. Using post-hoc pairwise comparisons using Bonferroni adjustment for multiple comparisons (see Table 10). Participants reported having significantly more negative contact with Black people than any other group and the least negative contact with Muslim people.

Table 11:

Descriptive statistics and pairwise comparisons for frequency of positive contact with each outgroup

Post Hoc Comparisons – Positive contact by outgroup

Comparison								
Outgroup		Outgroup	Mean Difference	<i>SE</i>	<i>df</i>	<i>t</i>	<i>p</i> _{tukey}	Cohen's <i>d</i>
Gay men	-	Black people	-.75	.14	1182.00	-5.44	< .001	-.47
	-	Immigrants	.11	.15	1182.00	0.77	.868	.07
	-	Muslims	.54	.13	1182.00	4.21	< .001	.34
Black people	-	Immigrants	.86	.14	1182.00	6.30	< .001	.55
	-	Muslims	1.29	.12	1182.00	10.81	< .001	.82
Immigrants	-	Muslims	.43	.13	1182.00	3.37	0.004	.27

Note. Comparisons are based on estimated marginal means. *SE* = Standard error and *df* = degrees freedom

Table 12: Descriptive statistics and pairwise comparisons for frequency of negative contact with each outgroup

Post Hoc Comparisons – Negative contact by outgroup

Comparison								
Outgroup	Outgroup	Mean Difference	<i>SE</i>	<i>df</i>	<i>t</i>	<i>p</i> _{tukey}	Cohen's <i>d</i>	
Gay men	- Black people	-.53	.13	1182.00	-4.20	< .001	-.37	
	- Immigrants	-.12	.13	1182.00	-.89	0.809	-.08	
	- Muslims	-.08	.12	1182.00	-.68	0.905	-.06	
Black people	- Immigrants	.41	.13	1182.00	3.28	0.006	.28	
	- Muslims	.45	.11	1182.00	4.10	< .001	.31	
Immigrants	- Muslims	.04	.12	1182.00	.33	0.988	.03	

Note. Comparisons are based on estimated marginal means. *SE* = Standard error and *df* = degrees freedom

Affect Matching: Valence-consistent contact and emotions are tightly linked

In line with the affect-matching hypothesis, it was predicted that prior positive intergroup contact experiences would have a disproportionately stronger relationship with (increasing) the positive emotion admiration than with (decreasing) negative emotion towards a range of outgroups. Similarly, it was predicted that negative contact experiences would have a disproportionately stronger association with (increasing) the negative emotions anger, disgust, and fear than with (decreasing admiration, felt towards a range of outgroups (Barlow et al. 2019). Support for the affect-matching hypothesis would be seen if negative contact had a disproportionately large relationship with the negative emotions compared to admiration and if positive contact had a disproportionately large relationship with admiration compared to the negative emotions. I completed this analysis in two stages. First a series of regression analyses were conducted to determine the extent to which the predictor variables *positive and negative contact* could predict each emotion (*admire, anger, fear, and disgust*). Second, following Barlow et al. (2012), I compared the standardized beta coefficients from the regression analyses to test whether positive contact was a better predictor of warmth than each of the specific negative emotions. Then, I tested whether negative contact was a better predictor of each specific negative emotion than admiration.

To what extent do positive and negative contact predict each specific emotion?

Four sets of hierarchical regression analyses were performed, one set for each of the four outgroups (gay men, Black, Muslim, and immigrant people), meaning 16 tests in total. Participant age and sex were controlled for in step one; older adults generally show less negative emotion arousal and more positive affect arousal than younger adults (Kessler & Staudinger, 2009). Females also show a broad disposition to respond with greater arousal to emotional stimuli, especially unpleasant ones, compared to males (Deng et al., 2016). Following Barlow et al. (2019), it was decided to control for positive emotions while

predicting negative emotions, and vice versa, in order to isolate the positive and negative valence constructs. Positive and negative contact were included in the final step.

Admiration. In the case of *admiration* across the four conditions, the full three-step models to predict the emotion *admire* were all statistically significant (see Appendix A). In the case of gay men, while the overall fit was significant $R^2 = .356$, $F(7,225) = 17.796$, $p < .001$, only the independent effects of positive contact were significant ($t = 8.5$, $p < .001$), but not negative contact ($t = -1.38$, $p = .17$). Positive contact with gay men predicted increased admiration for gay men; negative contact predicted decreased admiration but not significantly so. For Black people, the overall fit was significant $R^2 = .326$, $F(8,292) = 17.67$, $p < .001$, and both the independent effects of positive ($t = 9.39$, $p < .001$) and negative ($t = -3.19$, $p = .002$) contact reached significance. Positive contact with Black people predicted increased admiration for Black people; negative contact predicted decreased admiration for Black people. In the case of immigrants, again the overall fit was significant ($R^2 = .38$, $F(8,230) = 17.81$, $p < .001$), and the independent effects of both positive ($t = 9.36$, $p < .001$) and negative ($t = -2.64$, $p = .009$) contact reached significance. Positive contact with immigrants predicted increased admiration for immigrants, while negative contact predicted decreased admiration. Finally, for Muslims, while the overall model fit was significant ($R^2 = .39$, $F(8,404) = 32.41$, $p < .001$), only the independent effects of positive ($t = 14.06$, $p < .001$) but not negative contact ($t = -1.58$, $p = .12$) were significant. Positive contact with Muslims predicted increased admiration; negative contact predicted decreased admiration but not significantly so.

Anger. In the case of *anger*, again all four models to predict the emotion *anger* were statistically significant (see Appendix B). In the case of gay men, while the overall fit was significant ($R^2 = .600$, $F(5, 227) = 68.14$, $p < .001$), only the independent effects of negative ($t = 17.90$, $p < .001$), not positive ($t = -1.62$, $p = .10$), contact reached significance. Positive

contact with gay men predicted less anger with gay men; negative contact predicted greater anger with gay men but not significantly so. For Black people, the overall fit was significant ($R^2 = .601$, $F(6, 294) = 73.89$, $p < .001$), and the independent effects of both positive ($t = -2.08$, $p = .04$) and negative ($t = 17.39$, $p < .001$) contact reached significance. Positive contact with Black people predicted less anger towards Black people; negative contact predicted greater anger. In the case of immigrants ($R^2 = .54$, $F(6, 232) = 45.83$, $p < .001$), both the independent effects of positive ($t = -3.39$, $p = .001$) and negative ($t = 13.92$, $p < .001$) contact reached significance. Positive contact with immigrants predicted less anger, and negative contact predicted greater anger. Finally, for *Muslims* ($R^2 = .461$, $F(6, 406) = 57.89$, $p < .001$), only the independent effects of negative ($t = 18.08$, $p < .001$), not positive ($t = -1.77$, $p = .07$), contact reached significance. Positive contact with Muslims predicted less anger, and negative contact with Muslims predicted greater anger, but not significantly so.

Fear. In the *fear* regression model, all four models to predict the emotion *fear* were statistically significant (see Appendix C). In the case of gay men ($R^2 = .59$, $F(5, 227) = 66.24$, $p < .001$), both the independent effects of positive ($t = -2.74$, $p = .01$) and negative ($t = 17.60$, $p < .001$) contact reached significance. Positive contact with gay men predicted less fear; negative contact predicted greater fear of gay men. For Black people, the overall model fit was significant ($R^2 = .49$, $F(6, 29) = 47.33$, $p < .001$), and again the independent effects of both positive ($t = -4.24$, $p < .001$) and negative ($t = 13.41$, $p < .001$) contact reached significance. Positive contact with Black people predicted less fear; negative contact predicted greater fear towards Black people. In the case of immigrants ($R^2 = .43$, $F(6, 232) = 29.85$, $p < .001$), both the independent effects of positive ($t = -4.31$, $p < .001$) and negative ($t = 11.68$, $p < .001$) contact reached significance. Positive contact with immigrants predicted less fear; negative contact predicted greater fear of immigrants. Finally, for Muslims ($R^2 = .427$, $F(6, 406) = 50.46$, $p < .001$), again the independent effects of both positive ($t = -4.38$, p

< .001) and negative ($t = 15.88, p < .001$) contact reached significance. Positive contact with Muslims predicted less fear; negative contact predicted greater fear of Muslims.

Disgust. Finally, for the *disgust* regression, all four models to predict the emotion *disgust* were significant (see Appendix D). In the case of gay men ($R^2 = .56, F(5, 227) = 57.44, p < .001$) both the independent effects of positive ($t = -3.00, p = .02$) and negative ($t = 16.64, p < .001$) contact reached significance. Positive contact with gay men predicted a decrease in disgust; negative contact predicted increased disgust. For Black people ($R^2 = .55, F(6, 294) = 60.67, p < .001$), only the independent effects of negative ($t = 15.80, p < .001$), not positive ($t = -1.57, p = .11$) contact reached significance. Positive contact with Black people predicted decreased disgust; negative contact predicted increased disgust. In the case of immigrants ($R^2 = .49, F(6, 232) = 37.79, p < .001$), both the independent effects of positive ($t = -2.98, p = .003$) and negative ($t = 13.53, p < .001$) contact reached significance. Positive contact with immigrant people predicted decreased disgust; negative contact predicted increased disgust. Finally, for Muslim people ($R^2 = .48, F(6, 406) = 62.00, p < .001$), both the independent effects of positive ($t = -2.69, p = .008$) and negative ($t = 18.54, p < .001$) contact also reached significance. Positive contact predicted decreased disgust with Muslims; negative contact predicted increased disgust.

Which is the better predictor of each specific emotion – positive or negative contact?

Next, a series of absolute standardized regression coefficients comparisons were made to determine if positive intergroup contact experiences have a disproportionately strong relationship with the positive emotion admiration, held towards a range of outgroups, compared to negative contact, and vice versa – that is if negative contact experiences have a disproportionately strong association with negative emotions (e.g., *anger*, *disgust*, and *fear*) compared to positive contact. The results of these absolute beta coefficient comparisons (i.e.,

using the equation $t = (b_1 - b_2) / SE_{(b_1 - b_2)}$ following Barlow et al., (2012) are set out in Table 11.

The results of these analyses were consistent with the affect-matching hypothesis. Overall, positive contact was a better predictor of *admiration* than *negative contact*. Specifically, in all four studies, positive contact was a significantly stronger predictor of admiration than negative contact was of the negative emotions anger, fear, or disgust. Conversely negative contact was a significantly better predictor of the negative emotions anger, fear, and disgust than positive contact. Thus, negative contact was significantly and more strongly related to reports of higher levels of anger, fear, and disgust than negative contact was related to reduced levels of admiration. These findings support the affect-matching hypothesis of Barlow et al.' (2019) – namely, that positive intergroup contact has a stronger association with positive emotions (i.e., admiration), whereas negative contact will have a stronger association with negative emotions (i.e., anger, disgust, and fear).

Table 13:

Absolute standardized regression coefficients for positive and negative contact experiences with four outgroups, predicting ingroup emotions

Group	Gay men		Black people		Immigrant people		Muslim people	
	Contact		Contact		Contact		Contact	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Variable	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
Admire	.50 (.06) >	.12 (.09)	.50 (.05) >	.24 (.08)	.52 (.06) >	.20 (.08)	.60 (.04) >	.09 (.06)
Anger	.08 (.05) <	.77 (.04)	.09 (.04) <	.70 (.04)	.18 (.05) <	.66 (.05)	.08 (.05) <	.67 (.04)
Fear	.14 (.05) <	.76 (.04)	.22 (.05) <	.61 (.05)	.26 (.06) <	.62 (.05)	.20 (.05) <	.59 (.04)
Disgust	.16 (.05) <	.75 (.05)	.08 (.05) <	.67 (.04)	.17 (.06) <	.66 (.05)	.12 (.05) <	.67 (.04)

Note. The “<” or “>” symbols indicate whether positive or negative contact is a stronger predictor of the given dependent variable and is significant at $p < .05$

Discussion

The results from this study provide initial empirical support for two key elements of the theoretical framework of this thesis: First, in line with Cottrell and Neuberg (2005), it was found that different social groups can evoke qualitatively different profiles of emotional reactions. The fact that certain outgroups elicit certain emotions does not necessarily mean that contact is going to influence those specific emotions. However, the second test provides evidence that positive and negative feelings about outgroups may be tied to qualitatively distinct contact experiences. In line with the affect-matching hypothesis (Barlow et al., 2019), negative contact had a disproportionately large association with a range of specific negative emotions, whereas positive contact had a disproportionately large association with admiration, a positive emotion. Taken together, both empirical tests support the idea that outgroups can elicit specific emotional reactions and that these specific emotions may be rooted in different contact experiences and as such might therefore account for the processes underlying the effect of contact on prejudice.

The socio-functional approach

In building on Cottrell and Neuberg's (2005) socio-functional approach, it was predicted that different outgroups would evoke qualitatively different profiles of specific positive and negative emotional reactions. The results show that participants reported significantly different patterns of both positive and negative emotional reactions towards the four separate target outgroups. These findings support Cottrell and Neuberg's (2005) assertion that groups believed to pose qualitatively distinct threats to ingroup resources or goals evoke qualitatively distinct and functionally relevant emotional ingroup reactions. The findings confirm that negative emotions (e.g., anger or disgust) may be involved in contact processes. These specific negative emotions are based on the specific types of threat perceived to be posed by an outgroup. Likewise, the findings also indicate that positive

emotions related to status and esteem (e.g., admiration) may be involved in contact processes. Overall, these results further emphasise that the traditional concept of “prejudice” as an outcome measure can mask the rich detail of intergroup emotions people experience when thinking about intergroup contact.

Affect matching

Tests of the affect-matching hypothesis indicate that, as Barlow et al. (2019) suggest, positive and negative contact (like positive and negative emotions) are separable and uniquely meaningful and that these positive and negative phenomena are not in competition (Cacioppo and Bernston, 1994). Positive and negative feelings towards four different outgroups were associated with qualitatively distinct prior contact experiences. It was found that individuals with greater prior positive intergroup contact experiences reported that positive emotions like admiration were aroused more greatly towards a range of outgroups than negative emotions were reduced. Conversely, participants with greater past negative contact experiences reported stronger negative emotion arousal than diminished admiration. These results represent the foundational empirical support for the affect-matching hypothesis, which seeks to explain (at least in part) how emotional factors might be at the heart of the process of the contact effect.

Together, both empirical tests support the key theoretical points that different groups can evoke different profiles of specific positive and negative emotions and that these specific emotions may stem from different contact experiences. As such, they may account for the effect of contact on group relationships. With this said, two limitations of this study must be noted. First, it did not measure participant outgroup threat perceptions nor seek evidence that different groups can evoke qualitatively different profiles of perceived threat. Because perceived threat is a key component of the theoretical framework of this thesis, Study 2a and 2b tested for the presence of intergroup threat. Second, the data were cross-sectional, and it is

therefore not possible to rule out the possibility that people who experience negative contact are also prone to feeling negative emotion or that admiration causes people to seek out more frequent positive contact experiences.

These findings are in line with those of Seger et al. (2017), as discussed in chapter 2. Seger et al. reported that specific emotions are likely to be group specific and related to contact experiences and as such might account for the processes underlying the effect of contact on prejudice. When investigating contact as predicting prejudice towards gay men, Seger et al. found that only increased levels of a positive emotion (admiration) and decreased levels of a threat-based emotion (disgust) mediated this relationship. In contrast, in the case of ethnic intergroup relationships, only the increased levels of a positive emotion (admiration) and decreased levels of a negative emotion (anger) mediated the contact and prejudice relationship. This means that one might expect negative contact experiences to have a disproportionately strong association with the specific negative emotions that are related to the specific type of threat perceived to be posed by the minority group. If this were the case, the patterns of emotions elicited by positive and negative contact might depend further on the threat perceived to be posed by the outgroup (i.e., threat-matching).

Summary and Conclusion

In summary, the results from the study reported within this chapter represent further empirical support that different outgroups elicit specific positive and negative ingroup emotions. At least in part, these emotions explain how emotional factors might be at the heart of the process of the contact effect. These results reinforce the importance of measuring discrete emotions as outcomes in intergroup contact and represent a foundation for the threat-matching hypothesis – namely, that the patterns of emotions elicited by positive and negative contact depend on the threat perceived to be posed by the outgroup.

The following chapter builds on these initial findings and the evidence from Seger et al. (2016) that specific emotions are likely to be group specific and related to contact experiences. Study 2a and 2b investigated whether negative contact experiences have a disproportionately strong association with the specific negative emotions that are related to the specific type of threat perceived to be posed by the minority group – a phenomenon that would be further support for the threat-matching hypothesis.

Chapter 4: Single Group Tests of the Threat-matching Hypothesis

Chapter 4² reports two tests of the novel “threat-matching” hypothesis proposed in chapter 2. This hypothesis draws on models of outgroup-specific social perception to predict that the emotional processes underlying contact effects depend not only on contact valence (i.e., affect matching) but also on the specific threat(s) posed by the outgroup. The two studies in this chapter explore the role of emotion as a mediator of the relationship between intergroup contact and intergroup behaviour in two separate threat contexts: first, the early days of the COVID-19 pandemic, when Chinese people were perceived to pose a welfare threat to a White British ingroup, and second, the immediate aftermath of the 2020 US presidential election, when Democratic Biden supporters were perceived to pose an obstacle threat to political power for Republican Trump voters. These two studies investigated the structural relationships between positive and negative contact, specific intergroup emotions, and threats. This approach made it possible to gain a differentiated and integrated view of the process and outcomes of intergroup contact within two distinct contexts.

Introduction

The socio-functional approach to prejudice (Cottrell & Neuberg, 2005; Neuberg & Cottrell, 2002) postulates that the specific emotions felt towards outgroups are determined by the specific threat the outgroup represents for the ingroup. Distinctions can be drawn between physical threats and threats aimed at valuable resources. Any outgroup perceived to pose a physical welfare threat is likely to arouse intergroup fear, prompting an avoidance reaction and self-protective behaviours. In contrast, when an outgroup poses a threat to economic

² Parts of this chapter from the published manuscript Alston, L., Meleady, R., & Seger, C. R. (2020). Can past intergroup contact shape support for policies in a pandemic? Processes predicting endorsement of discriminatory Chinese restrictions during the COVID-19 crisis. *Group Processes and Intergroup Relations*, 1–11. <https://doi.org/10.1177/1368430220959710>

resources, individuals may experience anger, motivating confrontational behaviour directed at removing the obstacle to the desired outcomes.

These emotional responses can be considered *functional*, which refers to the elicit specific ingroup behaviours intended manage the threat at hand. Prior research has established that intergroup contact reduces general prejudice, at least in part, by reducing threat perceptions (Aberson, 2019). However, the implication of the socio-functional approach is that rather than reducing global negative feelings emerging from a global threat perception, intergroup contact processes are nuanced and determined by the salient threat posed by the outgroup within a given context. As set out in chapter 2, the socio-functional approach describes a set of intergroup threats and connects each to a primary functional emotional reaction and a motivated behaviour in a threat–emotion–behaviour profile (e.g., safety–fear–escape or contamination–disgust–rejection profiles). Study 2a conducted a test for the welfare–fear–avoidance threat profile. Study 2b replicated study 2a, focusing on the obstacle–anger–approach threat profile. Importantly, if the threat-matching hypothesis is supported in study 2a, fear will serve as a functional emotion that mediates the relationship between past intergroup contact and avoidance behaviour. Similarly, in study 2b anger (not fear) will account for the contact–approach behaviour tendency relationship.

Study 2a

Context

In December 2019, an outbreak of viral pneumonia was detected in China caused by a novel coronavirus, SARS-CoV-2 (COVID-19). When this research was conducted, 50,000 cases of laboratory-confirmed COVID-19 had been detected in China, and the virus had begun to spread beyond its origin, with a further 1,200 confirmed cases across 26 countries, including nine in the United Kingdom (World Health Organization, 2020). The British Foreign and Commonwealth Office advised against all but essential travel to mainland China,

but most British lives were uninterrupted. Nevertheless, opinion polls suggested that one in three British citizens already saw the virus as a moderate to high personal threat (Quigley, 2020). The prejudicial linking of infection with ethnic minority status has a long-established history (Ali, 2008), and the surveillance efforts in the early part of the COVID-19 pandemic by public health officials may have inadvertently amplified the stigmatization of Chinese people in Britain. By February 2020, when this study was conducted, the virus (assumed to have originated from a marketplace in China) posed a salient welfare threat to British people. This threat was influencing attitudes and behaviour towards Chinese people. Unwelcoming sentiment and discriminatory behaviour were reported to increase towards Chinese people, including Chinese people being banned from restaurants and hotels (Chung & Li, 2020; Schild et al., 2020). Such acts reflect an avoidant reaction towards presumed carriers of the disease, but they were discriminatory, conflating the pandemic with ethnic and national identity.

The prejudicial linking of infection with ethnic minority status has an established history through the process of stigmatization. Link and Phelan (2001) conceptualise stigmatization as a multi-stage process of marking, stereotyping, separation, status loss, and discrimination. Goffman (1963) states that if someone or something is stigmatized, they are “marked”, or labelled, and unfairly regarded by many people as being bad or having something to be ashamed of. A study of the comparative stigma of HIV/AIDS, tuberculosis, and SARS in Hong Kong (Mak et al., 2006) found that the attributions of controllability, personal responsibility, and blame were applicable in explaining stigmatization. Stigmatization therefore requires a determination that the afflicted are personally responsible for their disease. The second stage of the stigmatisation process involves linking the labelling with the undesirable characteristics to form a culturally held stereotype. In cases of stigmatization involving disease, stereotypes build on the perceived unhygienic or dietary practices of a

particular group – a prejudice that is rooted in developmentalism and colonialism (Escobar, 2011). For instance, Chinese and Southeast Asian “wet markets” have been implicated in SARS (via civets) and H5N1 influenza (“bird flu”) via domestic poultry (Webster, 2004) as well as COVID-19. The third stage proposed by Link and Phelan (2001) is a process of “othering” – namely a socially constructed placing of labelled individuals into distinct categories of “us” and “them”. Evidence from the researchers investigating the stigmatisation of ethnic Chinese people during the 2003 severe acute respiratory syndrome (SARS) outbreak in both Toronto, Canada (Ali, 2008), and New York City, United States of America (Eichelberger, 2007), indicates a process of stigmatization linking Chinese ethnicity with the threat of disease.

As discussed in chapter 2, the socio-functional model identifies five distinct threat–emotion profiles, including a contamination–disgust–rejection profile, which suggests that outgroups elicit disgust when they are perceived to be a source of physical or moral contamination (Cottrell & Neuberg, 2005). Evidence for this profile is mixed, with studies suggesting that both disgust and fear result from contamination threat (Aubé & Ric, 2019; Johnston & Glasford, 2014). According to appraisal theories of emotion (Lazarus, 1991), if an outgroup encounter is appraised as posing danger and if an ingroup member believes they may not survive the uncertain or existential threat before them, anxiety or fright may be a more likely emotional reaction than disgust to prevent contamination. Others have conceptualised intergroup disgust in terms of social contaminants, such as undesired ideas and values (Hodson et al., 2013). For these reasons, I choose to focus on the role of fear rather than disgust in the context of the threat of COVID-19 infection. In this context, it was predicted that positive contact experiences with Chinese people would be associated with a reduction in negative intergroup emotions and a reduction in support for anti-Chinese policies. Negative contact experiences, meanwhile, were expected to be associated with an

increase in negative reactions towards Chinese people. Importantly, if the threat-matching hypothesis was supported, fear (not anger) would serve as the functional emotion that mediates the association between past intergroup contact and an index of avoidance behaviour (i.e., preferences towards Chinese exclusion policies)

Method

Participants

On February 21, 2020, 351 participants from the UK were recruited from an online participant panel, Prolific. Although samples recruited through these platforms are not fully representative, they typically include respondents who vary more broadly in age, level of education, political ideology, and geographic distribution than those recruited from undergraduate student populations (Huff & Tingley, 2015; Levay et al., 2016). The data were analysed using structural equation modelling (SEM), and sample size was determined using Soper's (2019) online tool. An effect size of $d = .20$ was specified, and a desired power of 80% was identified. With 15 indicators, a minimum sample size of 288 was recommended. Eleven participants were excluded because they described their ethnicity as Asian. The final sample consisted of 340 participants (202 female) aged between 18 and 75 ($M = 38.96$, $SD = 12.38$). Most of the participants were White (93.5%).

Procedure

The study was advertised as a survey exploring opinions about COVID-19. The order of all scales was counterbalanced. Participants indicated their attitudes towards Chinese people as well as a range of other social groups (American, Polish, British, Irish, and Spanish) with widely used attitude thermometers ranging from 0 to 10 (Haddock et al., 1993). The attitude thermometers represented a measure of generalized prejudice. Scores were reverse coded such that higher scores reflected higher prejudice. To assess discrete intergroup emotions, participants were asked to indicate the extent to which they felt a variety of

emotions towards Chinese people ('angry', 'infuriated', 'fearful', 'outraged', 'disgusted', 'afraid', 'repulsed', 'sickened', 'grossed out') using 7-point Likert scales (1 = *not at all*, 7 = *very much*; Giner-Sorolla & Russell, 2019).

Intergroup threat. Perceived threat posed by Chinese people was measured with three items adapted from Cottrell et al. (2010). The items focused on threat to physical welfare – specifically, “Chinese people threaten the health of British people like me”, “Chinese people increase the risk of physical illness to British people like me”, and “Chinese people increase the risk of British people like me contracting an infectious disease” (1 = *strongly disagree*, 7 = *strongly agree*, $\alpha = .96$).

Intergroup contact. To measure prior intergroup contact, participants indicated how often they had had positive/good and negative/bad contact with Chinese people on 7-point scales (1 = *never*, 7 = *very often*; Barlow et al., 2012). Such single-item measures of positive and negative intergroup contact are commonly used and correlate strongly with longer measures (Hayward et al., 2018).

Index of avoidance behaviour intention. Finally, participants were asked to what extent they supported nine policy measures the UK government could take to stop the spread of coronavirus (see Appendix E). Five items embedded in this scale concerned measures restricting the activities of Chinese people in the UK, including “Enforce a quarantine of all Chinese nationals in the UK” and “Close all Chinese restaurants” (1 = *strongly oppose*, 7 = *strongly support*, $\alpha = .70$). Four items concerned general restrictions to contain the virus, including “Ban large public gatherings, such as football matches and concerts” and “Close public transportation in UK cities where coronavirus has been reported” ($\alpha = .67$).² To conclude the study, participants provided demographic information and were thanked and debriefed.

Data preparation

Identifying specific emotion factors. To test the hypotheses, it was important that the specific emotions of anger and fear could be investigated. As with study 1, confirmatory factor analysis was used to explore the interrelationships between the six emotion items ('angry', 'infuriated', 'fearful', 'outraged', and 'afraid'). A one- and two-factor model were compared. Descriptive statistics and correlations for the observed items are set out in Table 12. Initial exploratory data analysis revealed that the negative emotion item variables were not normally distributed; therefore, a robust maximum likelihood estimator was used for the analyses. The models were fitted using lavaan version 0.6-5 (Rosseel, 2012) in R version 3.6.1. The one-factor model proposed that all five negative emotion items form a single factor for negative emotion, whereas the two-factor model indicated that the five items could be clearly differentiated into two factors: anger and fear. In terms of the fit indices χ^2/df , Robust RMSEA and Robust CFI, the two-factor model was a better fit. The statistics for both models are set out in Figure 6. Taken together, these confirmatory factor analysis results and model comparison are consistent with discrete emotion theory: Specifically, negative emotion could be meaningfully separated into individual factors for anger and fear. The emotion items for anger (angry, infuriated, and outraged) were averaged to form a composite variable for anger. The emotion items for fear (fearful and afraid) were averaged to form the composite variable for fear.

Table 14:

Means, standard deviations, and correlations with confidence intervals for the emotion items

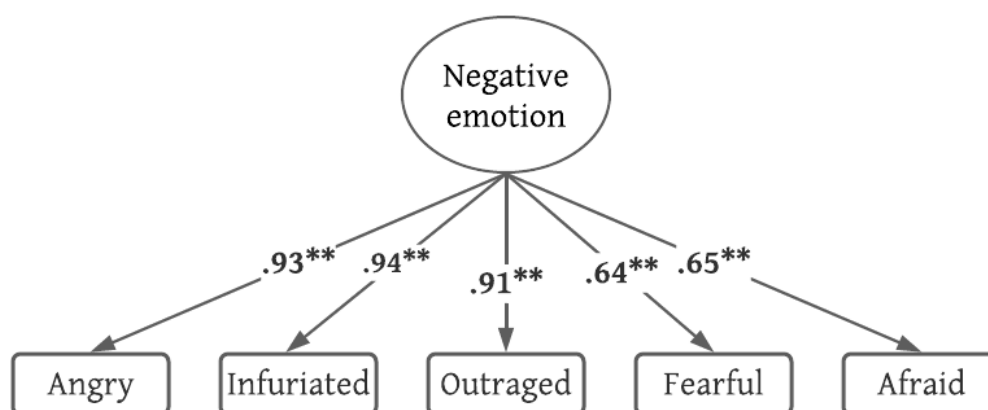
Variable	<i>M</i>	<i>SD</i>	1	2	3	4
1. Angry	1.59	1.22				
2. Infuriated	1.60	1.23	.89** [.86, .91]			
3. Fearful	2.14	1.63	.55** [.47, .62]	.57** [.49, .64]		
4. Outraged	1.60	1.29	.85** [.82, .88]	.84** [.81, .87]	.59** [.52, .66]	
5. Afraid	2.01	1.58	.54** [.46, .61]	.59** [.51, .65]	.91** [.88, .92]	.61** [.54, .67]

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Figure 6

Measurement models, empirical fit for a single-factor model of negative emotion compared to a two-factor model for negative emotion

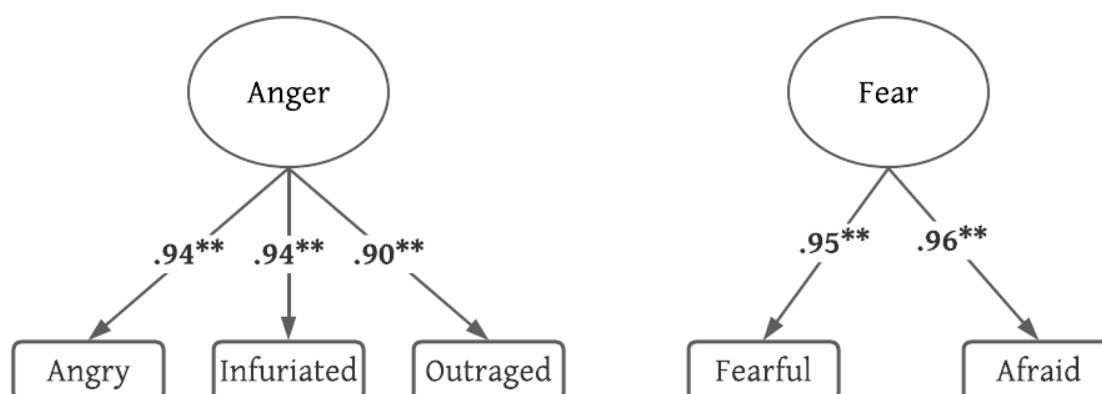
Single-factor model of negative emotion



Fit statistics: Robust $\chi^2 = (5, N = 351) = 457.40, p < .001, \chi^2/df = 91.48$, Robust CFI = .75,

Robust RMSEA = .51 90% CI [.47 to .55].

Two factor model of negative emotion



Fit statistics: Robust $\chi^2 = (4, N = 351) = 20.43, p < .001, \chi^2/df = 5.11$, Robust CFI = .99,

Robust RMSEA = .11 90% CI [.06 to .16].

Note. Coefficients are standardized

Results

Correlations and descriptive statistics

First, the correlations among all variables were examined. These are presented in Table 13 along with descriptive statistics. It was important to the context of the study that perceived Chinese welfare threat was salient. The welfare threat results ($M = 1.59$, $SD = 1.22$) indicated that a welfare threat was salient. Positive contact had a significant negative relationship with Chinese prejudice, welfare threat, fear, anger, and support for Chinese restriction policies. Negative contact, meanwhile, was significantly positively related to prejudice, welfare threat, fear, anger, and support for Chinese restriction policies.

A one-way repeated measures ANOVA revealed a significant difference in prejudice towards the different outgroup targets, as measured with the attitude thermometers, $F(3.92, 1319.09) = 33.73$, $p < .001$, partial $\eta^2 = .09$. Using post-hoc pairwise comparisons, I compared prejudice towards Chinese people to each of the five other national groups with Bonferroni adjustment for multiple comparisons (see Table 14). Results revealed that prejudice was significantly higher towards Chinese people than any other group at the time the study was conducted.

Table 15*Descriptive statistics and correlations for all variables*

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Positive contact	3.95	1.68							
2. Negative contact	1.80	1.16	-.044						
3. Chinese prejudice	2.15	1.63	-.36**	.38**					
4. Welfare threat	1.59	1.22	-.21**	.31**	.55**				
5. Fear	2.86	1.36	-.21**	.25**	.46**	.66**			
6. Anger	3.98	1.46	-.16**	.47**	.49**	.57**	.56**		
7. Support for general restriction policies	3.81	2.43	-.26**	.20**	.41**	.58**	.54**	.44**	
8. Support for Chinese restriction policies	2.42	1.52	-.11*	.05	.17**	.33**	.30**	.22**	.54**

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Table 16

Descriptive statistics and pairwise comparisons for prejudice attitudes held towards Chinese people compared to five other national groups

Nationality	<i>M</i>	<i>SD</i>	Mean Diff	<i>p</i>	95% Confidence Intervals	
					LB	UB
Chinese	3.78	2.41				
Polish	2.79	2.19	.991	< .001	.67	1.31
American	3.31	2.27	.475	< .001	.12	.83
British	2.66	2.06	1.12	< .001	.68	1.56
Spanish	2.88	1.93	.095	< .001	.61	1.20
Irish	2.43	1.86	1.35	< .001	1.02	1.69

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. LB and UB are used to represent lower bound and upper bound 95% confidence intervals.

Preliminary analysis

Affect matching. To test the affect-matching hypothesis, regression analyses were conducted to compare the strength of positive and negative contact effects on the specific intergroup emotions of fear and anger. Results show that positive and negative contact were both significant independent predictors of fear and anger towards Chinese people (see Table 15). A comparison of absolute standardized regression coefficients using the equation $z = \frac{b^1 - b^2}{SE(b^1 - b^2)}$, as per Barlow et al. (2019), showed that negative contact was a significantly stronger predictor of increased anger than positive contact was of reduced anger, $z = 5.04$, $p < .001$. The difference in strength between the negative and positive contact associations with fear – while numerically consistent with the results for anger – did not reach statistical significance, $z = .58$, $p = .56$. Partial support for affect-matching was therefore obtained.

Table 17

Regression models testing the affect-matching hypothesis by examining the association between positive and negative intergroup contact with Chinese people and fear and anger towards this group

Model	<i>b</i>	95% CI for <i>B</i>		<i>SE B</i>	<i>B</i>	<i>R</i> ²	<i>F</i>
		LB	UB				
Fear						.10	19.03***
Constant	2.32***	1.81	2.82	.26			
Positive Contact	-.20***	-.29	-.10	.05	-.20		
Negative Contact	.34***	.19	.48	.07	.24		
Anger						.49	52.75***
Constant	1.13***	.78	1.48	.18			
Positive Contact	-.10*	-.17	-.04	.04	-.14		
Negative Contact	.48***	.39	.58	.05	.46		

Note. *B* and *b* are used to represent standardised beta and unstandardised beta coefficients, respectively. LB and UB are used to represent lower bound and upper bound 95% confidence intervals. * $p < .05$, ** $p < .01$; *** $p < .001$

Main analyses

Testing the threat-matching hypothesis

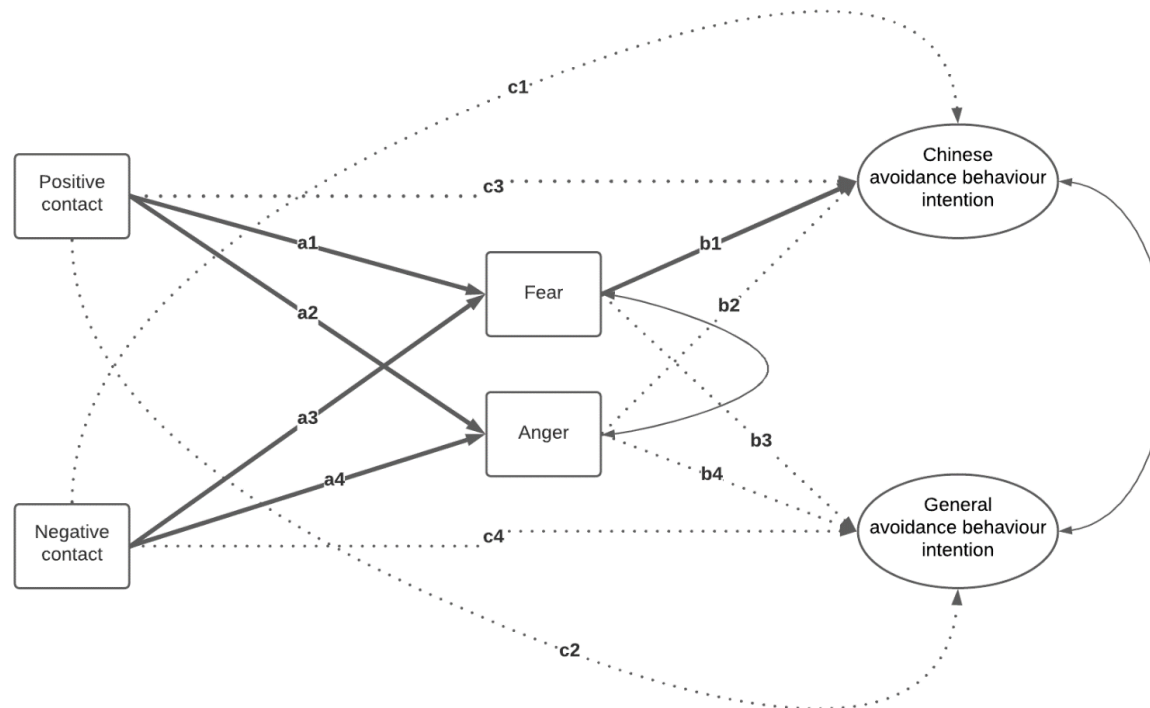
The threat-matching hypothesis predicts that the emotional processes underlying contact effects depends not only on contact valence (affect matching) but also on the specific threat(s) posed by an outgroup. Therefore, as Figure 7 shows, it was expected that prior experience of positive contact with Chinese people would be associated with a reduction in

negative intergroup emotions and a reduction in support for anti-Chinese policies. Negative contact meanwhile was expected to be associated with an increase in negative reactions toward Chinese people. Importantly, if the threat-matching hypothesis was supported, fear (not anger) would serve as the functional emotion that mediates the association between past intergroup contact and policy preferences (the index of avoidance behaviour). In other words, it was expected that the specific emotion fear (not anger) functions in the model to mediate White British people's intentions to avoid Chinese people.³

³ Regression models were run to test the direct and interaction effects of contact and threat on emotion and Anti-Chinese policy support. In all cases the direct effects of contact and threat were significant predictors of emotion and Anti-Chinese policy support. However, the interaction between threat and contact were not significant predictors of emotion nor Anti-Chinese policy support. Full details of these regression models can be seen in appendices O.

Figure 7

Proposed threat-matching mediational model showing the associations between contact, emotion, and avoidance behaviour intention



It is expected that the specific emotion fear (not anger) functions in the model to mediate White British people's intentions to avoid Chinese people. Note. All paths except the dashed lines are expected to be significant. Note. To simplify presentation, the measurement model for behaviour intention is excluded

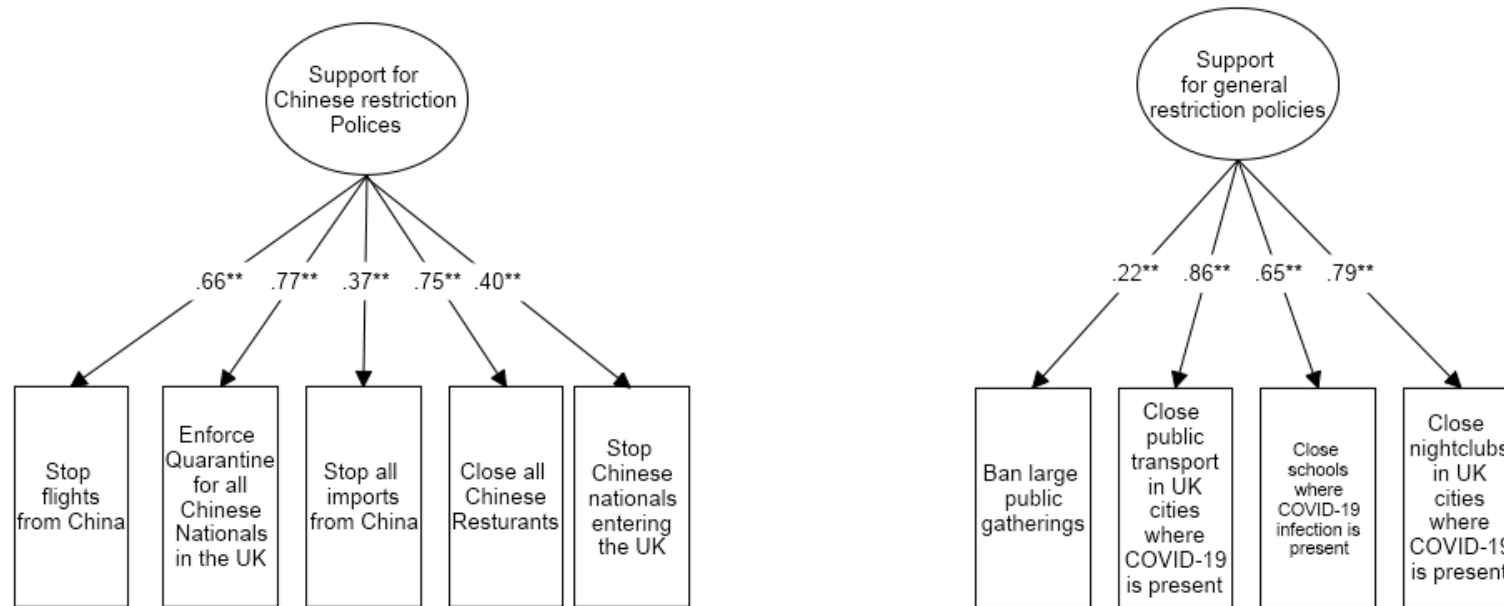
The threat-matching mediational model was tested using SEM analysis with latent variables. The analysis was conducted using the lavaan package (Rosseel, 2012) within R (R Core Team, 2018). The latent factor of support for Chinese restriction policies was indicated by five items, and support for the general restriction policies was indicated by four items. Positive and negative contact and anger and fear were included as manifest indicators. Anger and fear were not normally distributed, so robust maximum likelihood estimation was deployed. The measurement model (reported in Figure 8) showed an acceptable fit to the data. In the full structural model, a parallel mediation model was specified, in which positive contact (X_1) and negative contact (X_2) predicted perceptions of fear (M_1) and anger (M_2) with support for Chinese restriction policies (Y_1) and general restriction policies (Y_2) as the outcome variables. The direct paths from positive and negative contact to policy support were also included. Fear and anger were allowed to correlate, as were the Chinese restriction policies and general restriction policies.

Figure 9 reports the results of this model, which resulted in good model fit, robust χ^2 (54) = 132.63, $p < .001$, χ^2/df ratio = 2.46, Robust RMSEA = .07 [90% CI .52 – .08], SRMR = .04, Robust CFI = .94, $N = 351$. Tests of the indirect effects indicated that both positive and negative contact has a significant indirect effect on support for Chinese restriction policies via fear (positive contact, $b = -.09$, CI = -.14, -.04; negative contact $b = .10$, CI = .05, .16). The indirect effect of contact on support for Chinese restriction policies via anger was also significant, though smaller in magnitude (positive contact $b = -.03$, CI = -.06, -.01; negative contact $b = .11$, CI = .04, .18). The direct effect of negative contact on Chinese restriction policies was non-significant ($b = .02$ [-.09, .12]) when the indirect paths were included. However, the direct effects of positive contact on Chinese restriction policies remained significant ($b = -.13$ [-.24, -.02] when the emotion variables were introduced to the model. The direct effects of positive ($b = -.04$ [-.16, .08]) and negative contact ($b = -.07$ [-.20, .06])

on support for general restriction policies were non-significant, demonstrating that intergroup contact experiences are only relevant for predicting support for discriminatory Chinese restriction policies, and not for predicting support for measures to contain the spread of the virus.

Figure 8

Measurement model, empirical fit for support for Chinese restriction policies and support for general restriction policies



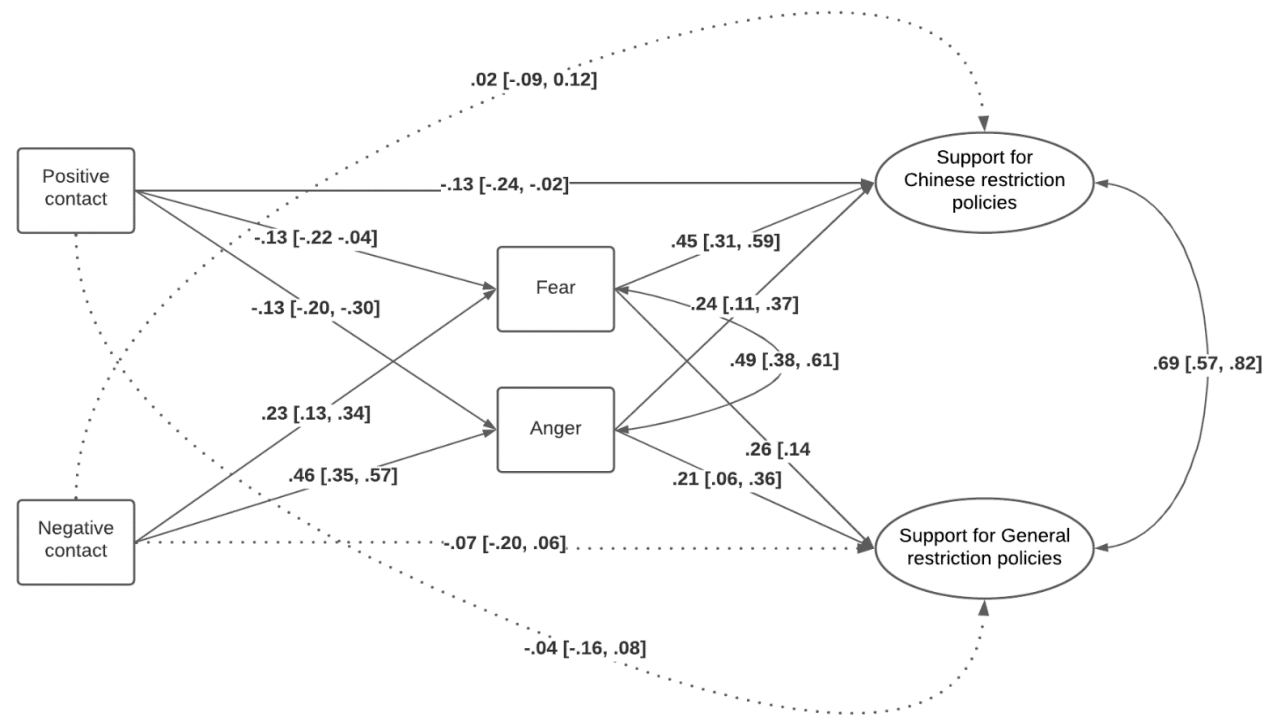
Note. * $p < .05$ ** $p < .001$; Coefficients are standardized

Fit statistics: robust χ^2 (26) = 91.524, $p < .001$, χ^2/df ratio = 3.52,

robust RMSEA = .086 [90% CI 0.052 – 0.079], SRMR = .046, robust CFI = .939.

Figure 9

Empirical fit of structural equation model of the associations between contact, emotion, support for Chinese restriction policies, and support for general restriction policies



Note. All paths except the dashed lines are significant. Coefficients are standardized, 95% confidence intervals are reported in square brackets.

To simplify presentation, the measurement model is shown in Figure 8.

The null hypothesis – that the indirect effects on intergroup contact on Chinese restriction policies via fear and anger are equal – was tested by specifying contrasts in lavaan to compare the indirect effects. The results revealed that the indirect effect of positive contact on Chinese restriction policies via fear was significantly stronger than the indirect effect of positive contact via anger ($b = -.06$, $CI = -.11, -.03$). The indirect effect of negative contact on Chinese restriction policies via fear was also significantly stronger than the indirect effect of negative contact via anger ($b = .02$, $CI = .01, .17$). In other words, while both fear and anger significantly mediated the relationship between distinct types of intergroup contact and support for discriminatory policies to restrict Chinese people in the context of a salient welfare threat, fear was the stronger emotional process underlying these effects.

Study 2a Discussion

This study investigated how experiences of intergroup contact with Chinese people predicted discrete intergroup emotions in the context of the outbreak of COVID-19 and how these emotions in turn predicted support for anti-Chinese restrictions. While positive contact was associated with less support for discriminatory Chinese restrictions, negative contact was associated with increased support for Chinese restrictions. In line with the threat-matching hypothesis, these effects were more strongly driven by fear than by anger. The direct effects of positive and negative contact on support for general restriction policies were non-significant showing that intergroup contact experiences are only relevant to predicting support for discriminatory Chinese restriction policies, and not relevant for predicting support for measures to contain the spread of the virus. To increase confidence in these findings, I also tested a model that included fear, anger, and disgust as parallel mediators. In this model, the indirect effect of positive and negative contact with Chinese people on Chinese restriction policies via fear remained significant, but the indirect effects of anger and disgust were non-significant. This alternative model is reported in Appendix F

There was also partial support for the affect-matching hypothesis (Barlow et al., 2019), with negative contact being more strongly related to increased anger than positive contact was of reduced anger. The association between negative contact and fear was also larger than the association between positive contact and fear, but the difference did not reach statistical significance. In conclusion, fear likely functions as the emotional process that underlies the contact effects between White British and Chinese people, and such fear drives support for discriminatory policies restricting Chinese people in the context of COVID-19. These findings demonstrate that the effects of contact may depend not only on contact valence but also on the specific welfare threat posed by the outgroup.

The implication of these findings is that the processes and outcomes of intergroup contact may vary as a function of the target outgroup and the threat context. The outcomes illustrate that threat appraisals are contextual and responsive to salient or relevant events, such as a pandemic. Importantly, the results observed here – where anti-Chinese discrimination is driven primarily by fear – may not be generalisable beyond the time and cultural context in which they were found. One might expect that the salience of the welfare threat posed by Chinese people waned as the virus became a pandemic. Gray and Hansen (2021) sadly found, however, that the rise in hate crimes against Chinese people in London was not a short-lived phenomenon provoked by immediate fear of the pandemic; in fact, the pandemic led to an increase in targeted hate crime against Chinese people that has endured throughout the lockdown and for many months after. These findings are in line with other research that suggests that world events have the power to change the way particular groups are seen in the long term (Sheridan & Gillett, 2005).

Study 2b

The results from study 2a highlight the importance of examining discrete intergroup emotions, suggesting that the consequences of intergroup contact may depend both on the

type of contact (affect matching) and on the specific threat posed by the outgroup (threat-matching). Study 2a provided a test for the welfare–fear–avoidance threat profile identified by Cottrell and Neuburg (2005). Their socio-functional model (2005) further indicates that anger is aroused when an outgroup is perceived as an obstacle threat to an ingroup’s goal achievement, motivating hostile reactions to remove the obstacle. Research has shown that anger occurs when people are prevented from goal achievement, thus motivating various aggressive and hostile behaviours to remove the obstacle perceived to be preventing goal attainment (Berkowitz, 2012; Carver & Harmon-Jones, 2009). Study 2b replicated study 2a by conducting a second test for the threat-matching hypothesis – this time by focusing on Cottrell and Neuberg’s (2005) obstacle–anger–approach threat profile. If the threat-matching hypothesis were supported it could be expected that when an outgroup poses an obstacle threat, anger (not fear) would account for the relationship between prior intergroup contact and hostile behaviour intentions.

Context

When an individual identifies with a political group, social identity theory (Tajfel & Turner, 1986) posits that partisanship, or an ingroup–outgroup distinction, is formed, triggering positive feelings towards the ingroup and negative evaluations towards the outgroup. Political partisanship is especially acrimonious in the United States of America (Finkel et al., 2020). During political campaigns, individuals constantly receive partisan cues that make group identity highly salient, increase outgroup threat, and exacerbate the political divide (Iyengar et al., 2019). On November 3, 2020, Democrat Joe Biden defeated the incumbent president, Republican Donald Trump, to become the 46th US president. Biden won the popular vote by 7 million votes to triumph in the Electoral College count by 306 to 232. In early December 2020, weeks following the presidential election and at the time study 2b was conducted, President Trump and other Republicans questioned Biden’s victory in public

statements and lawsuits (Shear, 2020). Although these legal challenges were unsuccessful, many Trump supporters were apparently convinced that the election was stolen. A survey in December 2020 found that over 75% of Republican voters found merit in claims that millions of fraudulent ballots were cast, voting machines were manipulated, and thousands of votes were recorded for dead people (Zilinsky et al., 2021).

In the immediate aftermath of the 2020 US presidential election, victory for the Democrats and their candidate Biden likely posed an obstacle threat to four more years of political power for President Trump and his supporters. This salient obstacle threat had an impact on the attitudes and behaviour of Republican supporters, with an increase in hate crimes towards Democrats being reported, including death threats (Riotta, 2020). Cottrell and Neuberg's (2005) obstacle–anger–aggression profile indicates that when an outgroup poses a threat to political power, anger is the functional emotion motivating hostile behaviour intentions directed at removing the obstacle to holding political power. In this context, it was predicted that the Republican Trump voters who had experienced positive contact with Democratic Biden voters would report a reduction in negative intergroup emotions and lower hostile behaviour intentions. Negative contact meanwhile was expected to be associated with an increase in negative reactions towards Democratic Biden voters. Importantly, if the threat-matching hypothesis is supported, this time anger (not fear) would serve as the functional emotion that mediates the association between past intergroup contact and hostile behaviour intentions.

Method

Participants

Between December 3 and 9, 2020, 500 US Republican Party supporters were recruited using CloudResearch Prime Panels (Chandler et al., 2019). To be eligible for the study, participants were required to report that they identified as having voted for the

Republican presidential candidate Donald Trump in the 2020 US general election. This approach was necessary because the Pew Research Center (Keeter et al., 2020) suggests that US polling samples systematically underrepresent some types of conservative voters because these voters are particularly difficult to reach, perhaps because Republicans report a widespread distrust in academic institutions (Motta, 2018). CloudResearch Prime Panels specifically identify and recruit MTurk participants from difficult-to-reach demographic groups, including those with specific voting intentions (Chandler et al., 2019). The data was analysed using structural equation modelling (SEM), and sample size was determined using Soper's (2019) online tool. An effect size of $d = .20$ was specified, with a desired power of 80%. With one latent variable and four observed variables, a minimum sample size of 400 was recommended to test the model structure (Figure 9). To verify participant ingroup identity, participants were asked to what extent they agreed with the statement "I identify with the Republican Party" using 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*). Postmes et al. (2013) indicate that this single-item measure of social identification (SISI) has good convergent and divergent validity as well as good test-retest reliability. Data from 60 participants were excluded because they reported ingroup identification scores below four or completed the questionnaire in less than two minutes. The final sample consisted of 440 participants (female = 253) aged between 18 and 85 ($M = 44.76$, $SD = 15.48$). The majority (92.9%) of participants were White.

Procedure and materials

The study was advertised as a survey of political attitudes. First, to measure generalized prejudice, participants indicated their attitudes towards Republicans (ingroup), Democrats (outgroup), and American citizens (supergroup), using widely adopted attitude thermometers, with scores ranging from 0 to 10 (Haddock et al., 1993). During the analysis, scores were reverse coded so that higher scores reflected greater prejudice. Participants

responded to items on five scales (ingroup identification, perceived threat, discrete emotion, behaviour intentions, and prior contact experiences), which were randomised.

Obstacle threat. Perceived obstacle threat posed by Democrats was measured by means of six pairs of items adapted from Aubé & Ric, (2019) and Cottrell & Neuberg, (2005) using 7-point Likert scales; 1 = *Strongly disagree*, 7 = *Strongly agree*. Two items together related to one element for each of Cottrell and Neuberg's six obstacle threats: (1) threatens ingroup's economic resources, (2) threatens ingroup's property, (3) threatens personal freedoms and rights, (4) threatens not to reciprocate (5) threaten social coordination, and (6) the ingroup mistrusts the outgroup. For instance, two items tapped the personal freedoms and rights element of obstacle threat: "Democrats represent a threat for freedoms of Republicans like me" and "Democrats represent a threat for the rights of Republicans like me". The six pairs of items are set out in Appendix G. The 12 items of the obstacle threat scale were subjected to principal components analysis (PCA). Before performing the PCA, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .6 and above. The Kaiser-Meyer-Olkin value was .96, exceeding the recommended value of .6 and Barlett's test of sphericity reached statistical significance, supporting the factorability of the correlation matrix. Principle components analysis revealed the presence of a single component with an eigenvalue exceeding 1, explaining 76.23% of the variance. The items were averaged to form a composite variable for obstacle threat ($\alpha = .97$)

Intergroup contact. Central to the study of the effects of intergroup contact is the operationalisation or conceptualisation of intergroup contact. It is important to distinguish between the opportunity for contact and actual, direct intergroup encounters (Pettigrew & Tropp, 2006). While opportunities for contact are sometimes considered as an approximation of face-to-face intergroup contact (Prestwich et al., 2008), it cannot be assumed that because

ingroup and outgroup members are in contact, they are interacting with each other (e.g., Khmelkov & Hallinan, 1999). Any investigation into the relationship between intergroup contact and outgroup prejudice needs to include a measure of direct interactions between ingroup and outgroup members. Unlike study 2a, in the current study, intergroup contact was operationalised in two ways: First, it was operationalised in line with common approaches in the intergroup contact literature as the frequency of positive and negative experiences with outgroup members (Barlow et al., 2012; Voci & Hewstone, 2003). Second, besides the question about the frequency of positive/negative intergroup contact (“How often have you had positive/negative contact with Democrats?”), participants were also asked about the pleasantness or unpleasantness of their experiences from intergroup contact (“How often have you had pleasant/unpleasant experiences from meeting Democrats?” (Paolini et al., 2010; Voci & Hewstone, 2003), using 7-point Likert scales (1 = *never*, 7 = *very often*).

Intergroup emotion. To assess the discrete intergroup emotions of fear and anger, participants were asked, “Thinking about recent events, please indicate the extent to which you feel the following emotions towards Democrats”. Participants responded regarding the terms ‘angry’, ‘irritated’, ‘afraid’ and ‘fearful’, using 7-point Likert scales; 1 = *not at all*, 7 = *very much*. Following Aubé and Ric, (2019) and Cottrell and Neuberg, (2005).

Index of hostile behaviour intention. Lastly, participants were asked to what extent they supported eight behaviour intentions towards Democrats (see Appendix H). Six items measured hostile behaviour intentions targeted at obstructing or frustrating the smooth transition of power from the Republican President Trump to the Democratic President-elect Joe Biden, including “I would endorse the use of military force to stop Democratic protestors who support the inauguration of Joe Biden as the president” and “I would rally with other Republicans to back the claims of voter fraud” ($\alpha = .87$). Participants were then asked for demographic information and were thanked and debriefed.

Data preparation

Identifying specific emotion factors. Again, it was important to the hypotheses that the specific emotions of anger and fear could be investigated. As with study 2a, confirmatory factor analysis was used to explore the interrelationships between the four emotion items ('angry', 'infuriated', 'fearful', and 'afraid'). A one- and two-factor model were compared. Descriptive statistics and correlations for the observed items are set out in Table 16. Initial exploratory data analysis revealed that the negative emotion item variables were not normally distributed; therefore, a robust maximum likelihood estimator was used for the analyses. The models were fitted using lavaan version 0.6-5 (Rosseel, 2012a) in R version 3.6.1. The one-factor model proposed that all four negative emotion items form a single factor for negative emotion, whereas the two-factor model indicated that the four items could be clearly differentiated into two factors: *anger* and *fear*. In terms of the fit indices χ^2/df , *Robust RMSEA*, and *Robust CFI*, the two-factor model was a better fit. The statistics for both models are set out in Figure 10. Taken together, these confirmatory factor analysis results and model comparison are consistent with discrete emotion theory, and negative emotion can be meaningfully separated into factors for anger and fear. The emotion items for anger (Angry, Infuriated) were averaged to form a composite variable for anger. Following Aubé and Ric (2019) and Cottrell and Neuberg (2005), the scores of the items angry + irritated were averaged to create the variable for anger, $\alpha = .86$. Then, similarly, the items afraid + fearful were aggregated to create the variable fear, $\alpha = .93$.

Table 18

Means, standard deviations, and correlations with confidence intervals for the emotion items

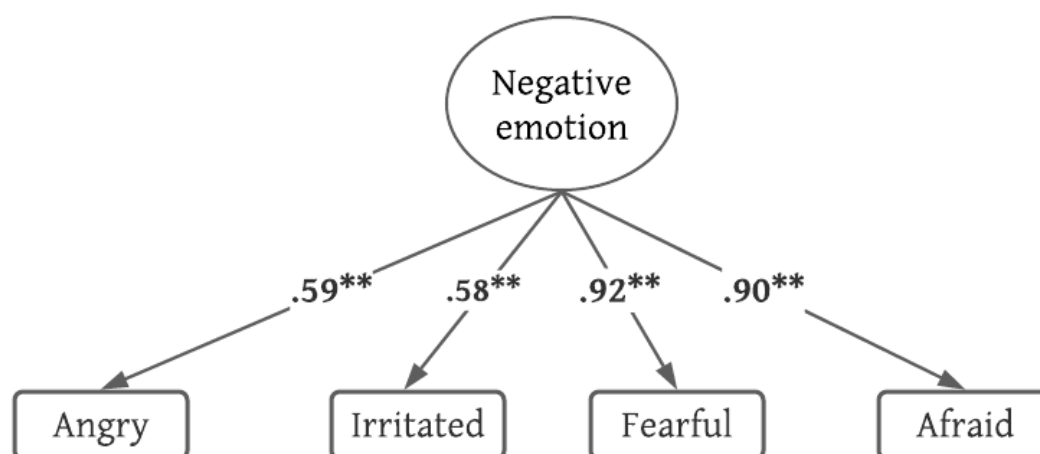
Variable	<i>M</i>	<i>SD</i>	1	2	3
1. Angry	4.42	2.06			
2. Infuriated	4.70	2.06	.77** [.73, .81]		
3. Afraid	3.68	2.16	.50** [.42, .56]	.48** [.41, .55]	
4. Fearful	3.75	2.10	.51** [.44, .58]	.50** [.43, .57]	.84** [.81, .87]

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Figure 10

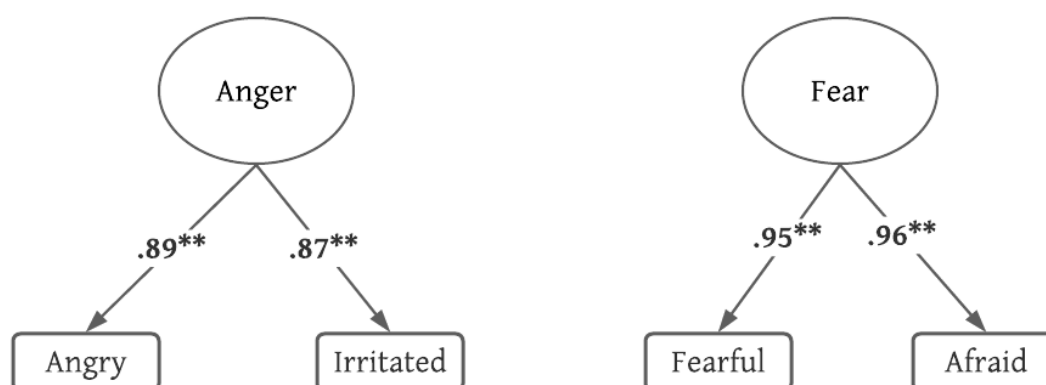
Measurement models, empirical fit for a single-factor model of negative emotion compared to a two-factor model for negative emotion

Single-factor model of negative emotion



Fit statistics: Robust $\chi^2 = (2, N = 440) = 256.53, p < .001, \chi^2/df = 128.27$, Robust CFI = .77, Robust RMSEA = .54 90% CI [.48 to .59].

Two factor model of negative emotion



Fit statistics: Robust $\chi^2 = (1, N = 440) = .06, p = .81, \chi^2/df = .06$, Robust CFI = .1, Robust RMSEA = .0 90% CI [.00 to .08].

Note. Coefficients are standardized

Results

Correlations and Descriptive statistics

First the correlations among all variables were examined. These are presented in Table 17 along with the descriptive statistics. It was important to the context of the study that perceived Democratic obstacle threat was salient. Obstacle threat was reported as $M = 4.95$, $SD = 1.68$, indicating a high level of salience. Positive contact was significantly negatively associated with obstacle threat, anger, fear, and hostile behaviour intentions, while negative contact was significantly positively associated with the same variables. Positive contact was significantly negatively associated with negative contact.

Next, a one-way repeated measures ANOVA was conducted to determine whether there was a statistical difference in feelings of prejudice held towards American citizens, Democrats, and Republicans. The data were not normally distributed. Epsilon (ϵ) was .82, as calculated according to Greenhouse and Geisser (1959) and was used to correct the one-way repeated measures ANOVA. Using post-hoc pairwise comparisons, prejudice towards Democrats was compared to prejudice towards the superordinate group, American citizens and the ingroup Republicans. American citizens, Democrats, and Republicans showed statistically significant different levels of prejudice, $F(1.63, 714.87) = 643.85, p < .001$. partial $\eta^2 = .60$. As Table 18 shows, prejudice held towards Democrats was significantly greater than that held towards American citizens (-4.82, 95% CI -5.23, -4.41) and Republicans (-5.19, 95% CI -5.64, -4.74).

Table 19*Descriptive statistics and correlations for all variables*

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
(1) Positive contact	3.74	1.72							
(2) Negative contact	3.99	1.80	-.10*						
(3) Prejudice	7.03	3.01	-.33**	.20**					
(5) Threat	4.95	1.68	-.15**	.57**	.45**	.47**			
(6) Anger	4.56	1.94	-.24**	.51**	.37**	.34**	.65**		
(7) Fear	3.71	2.04	-.11*	.29**	.20**	.11*	.36**	.55**	
(8) Hostile behaviour intention	3.79	1.67	-.11*	.52**	.12*	.40**	.55**	.43**	.21**

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Table 20

Descriptive statistics for prejudicial attitudes towards each group and pairwise comparisons to Democrats

Group	<i>M</i>	<i>SD</i>	Mean Diff	<i>p</i>	95% confidence interval	
					LB	UB
Democrat	7.03	3.01				
American	2.21	2.25	4.82	< .001	4.41	5.23
Republican	1.83	2.18	5.19	< .001	4.74	5.64

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. LB and UB are used to represent lower bound and upper bound 95% confidence intervals **p* < .05, ** *p* < .01; ****p* < .001

Preliminary analysis

Affect matching. Next, to test the affect-matching hypothesis, two regression analyses were performed to assess the ability of positive and negative contact to predict anger and fear. Results (see Table 19) show that while both positive and negative contact were significant independent predictors of anger towards Democrats, only negative contact was a significant independent predictor of fear towards Democrats. A comparison of absolute standardized regression coefficients was made using the equation $z = \frac{b^1 - b^2}{SE(b^1 - b^2)}$ as per Barlow et al. (2019). This analysis showed that negative contact was a significantly stronger predictor of both increased anger and fear than positive contact was of reduced anger ($z = 5.22, p < .001$) or reduced fear ($z = 3.19, p = .001$). Therefore, the affect-matching hypothesis was supported.

Table 21

Regression models testing the affect-matching hypothesis by examining the association between positive and negative intergroup contact with Democrats and fear and anger towards this group

	<i>b</i>	95% CI for <i>B</i>		SE <i>B</i>	<i>B</i>	<i>R</i> ²	<i>F</i>
Model		LL	UL				
Anger						.30	92.91***
Constant	3.28***	2.76	3.80	.27			
Positive contact	-.22***	-.31	-.13	.05	-.20		
Negative contact	.59***	.44	.61	.04	.49		
Fear						.09	21.96***
Constant	2.77***	2.15	3.40	.32			
Positive contact	-.09	-0.2	.02	.06	-.08		
Negative contact	.32***	0.22	.43	.05	.29		

Note. *B* and *b* are used to represent standardised beta and unstandardised beta coefficients, respectively. LB and UB are used to represent lower bound and upper bound 95% confidence intervals. * $p < .05$, ** $p < .01$; *** $p < .001$

Main analyses

Testing the threat-matching hypothesis. The threat-matching hypothesis predicts that the emotional processes underlying contact effects depend not only on contact valence (affect matching) but also on the specific threat(s) posed by the outgroup. Therefore, as Figure 11 shows, it was predicted that Republican Trump voters with experience of positive contact with Democratic Biden voters would be associated with a reduction in negative intergroup

emotions and lower hostile behaviour intentions. Negative contact, meanwhile, was expected to be associated with an increase in negative reactions to Democratic Biden voters.

Importantly, if the threat-matching hypothesis were supported, anger (not fear) would serve as the functional emotion that mediates the association between past intergroup contact and hostile behaviour intentions⁴.

SEM analysis with latent variables was used to test the threat-matching mediation model. The analysis was conducted using the lavaan package (Rosseel, 2012) within R (R Core Team, 2018). First a measurement model was tested using confirmatory factor analysis. The latent factor for hostile behaviour intention was indicated by six items. The latent factors for positive and negative contact were each indicated by two items: “How often have you had positive/negative contact with Democrats?” and “How often have you had pleasant/unpleasant experiences from meeting Democrats?” Anger was indicated by angry and irritated. Fear was indicated by afraid and fearful. The measurement model (see Figure 10) showed a good fit to the data, robust $\chi^2(67) = 78.68, p = .16, \chi^2/df$ ratio = 1.17, robust RMSEA = .02 [90% CI 0.00 – 0.04], SRMR = .024, robust CFI = .99.

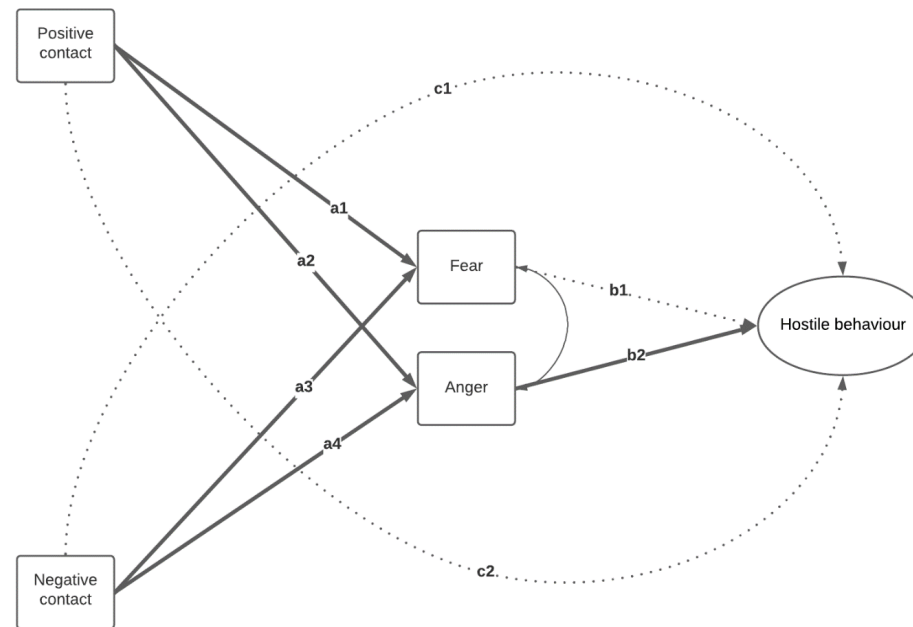
In the full structural model, a parallel mediation model was specified, where positive contact (X_1) and negative contact (X_2) predicted perceptions of anger (M_1) and fear (M_2) with intended behaviour (Y) as the outcome variable. The direct paths from positive and negative contact to hostile behaviour were included. Anger and fear were allowed to correlate. Figure 11 reports the results of this model, revealing a good model fit, robust $\chi^2(67) = 78.68, p =$

⁴ Regression models were run to test the direct and interaction effects of contact and threat on emotion and hostile behaviour intention. In all cases the direct effects of contact and threat were significant predictors of emotion and hostile behaviour intention. However, the interaction between threat and contact were not significant predictors of emotion nor hostile behaviour intention. Full details of these regression models can be seen in appendices O.

.16, χ^2/df ratio = 1.44, Robust RMSEA = .02 [90% CI 0.00 – 0.04], SRMR = .02, Robust CFI = .99, N = 440.

Figure 11

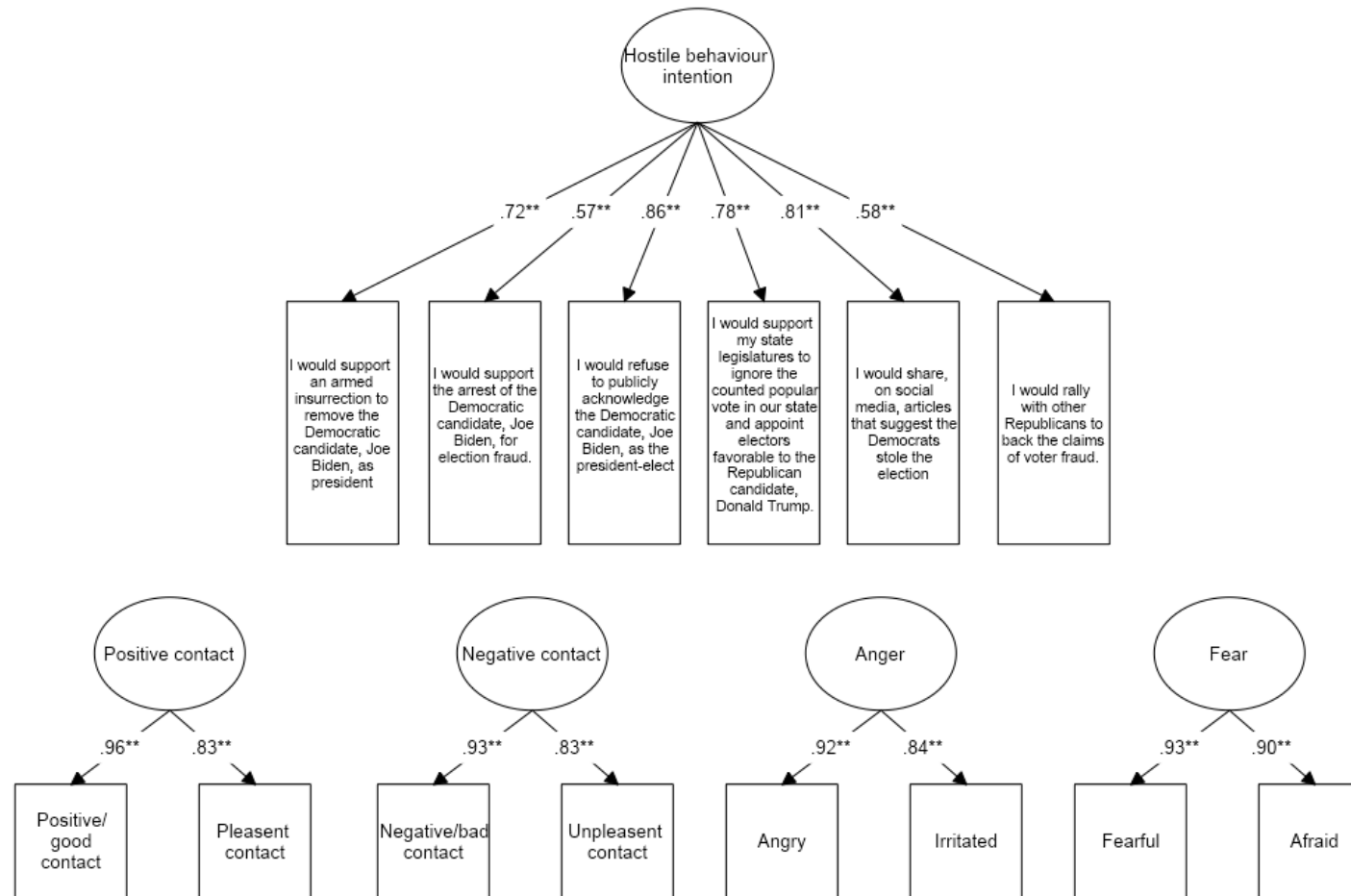
Proposed threat-matching mediational model showing the associations between contact, emotion, and avoidance behaviour intentions.



It is expected that the specific emotion of anger (not fear) functions in the model to motivate Republican hostile behaviour intentions towards Democrats. Note. All paths except the dashed lines were expected to be significant. To simplify presentation, the measurement model for behaviour intention, emotion, and contact is shown in Figure 12

Figure 12

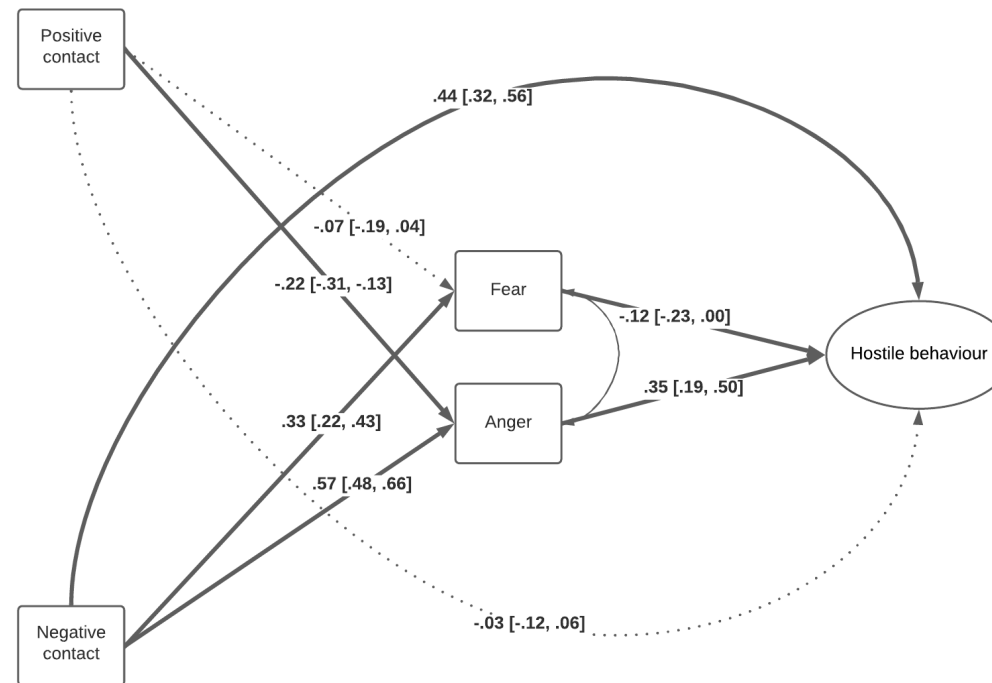
Measurement model, empirical fit for hostile behaviour intention towards Democrats, contact, and the emotion variables



*Note. * $p < .05$ ** $p < .001$; Coefficients are standardized*

Figure 13

Empirical fit of structural equation model of the associations between contact, emotion, and support for hostile behaviour intentions towards Democrats



Notes: All paths except the dashed lines are significant. Coefficients are standardized, 95% confidence intervals are reported in square brackets.

To simplify presentation, the measurement model is shown in Figure 12.

Tests of the indirect effects show that both positive and negative contact had a significant indirect effect on support for hostile behaviour intentions towards Democrats via anger (positive contact, $b = -.08$, [CI = $-.12, -.03$]; negative contact, $b = .20$, [CI = $.11, .28$]). In contrast, the indirect effect of contact on support for hostile behaviour intentions towards Democrats via fear were non-significant (positive contact, $b = .01$, CI = $-.01, .02$; negative contact, $b = -.04$, CI = $-.08, .00$). The direct effect of positive contact on support for hostile behaviour intentions was non-significant when the indirect paths were included. However, the direct effects of negative contact remained significant when the emotion variables were introduced to the model.

Next, contrasts were specified in lavaan to formally test the null hypothesis that the indirect effects on intergroup contact on support for hostile behaviour intentions via anger and fear are equal. The results reveal that the indirect effect of positive contact on support for hostile behaviour intentions via anger was significantly stronger than the indirect effect of positive contact on support for hostile behaviour intentions via fear ($b = -.09$, CI = $-.14, -.03$). Likewise, the indirect effect of negative contact on support for hostile behaviour intentions via anger was significantly stronger than the effect of negative contact on support for hostile behaviour intentions via fear ($b = .24$, CI = $.12, .34$). These findings show that anger (not fear) is the stronger emotional process underlying the relationship between positive and negative contact and underlying support for hostile behaviour intentions.

Study 2 Discussion

This study investigated how the experience of intergroup contact with Democrats predicted discrete intergroup emotion arousal in Republican Trump voters in the context of a threat to power in the aftermath of the 2020 US presidential election. Specifically, this study investigated how these emotions, in turn, predicted hostile behaviour intentions towards Democrats. Positive contact was associated with less hostile behaviour intentions, and

negative contact was associated with greater hostile behaviour intentions. In line with the threat-matching hypothesis, these effects were significantly driven by anger, not fear. Study 2b's results replicate those of study 2a, but this time with a focus on the Cottrell and Neuberg (2005) obstacle–anger–approach threat profile. In this threat profile, the threat-matching hypothesis predicts that the emotion anger, compared to fear, is the stronger emotional process underlying the relationship between positive and negative contact and support for hostile behaviour intentions. The findings of study 2b further demonstrate that the effects of contact may depend not only on contact valence but also on the specific intergroup threat posed by the outgroup. The effects of contact operated via fear in the case of Chinese people in the context of a welfare threat but via anger in the context of Democrats and obstacle threat. This difference illustrates that the processes underlying the effects of contact are likely founded on specific emotional responses that function to elicit specific intergroup behaviours intended to manage the perceived intergroup threat at hand. In other words, the processes and outcomes of intergroup contact likely vary as a function of both the target outgroup and the threat context.

There was also full support for the affect-matching hypothesis (Barlow et al., 2019), with negative contact being more strongly related to both increased anger and fear than positive contact was of reduced anger and fear. Such results further reinforce the importance of examining discrete intergroup emotions, suggesting that the consequences of intergroup contact may depend both on the type of contact (affect matching) and specific threat posed by the outgroup (threat-matching).

Summary and Conclusions

The results from studies 2a and 2b, illustrate how a novel integration of intergroup contact theory with intergroup emotion approaches can provide a nuanced understanding of how specific threats and emotions drive intergroup contact effects. The present findings

recognise that threat appraisals can be contextual and responsive to events such as political events or a pandemic. Such events can influence which intergroup threats are most salient or relevant. The socio-functional threat tradition has assumed threats posed by groups are stable group-level perceptions. The intergroup emotions literature, which is built on cognitive appraisal theories of emotion, has long assumed that specific manifestations of prejudicial emotions are context dependent (Mackie & Smith, 2018; Scherer, 2009; E. R. Smith & Mackie, 2008), and experimental studies have shown that priming different threats elicited by the same outgroup can produce distinct emotional and behavioural responses (Kamans et al., 2011). Importantly, then, one should not necessarily expect the results here – where anti-Chinese discrimination is driven primarily by fear – to generalize beyond the moment in time and cultural context in which they were found. It is very possible that the salience of the welfare threat posed by Chinese people waned as the virus became severe in other part of Europe, and then the UK. Similarly, in November 2020, the US was wracked by political polarization, political institutions were set up against another within the same political system (a Republican president against the Congress, a House against the Senate) and a \$14.4-billion election campaign focused on intensifying negative sentiments against the opposition party (Horncastle, 2020). It is also possible that in the moment Biden's presidency was confirmed, the salience of the obstacle threat posed by Democrats increased for some, leading to the January 6, 2021, attack on the US Capitol.

One limitation of both study 2a and 2b is that I considered only welfare threat in study 2a and only obstacle threat in 2b. Although the evidence indicates that both these threats were salient at the time of the study, it possible to speculate that different outgroups simultaneously pose obstacle and welfare threats. For example, White British people may have perceived Chinese people as posing an obstacle threat. In the months after this study, the pandemic created great disturbance in the economy, and 'lockdowns' restricted personal freedoms.

Similarly, welfare threats might be relevant to political dynamics. Future tests of this model should include a range of threats posed by a range of outgroups.

The implication of these findings is that the processes and outcomes of intergroup contact may vary as a function of the target outgroup and the threat context. The reliability of the contact–prejudice association means that researchers may be tempted to overlook the unique characteristics that define group membership when selecting outgroups for research. However, this generalized approach ignores the fact that individuals may react differently in terms of both affect and behaviour towards different outgroups and in different intergroup contexts. In the next chapter, I assess contact with multiple groups and measure discrete threats, emotions, and behaviours to build further insight into the complexity of intergroup contact effects.

Chapter 5: Multiple Group Tests of the Threat-Matching Hypothesis

This chapter provides further support for the threat-matching” hypothesis. Using a multigroup design, it adopts three of Cottrell and Neuberg’s (2005) threat–emotion–behaviour profiles (safety–fear–passive harm, contamination–disgust–passive harm, and obstacle–anger–active harm) to test whether specific emotions (fear, disgust, and anger) can explain the relationship between contact experiences with groups that pose distinct safety, contamination, and obstacle threats and two specific threat coping tendencies. While the findings of this study do not perfectly align with the three threat–emotion profiles of Cottrell and Neuberg (2005), the results do provide evidence that specific emotions can help explain the effects of prior contact with a threatening outgroup on specific threat-coping behaviour tendencies.

Introduction

After establishing the reliability of the threat-matching hypothesis across two different threat contexts in studies 2a and 2b, it is important to determine whether the effects of contact replicate across multiple threat contexts. Thus far, the two studies described above provide initial evidence for the threat-matching hypothesis. The findings from studies 2a and 2b support the concept that intergroup affect arousal is likely to activate specific emotions because it serves a function to motivate specific threat-coping behaviours. In study 2a, fear (not anger) was found to stimulate an avoidance tendency aimed at protecting an individual’s well-being. In contrast, in study 2b, anger (not fear) was found to motivate a hostile approach tendency, intended to remove an obstacle to political power. Importantly it was shown in both studies that the effects of contact were explained by threat-specific emotional processes, which predicted specific threat-coping behaviour intentions. One limitation of the studies reported in chapter 4 is that they each considered a single outgroup. One cannot assume that when a person has contact experiences with a variety of outgroups, the emotional processes

underlying contact for that individual will necessarily vary to reflect the specific threat posed by each outgroup. To address this limitation, participants in the current study were asked to consider their prior contact experiences with three diverse outgroups, each of which was expected to pose a different threat to the individual, according to Cottrell and Neuberg (2005). In this study, it would be noteworthy if each outgroup the participants considered would elicit a different emotional response, which in turn would be associated with a specific and relevant coping behaviour tendency. Such a finding would indicate with a relatively high level of confidence that the emotional processes underlying contact depend on the specific threat posed by the outgroup.

The research in this thesis illustrates that intergroup threats are likely positively related with various specific negative intergroup emotions. For example, feeling threatened by an outgroup may lead to fear if an individual or an individual's group as whole cannot counter the threat posed. On the other hand, if the outgroup threat implies a challenge to ingroup goals, ingroup members may respond with anger, frustration, or resentment, especially if the ingroup members believe they have the power to counter the threat. In a similar way, Matthews and Levin (2012) found that when an outgroup threatens potential violation of the social norms, values, or morals of an ingroup, ingroup members may respond with disgust or contempt.

Research shows that negative emotions and cognition elicited by intergroup threats fuel negative behavioural responses (Stephan & Stephan, 2019). Studies 2a and 2b in this thesis provide evidence that specific intergroup threats are also linked via specific emotions to outgroup-specific negative behaviour intentions. Prior literature illustrates that specific negative intergroup emotions can be associated with different passive and active harm behavioural responses (Cuddy et al., 2007). Behavioural responses to intergroup threats can include active harm (e.g., aggression or harassment) and passive harm (e.g., avoidance or

demeaning the outgroup). For instance, Wagner et al. (2008) found that threats perceived to be posed by foreigners in Germany were positively associated with active harm and a willingness to be aggressive towards foreigners. Other studies have found intergroup threats to be related to active harm, such as harassing behaviour tendencies towards the homeless in the Netherlands (Van Zomeren et al., 2007). Intergroup threats can also lead people to engage in passive negative behaviours like leaning away from an outgroup member, averting one's gaze, engaging in physical distancing (Toosi et al., 2012), or excluding or avoiding an outgroup member (Barlow et al., 2009, 2010). This research on the consequences of intergroup threats supports Cottrell and Neuberg's (2005) argument that negative responses serve an evolutionary function because they lead groups and individual group members to defend themselves against threats of harm from outgroups. In other words, the pattern of negative intergroup behaviours likely varies because it is intended, perhaps with little or no conscious consideration, to deal with the specific outgroup threat posed.

When confronted with threats from other groups, people often respond with a cognitive appraisal of the type and extent of the threat, and they assess their personal ability to cope with the threat (Trawalter et al., 2009). This appraisal is likely to be followed by a consideration of the options available to respond to the threat and an assessment of how and when to act. These cognitive appraisals, and the vigilance needed to monitor a threat, can be cognitively demanding. Cognitive depletion created by threat may in turn lead to reliance on cognitive heuristics, such as stereotypes, which function as resource-preserving devices in mental life (Macrae et al., 1994).

Previous research finds that certain groups are heuristically associated with specific and realistic intergroup threats (Stephan & Renfro, 2002). For instance, Muslims (Abrams et al., 2017), Black men (Cottrell & Neuberg, 2005), and psychiatric patients (Bhugra, 1989) are associated with a realistic safety threat related to their perceived ability to exert actual

physical harm. In somewhat different ways, gay men (Cottrell & Neuberg, 2005), drug users (Barry et al., 2014), and obese people (Vartanian et al. 2016) have been seen as posing a contamination threat. Moreover, according to Stephan et al. (2009), symbolic threats posed by ideological extremism may threaten the integrity or validity of an ingroup's meaning system or world view. Cottrell and Neuberg (2005) similarly identified activist feminists and fundamental Christians as ideological groups that might pose a realistic or symbolic threat to their American students' sense of social order, which they termed "obstacle" threat.

Ideologically extremist groups such as far-right activists, environmental activists (such as "Extinction Rebellion"⁵), and members of the anti-vaccine movement ("anti-vaxxers"), might have been viewed as presenting several intergroup threats in Britain in 2021. Prior intergroup conflict, group power, relative status, and group size also likely have an impact on the perception of intergroup threats (Corenblum & Stephan, 2001). As study 2a and 2b show, situational factors, such as context, can exacerbate threat. Prior research also indicates that situational factors, such as time and proximity, have been shown to affect the realistic or symbolic nature of threat perception (Dixon et al., 2020; Spencer-Rodgers & McGovern, 2002) (Spencer-Rodgers & McGovern, 2002).

In line with the idea that perceived threat elicits a specific emotional response that drives distinct coping behaviour tendencies, Johnston and Glasford (2014) explored whether three of Cottrell and Neuberg's (2005) threat–emotion profiles (i.e., obstacle–anger, contamination–disgust, and safety–fear, as discussed in chapter 2) would be differentially associated with active and passive harm behaviour intentions. Johnston and Glasford (2014) draw on emotion-appraisal theory (Roseman, 2001) and argue that threat–emotion profiles

⁵ Extinction Rebellion activists self-describe as belonging to "a global environmental movement with the stated aim of using nonviolent civil disobedience to compel government action to avoid tipping points in the climate system, biodiversity loss, and the risk of social and ecological collapse." (www.extinctionrebellion.uk, 2021). According to the Guardian Newspaper (Dodd 2020), the UK Government home secretary, Priti Patel, has claimed Extinction Rebellion activists are "so-called eco-crusaders turned criminals" who threaten key planks of national life.

might lead to either active or passive behaviour intention because of the motivational nature (i.e., appetitive vs. aversive) of the emotion concerned in the threat–emotion–behaviour profile.

Active and passive harm have been shown to be unique forms of discriminatory intergroup behaviour that are explained by independent and diverse predictors (Cuddy, Fiske, & Glick, 2008), such as distinct emotions (Cuddy et al., 2007). Consistent with Cotrell and Neuberg's (2005) specific threat–emotion profiles, Johnston and Glasford (2014) first found that each specific threat–emotion profile (e.g., contamination–disgust) was most strongly related to a specific group (e.g., gay men). Then, complementing stereotype content model and BIAS map work (Cuddy et al., 2007; Fiske et al., 2002), they found some evidence that these threat–emotion profiles were also related to a participant's active or passive harm intentions. The results showed that the obstacle–anger model was related to active harm intention (i.e., attack, harass), not passive harm, and that contamination–disgust and physical safety–fear models were related to passive harm intentions (i.e., exclude, demean), not active harm. Furthermore, each expected specific emotion mediated the anticipated link between threat and harm intention. These differentiations in discriminatory behaviour intention support the theory that intergroup threat perception, such as the belief that an outgroup threatens personal safety or represents an obstacle, could elicit specific threat–emotion profiles (e.g., safety–fear or obstacle–anger), which in turn are associated with a particular form of bias (e.g., passive harm or active harm).

Despite this divergence in reaction towards dissimilar outgroups, contact research rarely considers how contact processes with members from diverse outgroups may unfold differently within an individual. To understand the role contact plays in relation to specific intergroup behaviour tendencies, it is necessary to explore the interplay between discrete

emotions and both positive and negative contact with a range of threatening target groups, with full regard for the context surrounding the group relationships.

Drawing on theory and research on contact, threats, emotions, and prejudice behaviour intentions, the investigations in this chapter explore the extent to which the emotional processes underlying intergroup contact depend on the specific threat posed by the outgroup, which in turn may explain the differences in prejudice behaviour intentions. The current study adopts the three threat–emotion profiles explored by Johnston and Glasford (2014) to further test the threat-matching hypothesis. With the Johnston and Glasford findings in mind, when an outgroup poses a specific safety or contamination threat, it can be expected that the emotion elicited functions to prompt a specific coping behaviour tendency. If so, an outgroup threatening ingroup safety or contamination will likely arouse fear or disgust, respectively, and thereby drive threat-coping behaviour intentions that discriminate against an outgroup via avoidance or via passively aggressive behaviours, such as demeaning. Contamination threats might arouse disgust, provoking similar coping behaviour tendencies, and obstacle threats likely elicit anger, motivating coping behaviour intentions that may lead to attacking or harassing behaviours. Importantly, however, it is expected that people with greater positive outgroup interactions can be predicted to experience weaker threat-related emotions, which in turn will be associated with reduced negative coping behaviour intentions related to the threat posed. In comparison, people with greater negative outgroup contact experiences can be expected to experience stronger threat-related emotions towards the outgroup and express greater negative intergroup coping behaviours related to the threat at hand.

Study 3

Overview

The investigations reported in this chapter further assessed the threat-matching hypothesis by testing whether the effects of contact replicate across multiple threat contexts. The threat-matching hypothesis predicts that the emotional processes underlying the contact effects depend on both contact valence (affect matching) and the specific threat(s) posed by the outgroup. Consistent with the need for replication within psychological research (Simmons et al., 2011), this study used a multigroup design. The advantage of this within-subject design (unlike the previous two studies, where participants assessed a single target outgroup) is that the differences within participants in emotion and behaviour responding towards different groups are revealed. This design made it possible to explore the role of White British contact experiences with three distinct threatening outgroups.

The investigation was run over two studies. First, an initial pilot study was used to identify three target outgroups that each posed a different array of threats towards the White British population. Participants were asked to evaluate threats (obstacle, contamination, and safety) posed by nine outgroups. Drawing on Cottrell and Neuberg's (2005) work, nine target groups were identified that might elicit qualitatively unique threat profiles: Muslims (Abrams et al., 2017), Black men (Cottrell & Neuberg, 2005), and psychiatric patients (Bhugra, 1989) were expected to elicit the perception of a safety threat. Gay men (Cottrell & Neuberg, 2005), drug users (Barry et al., 2014), and obese people (Vartanian et al. 2016) were expected to pose a contamination threat. Three ideologically extremist groups (far-right activists, environmental activists, and anti-vaxxers) were included because it might be presumed that they pose obstacles or barriers to desired ways of living in Britain in 2021. Thereafter, in the main study, following Johnston and Glasford (2014), participants were asked to assess their

emotions (anger, fear, and disgust) and biases (active and passive harm) towards the two selected respective target groups.

Pilot study

The key aim of the pilot study was to identify two outgroups, from a set of nine, that each might pose qualitatively different threats towards a White British population.

Participants were undergraduate students from a British University. In line with Cottrell and Neuberg's (2005) study, participants were asked to assess multiple groups. Target outgroups were presented in a random order to reduce the likelihood of systematic measurement contamination.

Participants

A power analysis was conducted in G*Power (Faul et al., 2009) to determine the sample sizes necessary for the pilot study using the 'ANOVA: fixed effects, omnibus, one-way' option to specify a model with nine groups. As indicated by the meta-analysis of Riek et al. (2006) regarding the relationship between intergroup threat and outgroup attitudes, we expected a large effect size ($f^2 = .40$). With a desired power of 80%, we sought to recruit more than 100 participants. Data were collected from university undergraduates who completed the survey in exchange for course credit between February 18 and 28, 2021. Only data from British nationals were retained. No further exclusions were made. The final sample consisted of 96 participants aged between 18 and 41 ($M = 20.24$, $SD = 3.53$). The sample was mostly White (88.5% White, 9.4% Asian / Asian British, 1% Black) and was mostly heterosexual (79.2% heterosexual, 1% homosexual, 17.7% bisexual, 2% other). Participants typically held no religious belief (70.8% atheist, 18.8% Christian, 2% Hindu, 1% Sikh, 2% other) and held a range of political views (10.4% very liberal, 46.9% liberal, 35.4% moderate, 5.2% conservative, and 2% other). Participants identified body weight as (11% underweight, 74% ideal weight, 13.5% overweight, and 1% very overweight).

Procedure

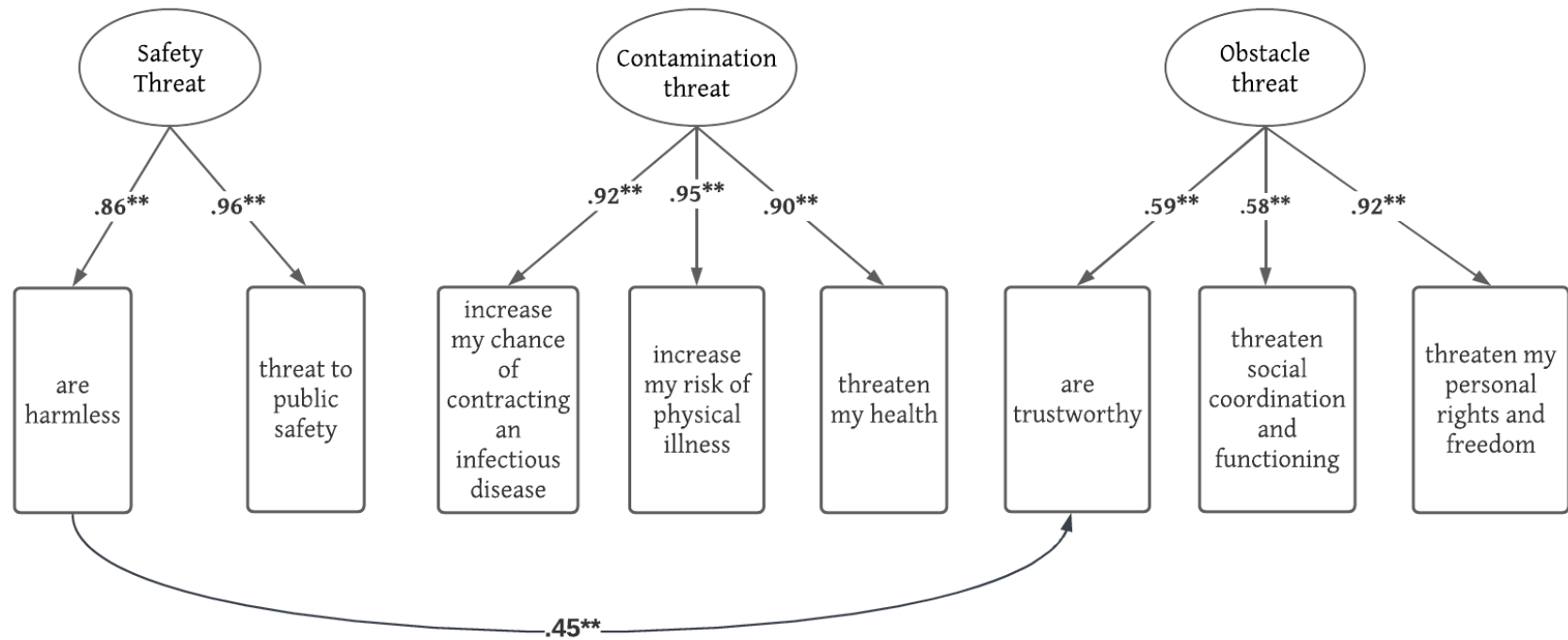
The study was advertised as a survey exploring perceptions of social groups. Presented in random order, participants were asked to indicate their perception of threat posed by nine different target groups: Black men, psychiatric patients, Muslims, gay men, drug users, obese people, far-right activists, environmental activists and anti-vaxxers. To assess perceived threats, participants indicated the extent to which they agreed with statements regarding the general and specific threats that each group posed on a 7-point Likert scale (1 = *not at all* and 7 = *extremely*). Items for three types of threat were adapted from Cottrell and Neuberg (2005): The items for obstacle threat included phrases like “are trustworthy”, “threaten social coordination and functioning”, and “threaten my personal rights and freedom”. Items for contamination threat included phrases like “threaten my health”, “increase my chance of contracting an infectious disease”, and “increase my risk of physical illness”. Items for safety threat included phrases like “are harmless”, “threat to public safety”, and “endanger my physical safety”. The Cronbach α for these nine scales are set out in appendix P. To conclude the study, participants provided demographic information and were thanked and debriefed.

Data preparation

First, a confirmatory factor analysis (CFA) was run to check the internal consistency of the threat scale. After removing the safety item “endanger my physical safety”, which loaded the latent constructs of both the safety threat and contamination threat, and after allowing the two reverse items “trustworthy” and “harmless” to correlate, the three-factor CFA revealed fair support for the model illustrated in Figure 14 ($\chi^2 (16, 864) = 102.24, p < .001, \chi^2/df = 6.39, \text{Robust CFI} = .98, \text{Robust RMSEA} = .08 \text{ 90\% CI } [.08 \text{ to } .12], \text{SRMR} .04$)

Figure 14

Measurement models, empirical fit for a three-factor model of perceived threat for the pilot study



Fit statistics: $\chi^2 (16, 864) = 102.24, p < .001, \chi^2/df = 6.39$, Robust CFI = .98, Robust RMSEA = .08 90% CI [.08 to .12]. SRMR .04.

Next, items for each threat type were averaged to form a mean score for three threat variables (contamination, obstacle, and safety) for each target outgroup. The means and standard deviations for these threat variables are presented in Table 20.

Table 22

Descriptive statistics for the safety, contamination, and obstacle threat scores for the nine target outgroups

Group	Safety Threat		Contamination Threat		Obstacle Threat	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Black men	3.89	0.47	1.34	0.84	2.74	0.62
Psychiatric patient	3.82	0.70	1.66	0.97	2.66	0.70
Muslim	4.03	0.46	1.38	0.89	2.97	0.63
Gay man	3.95	0.41	1.32	0.79	2.86	0.66
Drug addict	3.84	0.58	2.21	1.22	2.87	0.70
Obese person	3.95	0.59	1.41	0.90	3.05	0.72
Far-Right activist	3.74	0.56	2.27	1.27	4.03	0.89
Environmental activist	3.92	0.60	1.40	0.84	3.26	0.76
Antivaxxer	4.01	0.64	5.32	1.43	3.98	0.86

Note. *M* and *SD* are used to represent mean and standard deviation, respectively

Next, a series of violin plots (see Figures 15 – 18) were used to visually explore the relationship between the nine outgroups and the mean threat they posed. These violin plots are a combination of a box plot (median, interquartile range, and adjacent values) and a density of data distribution plot for participant responses to safety, contamination, and obstacle threat posed by the nine outgroups presented.

Figure 15

Safety Threat Violin Plot

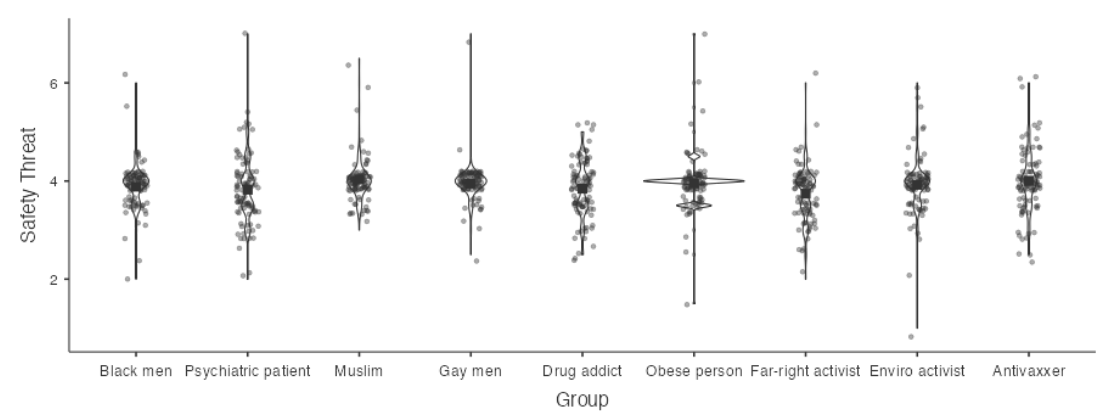


Figure 16

Contamination Threat Violin Plot

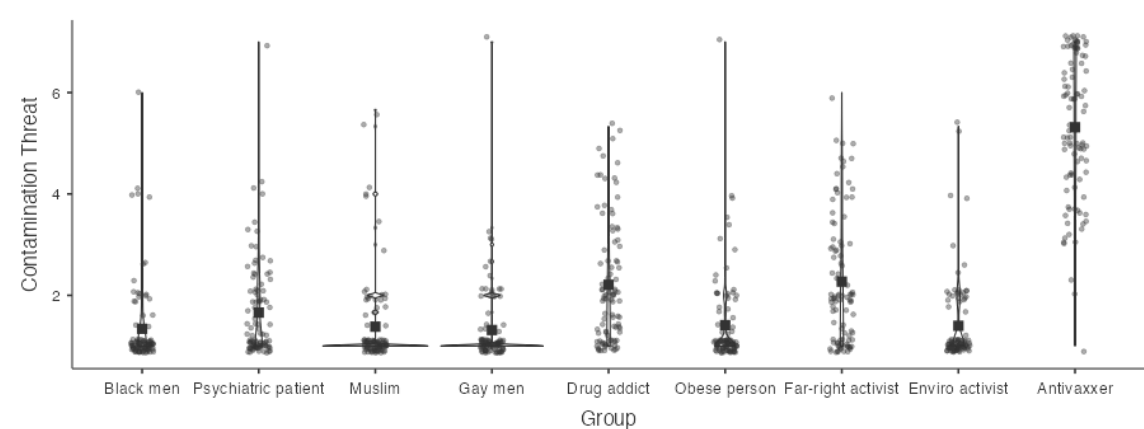


Figure 17

Obstacle Threat Plot



Results

To determine whether there was an effect of target outgroup on the three threat types experienced, three one-way within-subject ANOVAs using a linear mixed-effects model were performed. An extension of simple linear models, linear mixed models allow for both fixed and random effects. Mixed effect models are particularly used when there is non-independence in the data, where repeated measure observations within a subject may be correlated. Using mixed effects in an analysis means that in addition to estimation of the model parameters, between- and within-subject variability may be estimated.

Safety threat

There was a significant effect of target outgroup on safety threat experienced between target outgroups $F(8,760) = 3.19, p < .001, \eta p^2 = .03, 90\% \text{ CI } [.01, 1.00]$. Random effects between participants were $\tau_{00} = .06$. Intraclass correlations were computed from the mixed-effects model, which revealed that 19% of the variation in outcome was attributable to the participant. Tukey Honest Significant Difference (HSD) post-hoc pairwise comparisons were made and are set out in the appendices (Appendix J).

Contamination threat

There was a significant effect of target outgroup on contamination threat experienced between target outgroups $F(8,760) = 224.44, p < .001, \eta p^2 = .70, 95\% \text{ CI } [.68, 1.00]$. Random effects between participants were $\tau_{00} = .38$. Intraclass correlations were computed from the mixed-effects model, which revealed that 35% of the variation in outcome was attributable to the participant. Tukey HSD post-hoc pairwise comparisons were made and are set out in the appendices.

Obstacle threat

There was a significant effect of target outgroup on obstacle threat experienced between target outgroups $F(8,760) = 67.50, p < .001, \eta p^2 = .42, 95\% \text{ CI } [.37, 1.00]$. Random

effects between participants were $\tau_{00} = .38$. Intraclass correlations were computed from the mixed-effects model, which revealed that 35% of the variation in outcome was attributable to the participant. Tukey HSD post-hoc pairwise comparisons were made and are set out in the appendices.

Pilot study discussion

The results of the pilot study support the hypothesis of Cottrell and Neuberg (2005) – namely, that people perceive different patterns of specific threats from different outgroups. There was a significant effect of target outgroup on safety, contamination, and obstacle threat. In the case of safety threat perception, Tukey HSD post-hoc comparisons indicated that Muslim people, antivaxxers and far right activists were perceived as a significantly greater safety threat than the psychiatric patient outgroup. However, it was decided to advance the psychiatric patient outgroup to the main study because psychiatric patient safety threat was clearly different from contamination and obstacle threat. Tukey HSD post-hoc comparisons indicated that anti-vaxxer contamination threat was significantly greater compared to all other outgroups. Similarly, far-right activists were selected because far-right activist obstacle threat was significantly greater compared to all other outgroups. It was decided to advance psychiatric patients, anti-vaxxers, and far-right activists to the main study.

Main study

The main study sought to further test the threat-matching hypothesis by considering the three target social groups (psychiatric patients, anti-vaxxers, and far-right activists) identified in the pilot study as perceived to pose distinctly different threats (safety, contamination, or obstacle) towards a White British population.

Hypotheses

In line with the threat-matching hypothesis, the main study tested the following hypotheses:

1. Within an individual, the emotional processes underlying contact with each outgroup will depend specifically on the nature of the threat posed by the target outgroup, which in turn predicts different behaviour intentions that focus on coping with each group-specific threat.
2. Greater positive contact experiences will be associated with a reduction in negative intergroup emotions and a reduction in negative behaviour intentions, while greater negative contact experiences will be associated with stronger negative intergroup emotions and increased negative behaviour intentions.

Context

The study took place on Tuesday, March 23, 2021, when the COVID-19 vaccination roll-out programme was salient in many British minds. According the Guardian newspaper, (Henley, 2021) on this day, British people held a day of reflection with a minute's silence and with a national doorstep candlelit vigil to mourn for the 143,259 people who had lost their lives to COVID-19. Britain was still under a "stay at home" rule, but individuals were allowed to exercise outside with one person from outside their household. Holidays abroad were not permitted. A new COVID-19 variant (Alpha) had emerged in Kent, UK, and a third wave of COVID-19 (Delta) was sweeping across Europe. Globally, vaccine need was greater than vaccine supply, so European leaders were considering imposing a ban on the export of COVID-19 vaccine to Britain (Henley, 2021). At least 23 million British people had received at least one dose of a COVID-19 vaccine (Henley, 2021). All clinically vulnerable adults and those over the age of 55 had been offered a vaccination appointment (Henley, 2021). The Office for National Statistics carried out a "Coronavirus and vaccine hesitancy survey"

between February 17 and March 14, 2021, which revealed 94% of adults surveyed had a positive sentiment towards receiving a coronavirus vaccine. However, a number of citizens expressed having either declined receiving a vaccine or being unlikely to receive a vaccine if offered: those under the age of 29 (12%), Black and Black British (22%), and those living in the most deprived areas of Britain (12%).

In addition to COVID-19 vaccination, to some extent, far-right activism was also salient in the minds of the British public. On March 22, 2021, Hope Not Hate, a British advocacy group that campaigns against racism and fascism, published its annual report, “State of Hate 2021”. The report was widely publicised in mainstream British media. The comprehensive report notes, “While organisationally the British far right remains very weak and fragmented, the number of people who are coming across their ideas is growing exponentially and, as a consequence to the racist backlash to Black Lives Matter, we have seen the return of racial nationalism” (Hope Not Hate, 2021). In the same report, Hope Not Hate notes that Patriotic Alternative, an active neo-Nazi nationalist group organised 66 events under the “White Lives Matter” banner and clashed with Black Lives Matter protestors (Hope Not Hate, 2021, p. 10). In February 2021, the national press reported that the social media companies Facebook, Instagram, and Twitter had removed Patriotic Alternative’s pages from their platforms (Townsend, 2021) and that a 16-year-old leader of a neo-Nazi group had been convicted for the possession and dissemination of terrorist material (Townsend, 2021).

Mental health was also topical in March 2021, particularly in relation to the rising concern about the nation’s mental health as pandemic uncertainty and social isolation had had a considerable impact on people’s mental well-being (Pierce et al., 2021). Mental health services were overstretched (Blackall, 2021), and a small number of homicides committed by psychiatric patients were reported in the media around the time the current study took place. Some reports were graphic: Ernest Grusza, a man experiencing a florid psychotic episode,

killed and dismembered his mother in St Ives, Cambridgeshire (Buck, 2021). Shaun Powney attacked and killed his father in Plymouth, Devon, after being released from a secure mental health unit (Able, 2021).

Method

Participants

White British participants living in the UK were recruited from an online participant panel, Prolific, on March 23, 2021. Samples recruited from these platforms may not be fully representative of a White British population; however, they typically include respondents that vary more widely in age, education background, political ideology, and geographic distribution than undergraduate student populations (Huff & Tingley, 2015; Levay et al., 2016). The data were analysed using multigroup structural equation modelling (MG-SEM). Although determination of appropriate sample size is a critical issue in SEM, unfortunately, there is no consensus in the literature regarding what would be the appropriate sample size for SEM. The minimum sample size for conducting SEM is considered $N = 100\text{--}150$ (Tinsley & Tinsley, 1987). For multi-group modelling, the standard is 100 cases or observations per group (Kline, 2005). A sample size greater than 500 was planned. Thirty participants were excluded (12 submitted incomplete data; 18 were identified as psychiatric patients or anti-vaxxers). The final sample consisted of 480 participants (186 male, 287 female, five non-binary, two not disclosed), aged between 18 and 77 ($M = 39.98$, $SD = 15.55$). One participant did not disclose their age.

Materials and procedure

The study was advertised as a survey exploring perceptions of social groups. After giving consent, participants were invited to complete an online questionnaire relating to their contact experiences, opinions, and emotions associated with the three different social groups:

psychiatric patients, anti-vaxxers, and far-right activists. The order of presentation of the measurements scales to participants was counterbalanced.

Intergroup threat. To ensure there was an association between target outgroups and perceived threat, participants indicated their perception of the safety, contamination, and obstacle threats posed by each of the three target social groups using the same measures as in the pilot study. The item “endanger my physical safety” was excluded because it had loaded to both the safety threat and contamination threat latent constructs in the pilot study.

Intergroup contact. To measure prior positive intergroup contact, participants indicated how often they had had (1) positive/good contact and (2) pleasant experiences when interacting with members from each target group. Likewise, to measure prior negative intergroup contact, participants indicated how often they had had (1) negative/bad contact and (2) unpleasant experiences when interacting with each target social group (Zingora & Graf, 2019). Positive and negative contact items were measured on 7-point scales (1 = *never*, 7 = *very often*).

Specific intergroup emotions. To assess discrete intergroup emotions, participants were asked to indicate the extent to which they felt three discrete emotions towards each of the three target social groups (‘anger’, ‘fear’, and ‘disgust’), using 7-point Likert scales (1 = *not at all*, 7 = *very much*). Because the discrete emotion constructs of fear, disgust, and anger were theoretically important to the analysis, the decision was taken to use single item measures for each emotion in this study (Giner-Sorolla & Russell, 2019). To help the participants interpret each of the three emotion terms, each was illustrated with a photograph of a female posing with a facial expression corresponding to each emotion; these photographs were taken from materials validated in the study of Tracy, Robins, and Schriber (2009).

Behaviour intentions. Finally, active and passive harm behaviour intentions towards the target groups were assessed using two item scales adapted for active (“attack”, “harass”)

and passive harm (“exclude”, “demean”; Cuddy et al., 2007). All items were measured on 7-point scales (1 = *not at all*, 7 = *extremely*). The internal consistency for all scales was good and the Cronbach alpha for each scale by outgroup are reported in appendix Q. To conclude the study, participants provided demographic information and were thanked and debriefed.

Data preparation

Threat perception. First, a confirmatory factor analysis (CFA) was run to check the internal consistency of the eight-item threat scale. As illustrated in Figure 18, once the two reverse items, “trustworthy” and “harmless”, were allowed to correlate, the three factor CFA revealed fair support for the model ($\chi^2(16, 864) = 102.24, p < .001, \chi^2/df = 6.39$, Robust CFI = .98, Robust RMSEA = .08 90% CI [.08 to .12]. SRMR .04). The items for each threat type were averaged to form a mean score for three threat variables (Contamination, Obstacle and Safety) for each target outgroup.

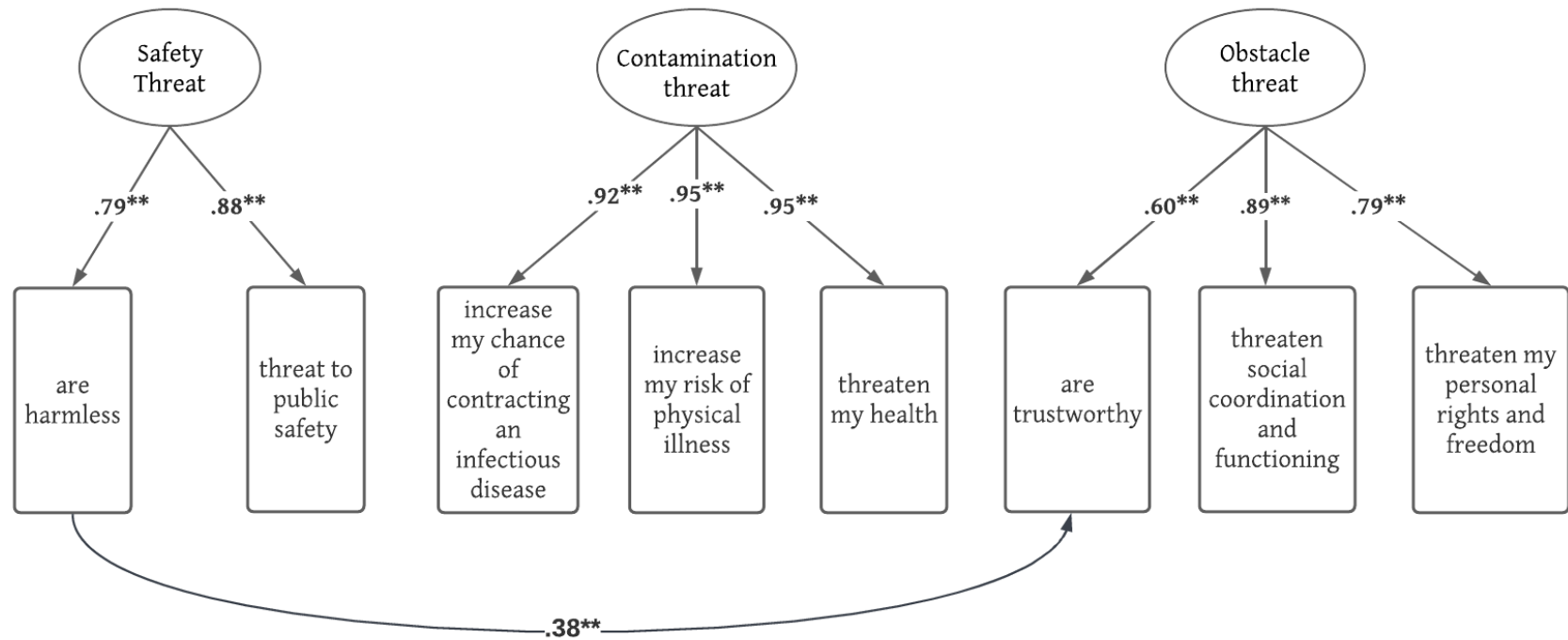
Results

Threat analyses

To determine whether there was an effect of target outgroup on the three threat types experienced, three one-way within subject ANOVAs using a linear mixed-effects model were performed – one for each threat. The results revealed a significant effect of target outgroup on safety, contamination, and obstacle threat. To clearly illustrate this effect, the violin plots in Figures 19 - 21 show the pattern of threats participants perceived from the three target outgroups.

Figure 18

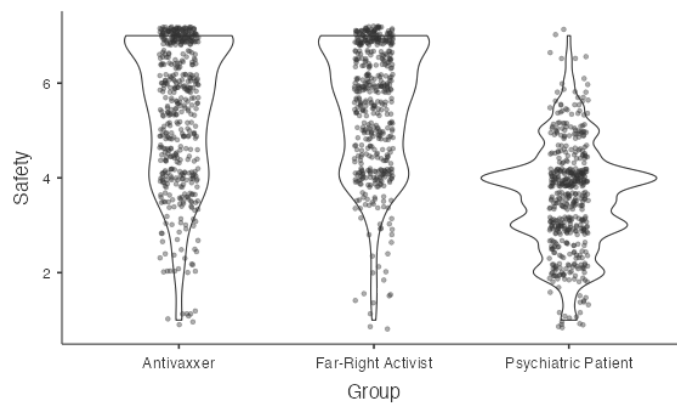
Measurement models, empirical fit for a three-factor model of perceived threat for the main study data



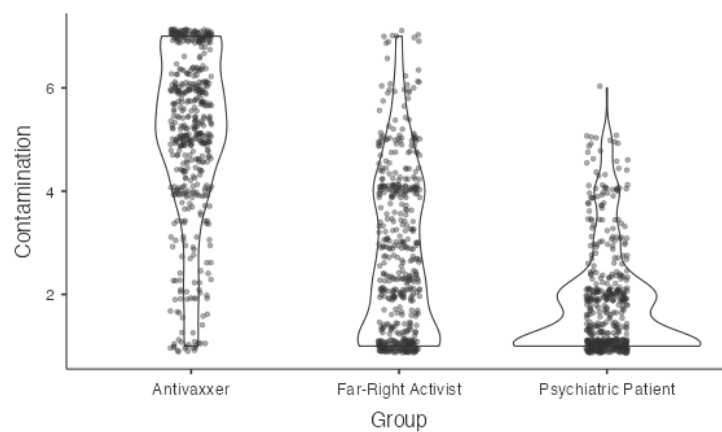
Fit statistics $\chi^2 (16, 1,440) = 146.78, p < .001, \chi^2/df = 9.17$, Robust CFI = .98, Robust RMSEA = .08 90% CI [.69 to .93]. SRMR .03.

Figure 19

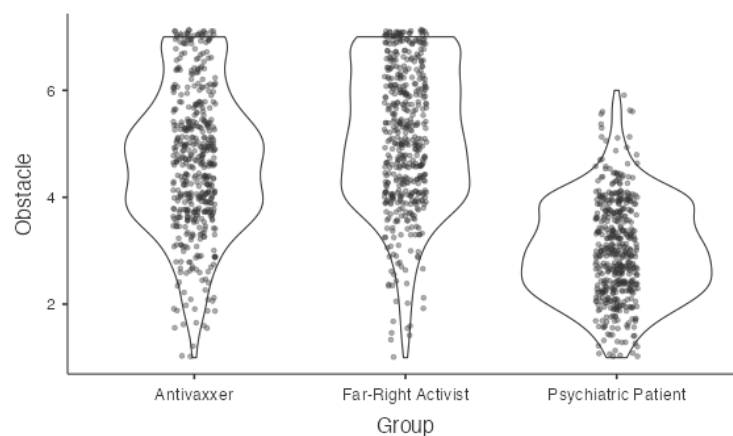
Violin plot to illustrate safety threat perception according to outgroup considered.

**Figure 20**

Violin plot to illustrate contamination threat perception according to outgroup considered

**Figure 21**

Violin plot to illustrate obstacle threat perception according to outgroup considered



Note: Violin plots for the threats posed by three outgroups. These violin plots are a combination of a box plot (median, interquartile range, and adjacent values) and a density of data distribution plot for participant responses to safety, contamination, and obstacle threat.

Safety threat. There was a significant effect of target outgroup on safety threat experienced between target outgroups $F(2,958) = 355.91, p < .001, \eta p^2 = .43, 90\% \text{ CI } [.39, 1.00]$. Random effects between participants were $\tau_{00} = .29$. Intraclass correlations were computed from the mixed-effects model, which revealed that 16% of the variation in outcome was attributable to the participant. Tukey HSD post-hoc pairwise comparisons were made and are set out in Table 21

Contamination threat. There was a significant effect of target outgroup on contamination threat experienced between target outgroups $F(2,058) = 804.76, p < .001, \eta p^2 = .63, 95\% \text{ CI } [.60, 1.00]$. Random effects between participants were $\tau_{00} = .50$. Intraclass correlations were computed from the mixed-effects model, which revealed that 50% of the variation in outcome was attributable to the participant. Tukey HSD post-hoc pairwise comparisons were made and are set out in Table 21

Obstacle threat. There was a significant effect of target outgroup on obstacle threat experienced between target outgroups $F(8,760) = 518.43, p < .001, \eta p^2 = .52, 95\% \text{ CI } [.42, 1.00]$. Random effects between participants were $\tau_{00} = .32$. Intraclass correlations were computed from the mixed-effects model, which revealed that 22% of the variation in outcome was attributable to the participant. Tukey HSD post-hoc pairwise comparisons were made and are set out in Table 21

Although these results support Cottrell and Neuberg's (2005) hypothesis that people perceive qualitatively different patterns of specific threats from different outgroups, the results did not follow the expected pattern of relationships. For example, psychiatric patients prompted significantly different threat perceptions within participants ($F(2) = 341.62, p <$

.001 $\eta p^2 = .32$, 95% CI [.29, 1.00] with greater safety threat being perceived ($M = 3.59$, 95% CI [3.49 – 3.68]) compared to contamination ($M = 1.86$, 95% CI [1.77 – 1.96]) or obstacle threat ($M = 3.01$, 95% CI [2.91 – 3.10]). In comparison (see Table 21), the mean perceived threat to safety from anti-vaxxers and far-right activists was significantly greater than that of psychiatric patients.

Anti-vaxxers elicited significantly different threats within participants ($F(2) = 27.45$, $p < .001$ $\eta p^2 = .04$, 95% CI [.02, 1.00]. Safety threat ($M = 5.37$, 95% CI [5.24 – 5.50]) was significantly greater than contamination ($M = 5.07$, 95% CI [4.94 – 5.21]) or obstacle threat ($M = 4.66$, 95% CI [4.52 – 4.79]). In comparison (see Table 21) the mean perceived contamination threat from anti-vaxxers was significantly greater than either far-right activists or psychiatric patients.

Far-right activists elicited significantly different threat perceptions within participants ($F(2) = 490.08$, $p < .001$ $\eta p^2 = .41$, 95% CI [.38 – 1.00]. Safety threat ($M = 5.47$, 95% CI [5.34 – 5.60]) was significantly greater than contamination ($M = 2.80$, 95% CI [2.67 – 2.92]) or obstacle threat ($M = 5.09$, 95% CI [4.97 – 5.22]). In comparison (see Table 21) the mean obstacle threat from far-right activists was significantly greater than either anti-vaxxers or psychiatric patients.

Table 23:

Estimated marginal means and pairwise differences for safety, contamination, and obstacle threat perception between outgroups

Target outgroup	EM	SE	L CI	U CI	EM	SE	L CI	U CI	EM	SE	L CI	U CI
	Safety Threat				Contamination Threat				Obstacle Threat			
Psychiatric Patient	3.59	.06	3.43	3.75	1.86	.07	1.69	2.04	3.01	.05	.86	3.15
Antivaxxer	5.37	.06	5.21	5.53	5.07	.07	4.90	.25	4.66	.05	.51	4.80
Far-Right Activist	5.47	.06	5.31	5.63	2.80	.07	2.62	.97	5.09	.05	.95	5.24
Between Pair Comparisons	Safety Threat				Contamination Threat				Obstacle Threat			
Psychiatric Patient – Antivaxxer	-1.78**	.08	-1.99	1.57	-3.21**	.08	-3.43	2.99	-1.65**	.07	1.83	-1.47
Psychiatric Patient - (Far-Right Activist)	-1.88**	.08	-2.09	1.67	-0.93**	.08	-1.15	0.71	-2.09**	.07	2.27	-1.91
Anti-vaxxer - (Far-Right Activist)	-.10	.08	-.31	.11	2.28**	.08	2.06	.49	-.44**	.07	.62	-.26

Kenward-Roger, p value adjustment: Tukey method for comparing family of three estimates. * indicates $p < .05$. ** indicates $p < .001$

Note. EM and SE are used to represent estimated marginal mean and standard error respectively. L CI and U CI are used to represent lower bound and upper bound 95% confidence intervals. * $p < .05$, ** $p < .01$; *** $p < .001$

Descriptive statistics and correlations for all variables

Next, the correlations among all variables for each target outgroup were examined. These are presented in Tables 22 to 24, along with the descriptive statistics.

Frequency of positive contact varied significantly between outgroups ($F(2) = 107.29, p < .001, \eta^2 = .18, 95\% \text{ CI } [.15 - 1.00]$). Frequency of positive contact was significantly greater with psychiatric patients ($M = 2.72, 95\% \text{ CI } [2.59 - 2.85]$) compared to anti-vaxxers ($M = 1.77, 95\% \text{ CI } [1.64 - 1.90]$) and far-right activists ($M = 1.48, 95\% \text{ CI } [1.35 - 1.61]$). Participants had significantly more frequent positive contact with anti-vaxxers than far-right activists.

Frequency of negative contact varied significantly between outgroups ($F(2) = 17.39, p < .001, \eta^2 = .04, 95\% \text{ CI } [.02 - 1.00]$). Participants had significantly more frequent negative contact with anti-vaxxers ($M = 2.61, 95\% \text{ CI } [2.45 - 2.77]$) compared to psychiatric patients ($M = 2.09, 95\% \text{ CI } [1.93 - 2.24]$) and far-right activists ($M = 2.39, 95\% \text{ CI } [2.24 - 2.55]$). Participants had significantly more frequent negative contact with far-right activists than psychiatric patients.

Comparatively, participants typically reported more frequent positive contact experiences than negative contact experiences with psychiatric patients but more frequent negative contact experiences than positive contact experiences with both anti-vaxxers and far-right activists.

In the case of all target outgroups, positive contact had a significantly negative relationship with safety, contamination, and obstacle threat. Negative contact with anti-vaxxers and far-right activists had a significantly positive relationship with all three threats. However, only the relationship between negative contact with psychiatric patients and contamination was significantly positive; the relationship between negative contact with psychiatric patients and either safety or obstacle threat did not reach significance.

Positive contact with each target outgroup also had significantly negative relationships with the three specific emotions (anger, fear, and disgust). Likewise negative contact with the target outgroup also had significantly negative relationships with the same emotions for anti-vaxxers and far-right activists. However, the association between negative contact with psychiatric patients and fear was significantly positive. Positive contact with each target outgroup also had a significantly negative relationship with passive harm, but not with active harm. However, negative contact with anti-vaxxers and far-right activists had a significantly positive relationship with both active and passive harm, but there was no significant relationship between negative contact with psychiatric patients and either active or passive harm.

Table 24*Psychiatric patients' means, standard deviations, and correlations with confidence interval*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Positive contact	2.78	1.86									
2. Negative contact	2.12	1.45	.58**								
			[.52, .64]								
3. Safety threat	3.58	1.13	-.32**	-.01							
			[-.42, -.27]	[-.10, .08]							
4. Contamination threat	1.85	1.05	-.10*	.10*	.46**						
			[-.19, -.01]	[.01, .18]	[.38, .52]						
5. Obstacle threat	2.99	0.92	-.31**	.02	.69**	.54**					
			[-.39, -.23]	[-.06, .11]	[.65, .74]	[.48, .60]					
6. Fear	2.72	1.53	-.19**	.11*	.47**	.24**	.45**				
			[-.27, -.10]	[.02, .20]	[.40, .54]	[.16, .32]	[.37, .52]				
7. Disgust	1.47	0.87	-.15**	.01	.26**	.35**	.39**	.47**			
			[-.24, -.07]	[-.08, .10]	[.18, .34]	[.27, .42]	[.32, .46]	[.40, .53]			
8. Anger	1.45	0.92	-.13**	.06	.31**	.36**	.44**	.46**	.83**		
			[-.22, -.04]	[-.03, .15]	[.23, .39]	[.29, .44]	[.36, .50]	[.39, .53]	[.80, .86]		
9. Active harm	1.12	0.48	-.02	.04	.11*	.23**	.18**	.06	.15**	.19**	
			[-.10, .07]	[-.04, .13]	[.02, .19]	[.15, .31]	[.10, .27]	[-.03, .14]	[.07, .24]	[.11, .27]	
10. Passive harm	1.43	0.80	-.16**	.04	.31**	.37**	.38**	.25**	.28**	.30**	.40**
			[-.25, -.08]	[-.04, .13]	[.23, .38]	[.29, .44]	[.30, .45]	[.17, .33]	[.19, .35]	[.22, .38]	[.33, .48]

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval

for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation

(Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Table 25*Anti-vaxxers' means, standard deviations, and correlations with confidence intervals*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Positive contact	1.83	1.44									
2. Negative contact	2.62	1.92	.14**								
			[.05, .23]								
3. Safety threat	5.30	1.58	-.40**	.27**							
			[-.47, -.32]	[.19, .35]							
4. Contamination threat	5.01	1.70	-.27**	.24**	.72**						
			[-.35, -.19]	[.15, .32]	[.68, .76]						
5. Obstacle threat	4.61	1.38	-.42**	.24**	.75**	.66**					
			[-.49, -.34]	[.15, .32]	[.71, .79]	[.61, .71]					
6. Fear	2.52	1.73	-.12**	.17**	.35**	.35**	.33**				
			[-.21, -.04]	[.09, .26]	[.28, .43]	[.27, .43]	[.25, .41]				
7. Disgust	4.10	2.10	-.37**	.29**	.63**	.53**	.68**	.40**			
			[-.44, -.29]	[.21, .37]	[.58, .68]	[.47, .59]	[.63, .73]	[.33, .47]			
8. Anger	4.69	2.05	-.36**	.31**	.70**	.58**	.66**	.39**	.80**		
			[-.43, -.28]	[.23, .39]	[.65, .74]	[.52, .64]	[.61, .71]	[.31, .46]	[.77, .83]		
9. Active harm	1.32	0.83	-.06	.25**	.18**	.17**	.23**	.09*	.20**	.15**	
			[-.15, .03]	[.16, .33]	[.10, .27]	[.08, .25]	[.15, .31]	[.00, .17]	[.12, .29]	[.06, .24]	
10. Passive harm	2.73	1.82	-.24**	.31**	.57**	.46**	.55**	.18**	.53**	.53**	.48**
			[-.32, -.16]	[.23, .39]	[.50, .62]	[.39, .53]	[.49, .61]	[.09, .26]	[.46, .59]	[.47, .59]	[.41, .54]

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval

for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation

(Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Table 26

Far-right activists' means, standard deviations, and correlations with confidence intervals

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Positive contact	1.51	1.11									
2. Negative contact	2.39	1.88	.24** [.16, .33]								
3. Safety threat	5.42	1.40	-.46** [-.47, -.32]	.21** [.19, .35]							
4. Contamination threat	2.77	1.60	-.11* [-.20, -.03]	.27** [.19, .35]	.45** [.38, .52]						
5. Obstacle threat	5.06	1.36	-.36** [-.44, -.28]	.33** [.25, .40]	.78** [.75, .81]	.42** [.35, .49]					
6. Fear	3.57	1.91	-.20** [-.28, -.12]	.23** [.15, .31]	.54** [.48, .60]	.31** [.23, .39]	.49** [.43, .56]				
7. Disgust	4.53	2.09	-.26** [-.34, -.17]	.29** [.21, .37]	.63** [.57, .68]	.37** [.29, .44]	.66** [.61, .71]	.55** [.49, .61]			
8. Anger	4.68	2.01	-.28** [-.36, -.20]	.33** [.25, .41]	.69** [.64, .73]	.38** [.31, .46]	.71** [.66, .75]	.60** [.54, .65]	.84** [.81, .86]		
9. Active harm	1.49	1.02	-.00 [-.09, .09]	.26** [.17, .34]	.19** [.10, .27]	.16** [.08, .25]	.20** [.12, .29]	.01 [-.07, .10]	.20** [.11, .28]	.21** [.12, .29]	
10. Passive harm	3.25	1.95	-.19** [-.27, -.10]	.32** [.24, .40]	.55** [.48, .61]	.31** [.23, .39]	.59** [.53, .65]	.30** [.22, .38]	.56** [.50, .62]	.58** [.52, .63]	.49** [.42, .55]

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval

for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation

(Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$

Testing the threat-matching hypothesis

The threat-matching hypothesis posits that the emotional processes underlying the effects of contact depend not only on contact valence but also on the specific threat(s) posed by the outgroup. Therefore, it was expected in the current study that prior positive contact experiences with an outgroup would be associated with a reduction in negative emotion(s) specifically associated with the threat posed, which in turn would be associated with a weaker harm intention. On the other hand, prior negative contact experiences with an outgroup would be related to an increase in negative emotions(s) specifically associated with the threat posed, and those stronger negative emotions, in turn, would be related to a stronger harm intention.

Structural equation model of the interrelations between contact, emotion, and behaviour intentions

To test the threat-matching hypothesis, a parallel mediation structural equation model was specified (see figure 22). In this model, positive contact (X_1) and negative contact (X_2) with the named target outgroup predicted the emotions (M_1) of anger (M_2) and disgust (M_3) with passive (Y_1) and active harm intentions (Y_2) as outcome variables. The direct paths from positive and negative contact to passive and active harm were also included. Each latent factor (i.e., positive, and negative contact as well as passive and active harm) was indicated by two items. Anger, fear, and disgust were included as manifest indicators and were allowed to correlate.

The first step tested the measurement model with a confirmatory factor analysis. The measurement model fitted the data well, as judged by standard fit measurements ($\chi^2 (14) = 97.74, p < .001, \chi^2/df \text{ ratio} = 6.98, \text{RMSEA} = .070 [90\% \text{ CI } .058-0.084], \text{SRMR} = .027, \text{CFI} = .99$). However, I found high standardized residuals, especially for the two positive contact items. The pairs of items for positive contact ($\alpha = .96$) and negative contact ($\alpha = .96$) were averaged to form composite variables for positive and negative contact. I replaced the two

contact latent variables with the two contact composite variables and tested the new measurement model. This improved the fit for the measurement model ($\chi^2(1) = 0.489, p = .50, \chi^2/df \text{ ratio} = .48, \text{RMSEA} = .00 [90\% \text{ CI } .00–0.07], \text{SRMR} = .002, \text{CFI} = 1.00$).

The full threat-matching mediation model was tested using Multilevel SEM (MSEM) analysis with latent variables. MSEM models enable the analysis of one structural model at the within level and another at the between level. Such models can include indirect effects (unlike multilevel models) Preacher et al (2011). The MSEM mediation model decomposes each variable that varies both within and between individuals into a latent within person part and a latent between person part, thereby estimating between-person and within-person paths. This latent decomposition avoids potential problems of conflated within and between person relationships that might occur with non-SEM multilevel mediation models and estimates the indirect effects more precisely (Preacher et al, 2011). In this repeated-measures study design, participant responses towards each outgroup are regarded as nested within-person, resulting a two-level data structure (i.e., between and within individual). In other words, residual variance likely exists not only within participants as they respond differently depending on the outgroup encountered but also between participants in general.

Before performing the multilevel analysis, I tested the extent the group-varying variables varied between and within individuals by computing Intraclass Correlation Coefficient (ICC, i.e., the proportion of within person variance in the total amount of within- and between person variance of the variable). The ICCs for all variables laid between 0.18 and 0.22, indicating that a multilevel nested data structure is appropriate. Then, to prepare the data for this multilevel SEM, I separated the within-person variance from the between-person variance by computing the person-means for each variable and the deviations of each person's scores (one for each outgroup) for the same variables. Thus, the estimated effect of within-person variance portrays to what extent the relationship between contact and the

outcome variable via emotion fluctuate by outgroup considered. Whereas the estimated effect of the between-person variance represents the effect of the relationship between contact and outcome (via emotion) varies on average across the sample.

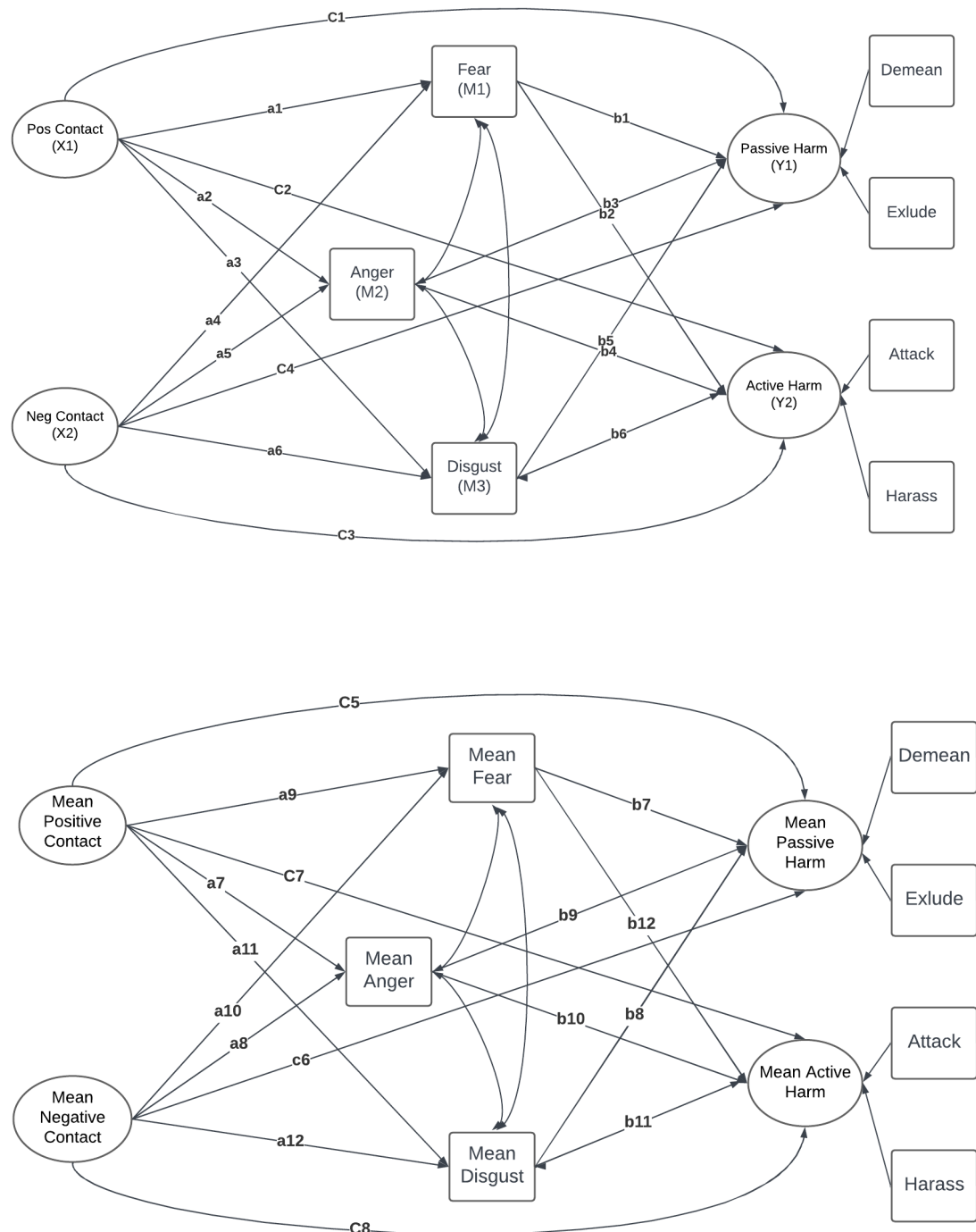
The analysis was conducted using the lavaan package (Rosseel, 2012) within R (R Core Team, 2018), using a long-format dataset. Two identical models were specified, one at level one to test within participant differences, one at level two to test between participant differences, see Figure 22. The results from the model indicate it was a good fit for the data ($\chi^2(22) = 115.28$, χ^2/df ratio = 5.24 $p < .001$, RMSEA = .066 [90% CI .055– 0.079], SRMR = .026 (within) SRMR = .027 (between), CFI = .99. It can therefore be concluded that the relationships between contact and behaviour intentions via emotion differ both within participant (according to the outgroup considered) and between generally between participants. The full results from this model for the indirect, direct, and total effects of contact on both passive and active harm intentions are set out in Table 25. However, whilst a multilevel SEM model can help determine if reactions within individuals vary when they encounter different outgroups, it is not possible to determine how reactions vary towards each different outgroup. Nonetheless at a global level, all indirect effects remained significant in the level one model suggesting that at an individual level, all three specific emotions have a significant effect on the relationship between contact and the two outcome behaviours. This was not the case for the level two model (as table 25 shows). In the between participant model, the indirect effects of both positive and negative contact on active harm via fear did not meet significance.

Next, to further investigate differences at an outgroup level, the threat-matching mediation model was tested again, this time using SEM analysis with latent variables. Whilst this model cannot determine if differences lay between or within participants, it can allow a comparison between outgroups. Again, the analysis was conducted using the Lavaan package

(Rosseel, 2012) within R (R Core Team, 2018) but this time using a wide format dataset. All the latent factors, positive and negative contact as well as passive and active harm, were each indicated by two items. Anger, fear, and disgust were included as manifest indicators. The measurement model showed a good fit to the data, $\chi^2(14) = 97.76$, $p < .001$, χ^2/df ratio = 6.98, RMSEA = .063 [90% CI 0.056– 0.081], SRMR = .027, CFI = .981. Within the full structural model, I specified three parallel mediation sub-models, one for each target group. In each sub model positive contact (X_1) and negative contact (X_2) with the named target outgroup, predicted perceptions of fear (M_1), anger (M_2) and disgust (M_3) with passive (Y_1) and active harm (Y_2) as outcome variables. The direct paths from positive and negative contact to passive and active harm were also included. Fear, anger, and disgust were allowed to correlate. The model which resulted in an excellent fit $\chi^2(96) = 141.85$, $p = .002$, χ^2/df ratio = 1.48, RMSEA = .031 [90% CI 0.019– 0.041], SRMR = .043, CFI = .99. The full results for the indirect, direct, and total effects of contact on passive harm intentions are set out in Table 26; the full results for the indirect, direct, and total effects of contact on active harm intention are set out in Table 27. The empirical fit of the structural equation model for each outgroup considered can be seen in Figures (39 – 41) appendix M.

Figure 22

Proposed threat-matching mediational model showing the associations between contact, emotion, and behaviour intention both within (level 1) and between (level 2) participants.



Note. Path labels are included to aid interpretation. Model Fit: (χ^2 (22) = 115.28, χ^2/df ratio = 5.24 $p < .001$, RMSEA = .066 [90% CI .055–0.079], SRMR = .026 (within) SRMR = .027 (between), CFI = .99

Table 27 *The summary of the effects of contact on passive and active harm intention both within and between participants.*

	Effect	Upper CI	Lower CI
Within participant effects from positive contact to passive harm			
Total	-.50**	-.74	-.27
Total indirect	-.37**	-.55	-.21
Total direct	-.13**	-.19	-.06
Specific indirect paths			
Positive contact > Fear > Passive harm	.03**	.00	.05
Positive contact > Anger > Passive harm	-.23**	-.31	-.16
Positive contact > Disgust > Passive harm	-.17**	-.24	-.10
Within participant effects from negative contact to passive harm			
Total	.46**	.27	.66
Total indirect	.29**	.16	.43
Total direct	.17**	.11	.23
Specific indirect paths			
Negative contact > Fear > Passive harm	-.02**	-.04	.00
Negative contact > Anger > Passive harm	.18**	.12	.24
Negative contact > Disgust > Passive harm	.13**	.08	.19
Within participant effects from positive contact to active harm			
Total	-.09	-.21	.02
Total indirect	-.05	-.13	.03
Total direct	-.04*	-.08	-.01
Specific indirect paths			
Positive contact > Fear > Active harm	.02**	.01	.04
Positive contact > Anger > Active harm	-.04**	-.08	-.01
Positive contact > Disgust > Active harm	-.03**	-.06	.00
Within participant effects from negative contact to active harm			
Total	.12**	.04	.22
Total indirect	.03	-.02	.10
Total direct	.09**	.06	.12
Specific indirect paths			
Negative contact > Fear > Active harm	-.02**	-.03	-.01
Negative contact > Anger > Active harm	.03**	.01	.06
Negative contact > Disgust > Active harm	.02**	.00	.05

Table 28 *The summary of the effects of contact on passive and active harm intention both within and between participants (continued)*

	Effect	Upper CI	Lower CI
Between participant effects from positive contact to passive harm			
Total	-.37**	-.67	-.09
Total indirect	-.24**	-.43	-.07
Total direct	-.13**	-.24	-.02
Specific indirect paths			
Positive contact > Fear > Passive harm	.04**	.01	.07
Positive contact > Anger > Passive harm	-.14**	-.22	-.07
Positive contact > Disgust > Passive harm	-.14**	-.22	-.07
Between participant effects from negative contact to passive harm			
Total	.40**	.16	.64
Total indirect	.20**	.04	.35
Total direct	.20**	.12	.29
Specific indirect paths			
Negative contact > Fear > Passive harm	-.04**	-.07	-.02
Negative contact > Anger > Passive harm	.12**	.06	.19
Negative contact > Disgust > Passive harm	.12**	.05	.18
Within participant effects from positive contact to active harm			
Total	-.05	-.18	.06
Total indirect	-.01	-.09	.05
Total direct	-.04*	-.09	.01
Specific indirect paths			
Positive contact > Fear > Active harm	.00	-.02	.01
Positive contact > Anger > Active harm	.03**	.01	.05
Positive contact > Disgust > Active harm	-.04*	-.08	-.01
Within participant effects from negative contact to active harm			
Total	.12**	.02	.21
Total indirect	.02	-.04	.07
Total direct	.10**	.06	.14
Specific indirect paths			
Negative contact > Fear > Active harm	.00	-.01	.02
Negative contact > Anger > Active harm	-.02**	-.04	-.01
Negative contact > Disgust > Active harm	.04**	.01	.06

The effects of contact with psychiatric patients on harmful behaviour intentions

In line with Cottrell and Neuberg's (2005) socio-functional approach to prejudice, it was anticipated that because participants perceived the psychiatric patient outgroup to pose a safety threat, this outgroup would elicit fear, which in turn would be associated with passive harm bias. The threat-matching hypothesis posits that the emotional processes underlying the effects of contact depend not only on contact valence but also on the specific threat(s) posed by the outgroup. Therefore, it was expected that prior positive contact experiences with psychiatric patients would be associated with a reduction in fear (not anger nor disgust), which in turn would be associated with a weaker harm intention. Prior negative contact experiences with psychiatric patients would be related to an increase in fear (i.e., the emotion specifically associated with the safety threat posed. This increased fear, in turn, was expected to be related to a stronger passive harm intention.

The structural equation model (see Figure 39, in Appendix M) was a good fit for the psychiatric patient data $\chi^2(11) = 39.15, p < .001, \chi^2/df \text{ ratio} = 3.56, \text{RMSEA} = .07 [90\% \text{ CI } .05\text{--}.09], \text{SRMR} = .03, \text{CFI} = .97$.

Indirect effects of contact on passive harm intention

As Table 26 shows, tests of the indirect effects indicated that both positive contact and negative contact have significant but small indirect effects on passive harm intention via anger (positive contact, $b = -.07, \text{CI} = [-.13, -.01]$; negative contact $b = .06, \text{CI} = [.01, .11]$). The tests of the indirect effects of both positive and negative contact via fear and disgust did not reach significance. The direct effect of positive contact was associated with significantly less passive harm intention ($b = -.12, 95\% \text{ CI} [-.18, -.05]$) when the indirect paths were included in the model. The direct effect of negative contact remained significant when the emotional variables were introduced in the model ($b = .21, 95\% \text{ CI} [.11, .31]$). These results indicate that

anger (not fear or disgust) significantly mediates the relationship between distinct types of intergroup contact and passive harm intention.

Indirect effects of contact on active harm intention

As Table 27 shows, tests of the indirect effects indicate that both positive and negative contact have significant, but again small, indirect effects on active harm intention via fear (positive contact, $b = .04$, CI = .00, .08; negative contact $b = -.03$, CI = -.06, .00) and via anger (positive contact, $b = -.04$, CI = -.09, .00); negative contact $b = .04$, CI = .00, .07). It is notable that the indirect effects of positive contact via fear were associated with an increase in active harm intention while negative contact experiences via the same emotion were related to diminished active harm intention. The tests of the indirect effects of both positive and negative contact via disgust did not reach significance. The direct effect of positive contact on active harm intention remained significant ($b = -.08$, 95% CI [-.14, -.03]) when the indirect paths were included in the model. The direct effect of negative contact also remained significant when the emotional variables were introduced in the model ($b = .10$ 95% CI [.20, .05]). These results indicate that fear and anger (but not disgust) significantly mediate the relationship between distinct types of intergroup contact and active harm intention. The indirect effects of intergroup contact on active harm intention via fear and anger were compared by specifying contrasts in lavaan. The results revealed that there was no significant absolute difference in the indirect effects of positive nor negative contact via fear and anger on active harm intention.

Table 29

The summary of the effects of contact with psychiatric patients, anti-vaxxers, and far-right activists on passive harm intention

	Psychiatric patients			Anti-vaxxers			Far-right activists		
	95% CI			95% CI			95% CI		
	Effect	L	U	Effect	L	U	Effect	L	U
Effects from positive contact to passive harm									
Total	-.24	-.51	.02	-.30*	-.50	-.11	-.33*	-.54	-.12
Total indirect	-.08	-.25	.10	-.21*	-.33	-.09	-.21*	-.36	-.07
Total direct	-.17*	-.25	-.08	-.09*	-.17	-.02	-.12*	.18	-.05
Specific indirect paths									
Positive contact > Fear > Passive harm	.01	-.05	.07	.01*	.00	.02	.03*	.00	.06
Positive contact > Anger > Passive harm	-.07*	-.13	-.01	-.11*	-.16	-.06	-.14*	-.20	-.08
Positive contact > Disgust > Passive harm	-.02	-.07	.04	-.11*	-.17	-.06	-.10*	-.16	-.05
Effects from negative contact to passive harm									
Total	.24	-.02	.49	.39*	.18	.60	.44*	.19	.70
Total indirect	.06	-.08	.20	.19*	.07	.31	.24*	.08	.39
Total direct	.17*	.06	.29	.20*	.10	.30	.21*	.11	.31
Specific indirect paths									
Negative contact > Fear > Passive harm	-.01	-.06	.04	-.02*	-.04	.00	-.03*	-.06	.00
Negative contact > Anger > Passive harm	.06*	.01	.11	.11*	.06	.16	.16*	.09	.22
Negative contact > Disgust > Passive harm	.01	-.03	.05	.10*	.05	.15	.11*	.05	.17

*Note: * indicates $p < .05$. ** indicates $p < .01$.*

Table 30

The summary of the effects of contact with psychiatric patients, anti-vaxxers, and far-right activists on active harm intention

	Psychiatric patients			Anti-vaxxers			Far-right activists		
	95% CI			95% CI			95% CI		
	Effect	L	U	Effect	L	U	Effect	L	U
Effects from positive contact to active harm									
Total	-.10	-.28	.07	-.10	-.27	.07	-.10	-.33	.12
Total indirect	-.02	-.14	.10	-.05	-.15	.05	-.05	-.19	.08
Total direct	-.08*	-.14	-.03	-.04	-.11	.03	-.05	-.14	.04
Specific indirect paths									
Positive contact > Fear > Active harm	.04*	.00	.08	.00	-.01	.02	.05*	.02	.09
Positive contact > Anger > Active harm	-.04*	-.09	.00	.01	-.04	.05	-.06*	-.12	.00
Positive contact > Disgust > Active harm	-.01	-.05	.02	-.07*	-.11	-.02	-.04*	-.08	.00
Effects from negative contact to active harm									
Total	.12	-.08	.31	.29*	.09	.49	.31*	.04	.58
Total indirect	.02	-.08	.11	.04	-.06	.14	.06	-.09	.21
Total direct	.10*	.00	.20	.24*	.14	.34	.25*	.13	.37
Specific indirect paths									
Negative contact > Fear > Active harm	-.03*	-.06	.00	-.01	-.02	.01	-.06*	-.10	-.02
Negative contact > Anger > Active harm	.04*	.00	.07	-.01	-.05	.04	.07*	.01	.13
Negative contact > Disgust > Active harm	.01	-.02	.04	.06*	.02	.10	.05*	.00	.09

*Note: * indicates $p < .05$. ** indicates $p < .01$.*

The effects of contact with anti-vaxxers on harmful behaviour intentions

In line with the threat-matching hypothesis, it was expected that prior positive contact experiences with anti-vaxxers (perceived to pose a contamination threat) would be associated with a reduction in disgust (not anger nor fear), which in turn would be associated with a weaker harm intention. Prior negative contact experiences with anti-vaxxers were expected to be related to an increase in disgust, the emotion specifically associated with the contamination threat posed; in turn, increased disgust was expected to be related to a stronger passive harm intention. The model (see Figure 40, in appendix M) was a good fit for the Anti-vaxxer data ($\chi^2(11) = 22.52, p = .02, \chi^2/df \text{ ratio} = 2.05, \text{RMSEA} = .05 [90\% \text{ CI } .02-0.8], \text{SRMR} = .02, \text{CFI} = .99$).

The indirect effects of contact on passive harm intention. As Table 26 shows, tests of the indirect effects indicated that both positive contact and negative contact have significant indirect effects via anger (positive contact, $b = -.11, \text{CI} = -.16, -.06$; negative contact $b = .11, \text{CI} = .06, .16$); disgust (positive contact, $b = -.11, \text{CI} = -.17, -.06$; negative contact $b = .10, \text{CI} = .05, .15$); and to a small extent, fear (positive contact, $b = .01, \text{CI} = .00, .02$; negative contact $b = -.02, \text{CI} = -.04, .00$). While positive contact is associated with decreased passive harm intention via anger and disgust, fear is associated with a significant but small increase in passive harm intention. Similarly, while negative contact via anger and disgust is associated with increased passive harm, fear is significantly related (in a small way) to decreased passive harm intention. The direct effects of both positive and negative contact on passive harm were significant when the emotion variables were included in the model (positive contact, $b = -.09, \text{CI} = -.17, -.02$; negative contact, $b = .20, \text{CI} = .10, .30$). These results indicate that both the positive and negative effects of intergroup contact with anti-vaxxers on passive harm intention likely operate via anger and disgust. Positive contact with anti-vaxxers is associated with weakened anger and disgust, which in turn are related to lower

passive harm intention. Negative contact is associated with strengthened anger and disgust, which are linked to increased passive harm intentions, such as demeaning and excluding behaviours.

The indirect effects of contact on active harm intention. As Table 27 shows, tests of the indirect effects indicate that both positive and negative contact have significant indirect effects on active harm intention via disgust (positive contact, $b = -.07$, $CI = -.11, -.02$; negative contact $b = .06$, $CI = .02, .10$) but not via anger nor fear. The direct effect of positive contact on active harm was not significant when the emotion variables were included in the model (positive contact, $b = -.04$, $CI = -.11, .03$), suggesting that reduced disgust accounts for the effect of positive contact on weakened active harm intentions. However, the direct effects of negative contact on active harm intentions remained significant when the emotion variables were introduced to the model (negative contact, $b = .24$, $CI = .14, .34$). These results indicate that both the positive and negative effects of intergroup contact with anti-vaxxers on active harm intention likely operate via disgust, which is linked in turn to active harm intentions, such as “attacking” and “harassing”.

The effects of contact with far-right activists on harmful behaviour intentions

It was expected that prior positive contact experiences with far-right activists would be associated with a reduction in anger (not fear nor disgust), which in turn would be associated with a weaker harm intention. Prior negative contact experiences with far-right activists would be related to an increase in anger (the emotion specifically associated with the obstacle threat perceived to be posed by far-right activists); increased anger, in turn, was expected to be related to a stronger active harm intention. The model (see Figure 41, Appendix M), however, was a notably weak fit for the far-right activist data ($\chi^2(11) = 72.12$, $p < .001$, χ^2/df ratio = 6.55, RMSEA = .11 [90% CI 0.08– 0.13], SRMR = .04, CFI = .97)

The indirect effects of contact on passive harm intention. As Table 26 shows, tests of the indirect effects indicated that both positive contact and negative contact have significant indirect effects via anger (positive contact, $b = -.14$, $CI = -.20, -.08$; negative contact, $b = -.03$, $CI = -.06, .00$), via disgust (positive contact, $b = -.10$, $CI = -.16, -.05$; negative contact, $b = .11$, $CI = .05, .17$), and via fear (positive contact, $b = .03$, $CI = .00, .06$; negative contact, $b = -.03$, $CI = -.06, .00$). While positive contact was associated with decreased passive harm intention via anger and disgust, fear was associated with a significant but small increase in passive harm. Similarly, while negative contact via anger and disgust was associated with increased passive harm, fear appears to be related in a small way to decreased passive harm. The direct effect of positive contact on passive harm was not significant when the emotion variables were included in the model (positive contact, $b = -.12$, $CI = .18, -.05$), suggesting that reduced disgust and fear account for the effect of positive contact on weakened passive harm intentions. However, the direct effects of negative contact on active harm intentions remained significant when the emotion variables were introduced to the model (negative contact, $b = .21$, $CI = .11, .31$).

The indirect effects of both positive and negative intergroup contact on passive harm intention via disgust and anger were compared by specifying contrasts in lavaan. The results revealed no significant differences. These findings indicate that both the positive and negative effects of intergroup contact with far-right activists on passive harm intention likely operate via both anger and disgust, which is linked in turn to passive harm intentions, such as demeaning and excluding.

The indirect effects of contact on active harm intention. As Table 27 shows, tests of the indirect effects indicate that both positive and negative contact have significant indirect effects on active harm intention via disgust (positive contact, $b = -.04$, $CI = -.08, .00$; negative contact $b = .05$, $CI = .00, .09$), anger (positive contact, $b = -.06$, $CI = -.12, .00$;

negative contact $b = .07$, $CI = .01, .13$), and fear (positive contact, $b = .05$, $CI = .02, .09$; negative contact $b = -.06$, $CI = -.10, -.02$). While positive contact was associated with decreased active harm intention via anger and disgust, fear was associated with an increase in passive harm. Similarly, while negative contact via anger and disgust was associated with increased active harm, fear appears to be related in a small way to decreased active harm. The direct effect of positive contact on active harm was not significant when the emotion variables were included in the model (positive contact, $b = -.05$, $CI = -.14, .04$), suggesting that reduced disgust accounts for the effect of positive contact on weakened active harm intentions. However, the direct effects of negative contact on active harm intentions remained significant when the emotion variables were introduced to the model (negative contact, $b = .25$, $CI = .13, .37$).

The indirect effects of both positive and negative intergroup contact on active harm intention via disgust and anger were compared by specifying contrasts in lavaan. The results revealed no significant differences. These findings indicate that both the positive and negative effects of intergroup contact with far-right activists on active harm intention likely operate via both anger and disgust, which are linked in turn to active harm intentions, such as attacking and harassing.

While these findings do not perfectly align with the three threat–emotion profiles of Cottrell and Neuberg (2005) (i.e., obstacle–anger, contamination–disgust, and safety–fear), these results do show some evidence for distinct mediation processes. In the case of psychiatric patients, a social group perceived to pose a safety threat to the participants was expected to arouse fear, which in turn would promote passive harm behaviours. Contrary to this expectation, the threat from psychiatric patients elicited anger (not fear), which in turn explained the effects of contact valence on passive harm behaviour intentions, such as

excluding and demeaning. Anger also partially explained the effect of contact on active harm behaviour intentions.

Anti-vaxxers, a social group perceived to pose a contamination threat to participants was anticipated to arouse disgust, which in turn would promote passive harm behaviours. In line with this expectation, the threat from anti-vaxxers elicited both anger and disgust, which in turn partially explained the effects of both positive and negative contact on passive harm behaviours. Contrary to expectations, weakened disgust arousal also fully accounted for the effect of positive contact and partially explained the effect of negative contact on active harm intentions, such as attacking and avoiding.

Far-right activists, a social group perceived to pose an obstacle threat to participants, was expected to arouse anger, which in turn would promote an active harm behaviour intention. In line with this expectation, both weakened disgust and weakened anger arousal fully accounted for the effect of positive contact on active harm behaviour intentions and partially explained the effect of negative contact on passive harm behaviours. Contrary to expectations, both weakened disgust and weakened anger arousal fully accounted for the effect of positive contact on passive harm intentions and partially explained the effect of negative contact on passive harm intentions.

Discussion

This chapter reported the tests used to further evaluate the threat-matching hypothesis and the concept that the effects of intergroup contact are likely threat specific because they serve the function of motivating specific threat-coping behaviours. The present study took a multigroup approach and was designed to determine whether the emotional processes underlying contact within an individual vary in response to different threats posed. When participants consider contact experiences and the consequences of threat perceptions with multiple outgroups, more confidence can be gained that the emotional processes underlying

contact depend on the specific threat posed by the outgroup. In line with the threat-matching hypothesis, it was expected that within an individual, the emotional processes underlying contact with each of the three outgroups presented would depend specifically on the nature of the threat posed by the target outgroup. The emotional process would in turn predict specific behaviour intentions that focus on coping with each group-specific threat. Greater positive contact experiences were expected to be associated with a reduction in negative intergroup emotions and a reduction in negative behaviour intentions, and greater negative contact experiences were expected to be associated with stronger negative intergroup emotions and increased negative behaviour intentions.

The results from this study show that frequency of intergroup contact is associated with reported intensity of intergroup emotion. In all cases, positive contact with an outgroup was associated with reduced emotional reactivity and reduced harm intention. Negative contact was associated with increased emotional arousal and increased harm intention. However, while the strength of emotional arousal predicted changes in behaviour intention, the specific threat–emotion–behaviour profiles envisaged by Cottrell and Neuberg (2005) did not consistently emerge. For example, for psychiatric patients presumed to pose a safety threat, anger (not fear) partially explained the relationship between contact and passive harm intention. Anger also partially explained the effect of contact on active harm intentions. For anti-vaxxers, who were expected to pose a contamination threat, the effects of contact via anger and disgust partially explained the effect of contact on both passive and active harm intentions. Similarly, in the case of far-right activists, a social group presumed to pose an obstacle threat, anger and disgust explained the effects of contact on both passive and active harm intentions. However, while these findings do not exactly map on to Cottrell and Neuberg's (2005) specific threat–emotion–behaviour profiles, the effects of contact appear in each outgroup case to operate via unique arrays of emotion that motivate relevant specific

threat-coping behaviours. In many respects, these results are not surprising. The discrepancy between the current study's findings and those of Cottrell and Neuberg (2005) are likely attributable to participants perceiving some outgroups to pose multiple threats and sometimes conflated threats.

In March 2021, for example, study participants were facing another wave of COVID-19 infection. As a result, clear lines between threats relating to safety, contamination, and obstacle constructs likely blurred, especially in the case of anti-vaxxers. The initial threat analyses revealed that the pattern of threats posed to the participants by the three outgroups did not follow the expected pattern. Psychiatric patients elicited a comparatively low safety and obstacle threat compared to anti-vaxxers and far-right activists. Anti-vaxxers were perceived as posing a relatively high level of safety, contamination, and obstacle threat. Far-right activists, in comparison, posed relatively high levels of safety and obstacle threat but little contamination threat. Cottrell and Neuberg (2005) used a threat representation model in which specific threats believed to elicit the same emotion are clustered together into the threat classes of obstacle, contamination, and safety threat. The authors state that their three-factor model to explain threat–emotion links may be less than ideal to capture relationships among threats. The findings in the current also indicate that categorizing threat by type is challenging. This does not negate the link between specific threat and specific emotion but does suggest the context matters when we appraise outgroup threat.

Threat content determines emotions, which in turn elicit behaviour that adequately deals with a given situation (Kamans, 2011). Anger and disgust were highly correlated in this study presenting difficulties in demonstrating a clear link between emotion and threat-coping behaviour. However, the entanglement of anger and disgust is perhaps unsurprising because of the nature of outgroup threats in this study. Anti-vaxxers, for instance, may provoke disgust, through fear of infection, and moral disgust and anger (i.e., moral outrage) in

response to obstacle threats such as breach of public or individual rights. In response to the same moral violation, some people report experiencing anger, and others report feeling disgust (Molho et al., 2017). In the study by Molho et al. (2017), participant anger was associated with high-cost, direct aggression, whereas disgust was associated with less costly, indirect aggression. This finding may help explain why, when faced with a variety of threats posed by anti-vaxxers, participants reported coping behaviour intentions that both acted against the target group (active harm) as well as without the target group (passive harm).

The results from the Far-right activist outgroup highlight that context matters when participants appraise threat. Far-right activism contravenes principles of equality, threatening greater harm to others, not the largely White British individual participants in this study. Interestingly, Molho et al. (2017) found that when the target of a moral violation shifts from the self to another person, anger decreases, but disgust increases, which may explain the link between far-right activist threat and passive harm intention. Far-right activists in the UK are also described in the State of Hate 2021 report as organisationally “very weak” and “fragmented” (Hope Not Hate, 2021, pg., 6). One aspect that is likely to determine how an ingroup member perceives an outgroup threat is group power (Cottrell & Neuberg, 2005). *Power* is often defined as the ability to control or influence a situation (Anderson & Berdahl, 2002; Fiske et al, 2016). This definition implies that even in conflict situations, the more powerful ingroup should be able to exert their power over the weaker far-right activist outgroup, in this case. Thus, passive harming behaviours, such as excluding and demeaning, seem to be appropriate threat-coping behaviours.

In this study, psychiatric patients posed relatively low levels of safety and obstacle threat towards participants, who aroused low levels of fear, anger, and disgust. Anger arousal partially explained the effects of contact on both passive and active harming behaviour intentions. The reason for this is not clear, but it may have something to do with the way

contact was measured in this study. Specific negative contact experiences are likely to arouse anger. Experiences that leave individuals feeling invalidated, disrespected, or treated unfairly generally arouse anger (Cremer et al., 2008)

One unanticipated finding was that while positive contact with each of the three outgroups was related to weakened fear responses and while negative contact was associated with greater fear arousal, fear in turn was associated with weakened passive and active harm intentions. A possible explanation for this is that participants were not offered an appropriate coping behaviour intention choice to deal with the threat at hand. That is, a limitation of this study is that participants were only presented with options to cope via passive or active harming behaviours. Active harming behaviours include harassing and attacking and are aimed at directly hurting a group or its interests (i.e., acting against the target group). Passive harming behaviours include excluding and demeaning groups so that their social worth is diminished (i.e., acting without the target group). Realistically, fearing a group is perhaps more likely to lead to impassively avoiding, not proactively excluding.

The present study took both a multilevel approach to further test the threat-matching hypothesis and the concept that the effects of intergroup contact are likely threat specific because they serve the function of motivating specific threat-coping behaviours. The results provide further evidence that the specific emotional processes underlying contact within an individual depend on the specific threat(s) posed by the outgroup, which likely elicit behaviour perceived to adequately deal with the event at hand.

Chapter 6: Contact history: Shaping the consequences of intergroup threat

This chapter draws on the appraisal theory of emotion (*Arnold, 1960; Frijda, 1986; Lazarus, 1968; Roseman, 1984; Scherer, 1984*) and questions whether the effects of an individual's prior contact experiences (e.g., quality, valence) moderate the emotional consequences of threat perception, which in turn may shape intergroup behaviours. This notion was explored over two studies that investigate the extent to which both positive and negative contact experiences can explain the variability in the threat–emotion–behaviour relationship. The results from these two studies show how integrating intergroup contact theory with intergroup emotion and the consequences of threat appraisal on behaviour intentions can provide a fine-grained understanding of how prior contact experiences may shape the way specific threats and emotions might drive intergroup behaviour tendencies. This finding implies that our history of positive and negative intergroup contact encounters may mould the way we appraise intergroup threats, which in turn may exacerbate or attenuate specific emotions that predict the avoidance or approach nature of our intergroup behaviour intentions.

Introduction

The results of the above-described studies provide support for the threat-matching hypothesis. This hypothesis draws on theories of outgroup-specific social perception to predict that the emotional processes underlying contact effects depend not only on contact valence but also on the specific threat posed by the outgroup. In testing threat-matching, the preceding two chapters explore a mediational model that tested the role of a range of specific emotions (i.e., anger, fear, and disgust) as mediators of the relationship between intergroup contact and intergroup behaviour. In the multiple contexts investigated, the findings of studies 2a, 2b, and 3b illustrate that specific and salient threats likely are linked to functional and specific emotions that may account for the effects of intergroup contact on behaviour

intentions. It was shown that threat content may determine specific emotions, which in turn elicit certain behaviours to enable coping as an intergroup situation unfolds. This finding establishes the idea that intergroup affect arousal is nuanced and specific in nature because it serves a function to promote threat-dependent and goal-orientated behaviour. It illustrates how such specific emotional responses may help explain the association between past contact experiences and particular intergroup behaviour intentions (e.g., passive versus aggressive harm). If prior contact experiences can predict specific emotional reactions (e.g., anger compared to fear) and subsequent behaviour responses to perceived intergroup threat, it is reasonable to also consider the role of both positive and negative contact as moderators of the threat–emotion–behaviour relationship. A person’s prior contact experiences may interact with their assessment of threat, moderating the threat and emotion relationship within the mediation. In other words, an individual’s prior contact experiences (e.g., their quality and valence) may help create a mindset where threat perception becomes malleable, which in turn may influence emotions and behaviour intentions.

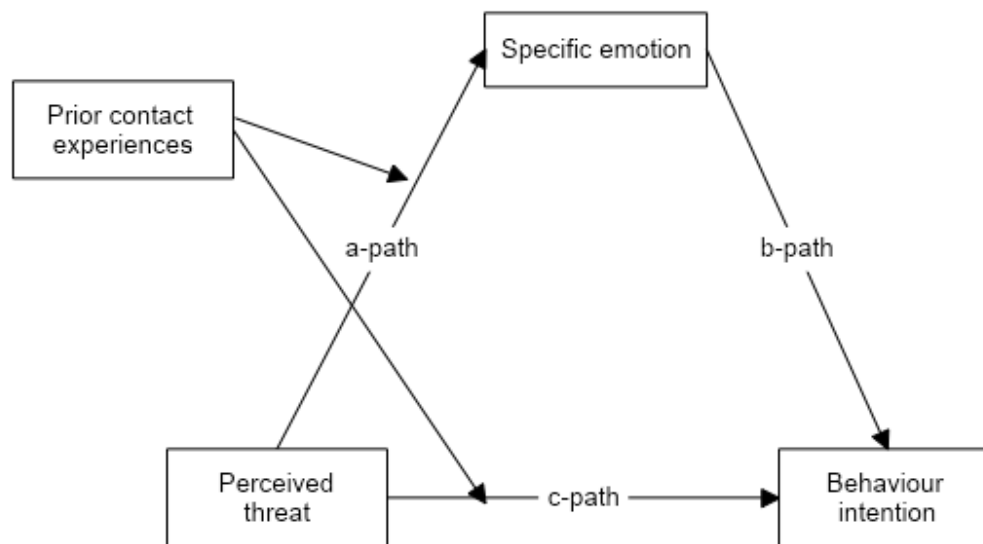
The role of prior contact experiences as a potential moderator of the threat–emotion–behaviour relationship can be seen at work in reports of social interactions between non-disabled students and their physically disabled peers. For instance, McCaughey et al. (McCaughy, 2009) suggest that non-disabled people often experience feelings of discomfort and anxiety when socially interacting with physically disabled individuals, and Fichten et al. (1994) report that college students experiencing feelings of discomfort around disabled peers purposefully distanced themselves from these “dissimilar” classmates. Dyson (2005), however, found that among school children who were educated in inclusive classrooms (those that contain both disabled and non-disabled children) sustained positive interactions, encouraging children to develop greater feelings of comfort and reduced anxiety in their interactions. Dyson’s (2005) findings illustrate that at least in the case of kindergarten

children, social interactions between differently abled children appeared to downregulate anxiety, which in turn predicted increased readiness for cross-group interactions during free play.

The notion that prior contact experiences have potential to moderate the threat–emotion–behaviour relationship was explored in the following two studies. These studies investigate how both positive and negative contact may help explain the variability in the threat–emotion–behaviour relationship. Specifically, the studies in this chapter investigated whether prior contact experiences moderate the relationships among perceived threat, both emotion, and behaviour. This process is illustrated in Figure 23, which indicates how prior contact may moderate both the direct relationship between threat and behaviour as well as the relationship between threat and emotion.

Figure 23

Model to illustrate the moderation of both the direct relationship between threat and behaviour and the path between threat and emotion



Threat appraisal

The appraisal theory of emotion (Arnold, 1960; Frijda, 1986; Lazarus, 1968; Roseman, 1984; Scherer, 1984) is of relevance to the present chapter. This theory proposes that emotions are extracted from individual “appraisals” (i.e., evaluations, interpretations, and explanations) of events. When people experience potentially stressful events, they need to make a judgment about the significance of the stressor. This process involves evaluating the potential harm the stressor poses and assessing available resources for survival. Appraisal theory posits that these judgments lead to specific emotional reactions that have the potential to drive an individual’s behaviour. In the theory, each specific emotion (e.g., anger, fear, joy) is hypothesised to be related to a distinct action tendency, which is relevant to the harm or benefit of the situation unfolding (Smith, 2004). For instance, anger often promotes an effort to remove an obstacle to re-open a path to a desired goal (Frijda, 1986) or to change the behaviour of others (Fischer & Roseman, 2007). For example, as study 2b showed among

Trump supporters in the 2020 US presidential election, anger towards Democratic voters predicted hostile behaviour intention, likely intended to remove Democratic politicians from power to achieve the Republican goal of maintaining political power.

One of the first cohesive models of appraisal theory, developed by Lazarus and Folkman (Lazarus & Folkman, 1984), highlights the role of *threat appraisal*, which is the anticipation that an event may lead to personal harm. Threat appraisal refers to the two-part evaluative process in which an individual assesses firstly the extent to which a stressor can directly harm them and secondly the degree to which they can cope with or control the stressor and the likely outcome of the threat. In line with the appraisal theory of emotion, threat appraisals that simultaneously indicate high risk alongside an assessment of poor coping capacity have been shown to elicit specific emotions that mobilise specific behaviour strategies to eliminate the stress-provoking situation. For example, Ireland (2011) found fear of victimisation could be predicted by the presence of increased threat and decreased coping ability among a population of male prisoners. Increased fear of victimisation, in turn, was found to predict avoidance through self-isolation and pre-emptive aggressive behaviour. Such appraisal processes can also exist at a group level (Smith, 1993). The studies in the previous two chapters highlight evidence indicating that when an outgroup poses a threat to an ingroup, individuals appraise the threatening event in terms of group goals; consequently, they experience specific intergroup emotions that according to intergroup emotion theory (Mackie et al., 2000), play a substantial role in shaping intergroup coping behaviour. This indirect effect of perceived intergroup threat on intended behaviour via emotion is illustrated by the mediation at the heart of the model shown in Figure 23.

Contact and perceived ingroup threat

Integrated threat theory (Stephan & Renfro, 2002; Stephan & Stephan, 2000) suggests that threat perceptions depend on the quantity and quality of contact between the groups

(Riek et al., 2006). Building on intergroup contact theory (Allport, 1954; Pettigrew, 1998), intergroup threat theory identifies contact as an antecedent to threat, with favourable contact experiences reducing threat perception and negative contact increasing such feelings (Stephan et al., 2009). Intergroup threat research provides some good evidence for the existence of a relationship between intergroup contact and perceived intergroup threats (e.g., Pettigrew et al., 2007; Tausch et al., 2007). Negative contact for example, was shown to be related to greater perceptions of both realistic and symbolic threats in Native Canadians and White Canadian's evaluations of each other (Corenblum & Stephan, 2001) as well as in Mexicans and Americans' views of each other (Stephan et al., 2000). Likewise, positive contact is associated with reduced threat perception. In the case of White students' attitudes towards African Americans (Aberson, 2015) and Dutch people's attitudes towards immigrants (Curşeu et al., 2007), positive contact experiences have been found to be related to weaker threat perceptions. Moreover, Schmid et al. (2014) examined the aggressive action tendencies of majority-group members towards immigrants across several European countries and found that positive contact was associated with a reduction in realistic threat and subsequently a reduction in aggressive action tendencies. From this body of a research, it can be concluded that intergroup threat theory evidentially supports the notion that prior contact experiences may create a mindset where threat perception can be moulded.

Taken together, appraisal and intergroup threat theories indicate that an individual's prior life experiences, including variable intergroup contact experiences are likely to be at the dynamic core of any intergroup threat appraisal processes. Therefore, one might expect people with frequent positive contact experiences with members of an outgroup to be more likely to consider such group encounters as more desirable (Vezzali et al., 2010) and less threatening (Aberson, 2015). Likewise, individuals in such situations could be expected to feel better resourced to cope (Haslam et al., 2004) and to experience less negative affect

(Kauff et al., 2017). On the other hand, people with more negative contact experiences are more likely to appraise such encounters as threatening. Such a perception often arouses anger, fear, or disgust, which may prompt behavioural reactions aimed at eliminating a stress-provoking situation. If variation in an individual's contact experiences can make threat perception malleable, those experiences may regulate the specific emotional responses (e.g., fear, anger, joy) and thus alter an individual's subsequent coping efforts, including specific intergroup behaviours (e.g., approach or avoidance). In other words, in terms of the hypothesised model (Figure 23), prior positive contact experiences may create conditions that moderate the indirect relationship between intergroup threat perception and intergroup behaviour via emotion.

Contact experiences may shape the relationship between outgroup attitudes and outgroup behaviour.

Some recent work has begun to explore the likelihood that both positive and negative contact experiences act as moderators that transform prejudicial attitudes, which in turn translate into specific behaviour tendencies, such as social distancing. *Social distance preference* is described as someone's willingness or desire to engage in interpersonal relationships of varying degrees of closeness with someone from a minority group (Baumann, 2007), and it has been assessed as a behavioural index of outgroup attitudes (Corrigan et al., 2001). Bagci et al. (2020) (in their study 2) investigated the role of both positive and negative contact as independent moderators in the association between outgroup attitudes and social distance, held by a Turkish majority towards a Kurdish minority. Their findings provide some insight into how existing contact experiences shape the relationship between negative attitudes held towards outgroups and relevant behaviour intentions in that contact experiences may directly transform prejudicial attitudes into avoidance tendencies. The results of their study show that prejudicial attitudes held by Turkish participants with higher levels of

positive contact were less readily translated into avoidant behaviour towards the Kurdish minority. However, negative contact did not have the same moderating role. This suggests that positive contact, at least in this Turkish context⁶ (where negative contact is more commonly experienced), plays an important role in ensuring consistency between one's attitude and behaviour. If an individual's contact experience has agency in attitude-behaviour consistency (Bagci et al., 2019), it follows that contact experiences may also mould the threat-perception-behaviour relationship. That is, negative contact may amplify threat, intensifying the specific negative emotion that motivates coping behaviour intentions, and positive contact might dissipate threat, which in turn diminishes such negative feelings and thwarts negative coping behaviours.

In summary, prior positive and negative contact experiences may explain variability in the threat-emotion-behaviour relationship (see Figure 23 for an illustration of this relationship). The two studies in this chapter tested both positive and negative contact as moderators of the threat-emotion-behaviour relationship. Study 4a tested the role of American gentiles' positive and negative contact experiences with Jewish Americans using Cottrell and Neuberg's (2005) obstacle threat-anger-approach behaviour profile in May 2020 as the economic impact of COVID-19 unfolded. Study 4b examined whether White British relationships with Chinese people moderated the welfare threat-fear-avoidance behaviour relationship in June 2020. It was expected that in both cases, threat would be associated positively with intended behaviour via emotion for people with greater negative contact experiences and that the threat-emotion-behaviour relationship would be negatively associated for those with greater positive contact experiences.

⁶ The PKK (Kurdistan Workers' party) took up arms against the Turkish state in the 1980s to fight for Kurdish rights and autonomy. In recent years Turk-Kurd relations have broken down further engulfing the south-east of the country in renewed violence. Previous research in the context of Turk-Kurd relationships has confirmed that positive contact was more closely related to outgroup attitudes because positive contact has greater salience over negative contact (Bagci et al., 2020).

Study 4a

Cottrell and Neuberg's (2005) socio-functional model of prejudice indicates that anger is aroused when an outgroup is perceived as an obstacle threat to an ingroup's goal achievement, motivating hostile reactions to remove the obstacle. As described in chapter 2, Cottrell and Neuberg identify several specific *obstacle threats* which occur in a number of instances: (1) threatens ingroup's economic resources, (2) threatens ingroup property, (3) threatens personal freedoms and rights, (4) when the outgroup does not want to reciprocate relationship with the ingroup, (5) when the outgroup is seen as a threat for social coordination, and (6) when the ingroup does not trust the outgroup. The current study tested the role of American gentiles' positive and negative contact experiences with an outgroup of Jewish Americans, in moderating Cottrell and Neuberg's (2005) obstacle threat profile. The study emphasised a perceived Jewish outgroup threat to ingroup economic resources and supposed breaches of trust. According to Cottrell and Neuberg (2005), such an obstacle threat might arouse intergroup anger, provoking approach intention behaviours that lead to confrontation, opposition, and argument with Jewish people.

Context

The study took place on May 4, 2020, in the United States as the economic impact of the COVID-19 pandemic was unfolding. The pandemic's ravaging of the US economy was salient in the minds of Americans, with major news sources reporting that stock markets were highly volatile (Ferguson, 2020). This stock market volatility provided numerous money-making opportunities for the shrewd investor (Song et al., 2021). Throughout history, tropes have depicted Jewish people as being clever, exploitative, and dishonest (Marger, 2012), connected to greed, moneylending, and usury (charging excessive interest rates) and as engaging in acts of moral turpitude (Wistrich, 1999). These antisemitic canards have stoked anti-Jewish sentiment, led to massacres against Jews, and sadly still result in the persecution

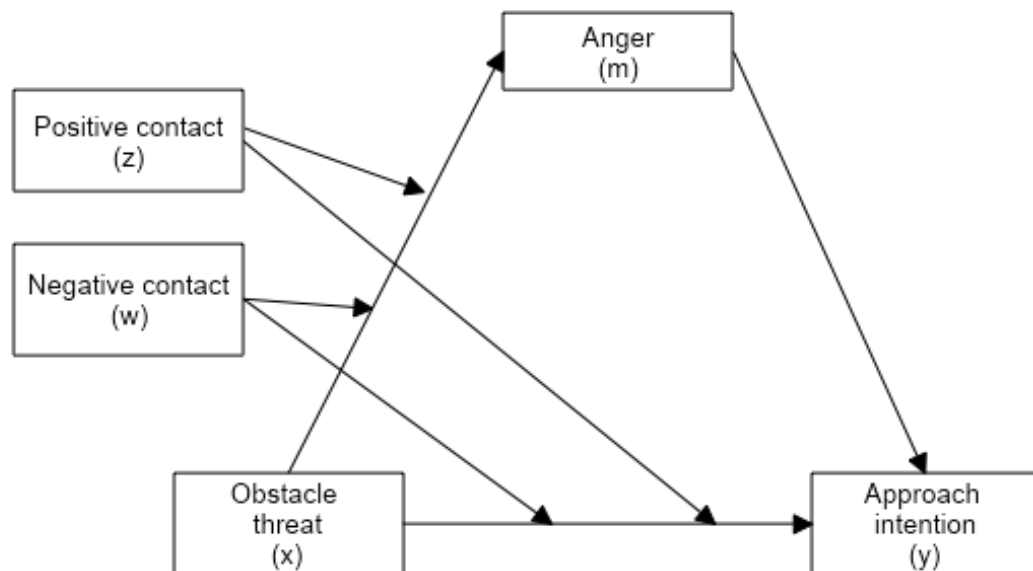
of Jewish people today (Kauders, 2011). Therefore, it might be expected that non-Jewish American citizens facing economic uncertainty and stock market volatility could conflate such economic turbulence with a perceived obstacle threat from Jewish people with respect to ingroup economic resources, such as employment opportunities and outgroup trust.

On the basis of the functionalist approach that links specific emotions to specific emotion tendencies, it is expected that anger would predict ingroup hostile approach behaviours towards Jewish people and that fear would predict avoidant behaviours (Cheung-Blunden & Blunden, 2008). Importantly, it might be expected that the threat–anger–approach behaviour relationship would be weaker among participants with greater positive contact experiences and stronger among participants with greater negative contact experiences.

Helpfully, Hayes (2018) describes a partial moderated mediation process as the extent to which the indirect effect of X on Y through M changes as the first moderator changes by one unit when the other moderator is held fixed. Tests of this partial moderated mediation model can help answer two important questions: (1) Does negative contact moderate the indirect effect of obstacle–threat–approach intention, via anger, when positive contact as the second moderator is held constant. And (2) does negative contact moderate the direct effect of obstacle–threat–approach intention when positive contact is similarly held. Figure 24 illustrates this conceptual model of partial moderated mediation (PROCESS Model 10; Hayes, 2018), where the independent variable was participants' perceived obstacle threat (x), where the mediator variable was anger (m), and where the outcome variable was approach intention (Y), with negative contact (w) and positive contact (z) independently moderating both the first stage obstacle–threat–anger (a) indirect path and the direct obstacle–threat–approach intention (c) path.

Figure 24

First stage indirect and direct path additive dual moderated mediation model in conceptual form (PROCESS Model 10; Hayes, 2018)



Hypothesis 4a: Ingroup prior positive and negative contact experiences with a Jewish American outgroup are independent (partial) moderators of the obstacle–threat–anger intended approach behaviours mediation. The relationship is weaker among participants with greater positive contact experiences and stronger among participants with greater negative contact experiences.

Method

Participants

A power analysis was conducted in G*Power (Faul et al., 2009) to determine the sample sizes necessary for the pilot study. The linear multiple regression option was selected: namely, fixed model, R^2 deviation from zero option to specify a model with two predictors. Assuming a small-to-medium effect size ($f^2 = .06$) and a desired power of 80%, we sought to

recruit more than 160 participants. A sample of 189 participants (86 = female, 1 = prefer not to disclose sex) age 24–73 ($M = 42.47$, $SD = 10.83$) were recruited via Amazon MTurk, under the restrictions they were residents of the United States of America and spoke English as their first language. Participants were required to have had at least a 95% task approval rating for their previous tasks and were paid \$0.20 on successful completion. Data from 10 participants were excluded because they described their faith as Jewish.

Materials and procedure

The study was advertised on May 4, 2020, as a survey exploring opinions on protecting the US economy from an economic downturn. Participants were first asked to indicate their attitudes towards people from a range of faith backgrounds (i.e., Muslim, Mormon, Protestant, Jew, Catholic, and atheist) with widely used attitude thermometers, ranging from 0 to 10 (Haddock et al., 1993). The attitude thermometers represented a measure of generalized prejudice. Scores were reverse coded such that higher scores reflected higher prejudice. Participants then responded to a battery of scales, where the order was counterbalanced.

Intergroup contact. To measure prior intergroup contact, participants indicated how often they had had positive/good and negative/bad contact with Jewish people on 7-point scales (1 = *never*, 7 = *very often*; Barlow et al., 2012). Such single-item measures of positive and negative intergroup contact are commonly used and correlate strongly with longer measures (Hayward et al., 2018).

Obstacle threat. Perceived obstacle threat posed by Jewish people was measured with six novel obstacle threat items that focused on the financial stability of the United States economy and the economic prospects of American people (1 = *strongly disagree*, 7 = *strongly agree*, $\alpha = .99$). For example, one item stated, “Jewish people’s involvement in the financial

markets threatens our American economy”. Another was “The financial dealings of Jewish people threaten employment prospects for American people like me.”

Specific intergroup emotions. To assess discrete intergroup emotions, participants were asked to indicate when thinking about the current stock market volatility, to what extent they felt five different emotions towards Jewish people (‘angry’, ‘infuriated’, ‘fearful’, ‘outraged’, and ‘afraid’) using 7-point Likert scales (1 = *not at all*, 7 = *very much*; Giner-Sorolla & Russell, 2019).

Behaviour intentions. Finally, to measure behaviour intentions, participants were asked to what extent Jewish people made them want to “confront them”, “oppose them”, “argue with them”, “avoid them”, “have nothing to do with them”, and “keep them at a distance” (1 = *not at all*, 7 = *very much*; Kenworthy et al., 2016). To conclude, the study participants provided demographic information and were thanked and debriefed.

Data preparation

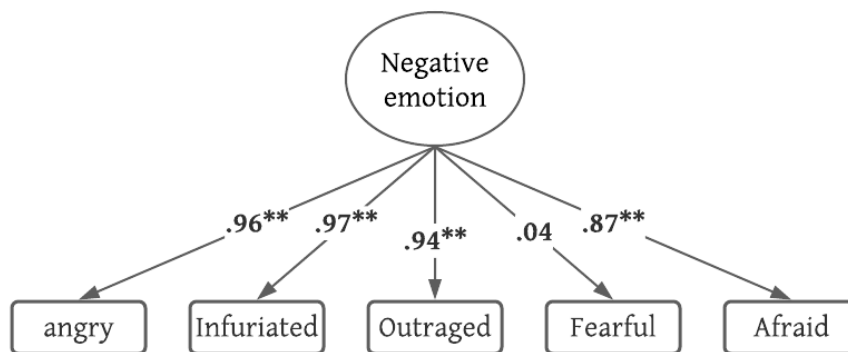
Specific intergroup emotions. In line with the previous studies in this thesis and Cottrell and Neuberg’s (2005) findings that different groups arouse qualitatively different emotions, I wished to explore the negative emotions anger and fear in this study as separate constructs. In data preparation, the five negative emotion items (i.e., angry, infuriated, fearful, afraid, and outraged) were treated as continuous observed variables. Descriptive and correlation statistics for these five emotion items are set out in Table 28. Initial exploratory data analysis revealed that the negative emotion item variables were not normally distributed. Confirmatory factor analysis (CFA) was used to investigate the fit of both a one-factor and a two-factor model of negative emotion. The models were fitted using lavaan version 0.6-10 (Rosseel, 2012) in R version 4.1.0. The one-factor model proposed that all five negative emotion items form a sign factor for negative emotion. The two-factor model anticipated that the five items could be clearly differentiated into two factors: anger and fear. The statistics

for both models are set out in Figures 25 and 26. In terms of the fit indices χ^2/df , *Robust RMSEA* and *Robust CFI*, the one-factor model was a better fit. Inspection of the emotion item correlations revealed that ‘angry’ and ‘fearful’ were not significantly related ($r = .019$). As the discrete emotion constructs of fear and anger were theoretically important to the analysis, the decision was taken to proceed with the analysis only using single-item variables “angry” and “fearful”.

Table 31*Means, standard deviations, and correlations with confidence intervals*

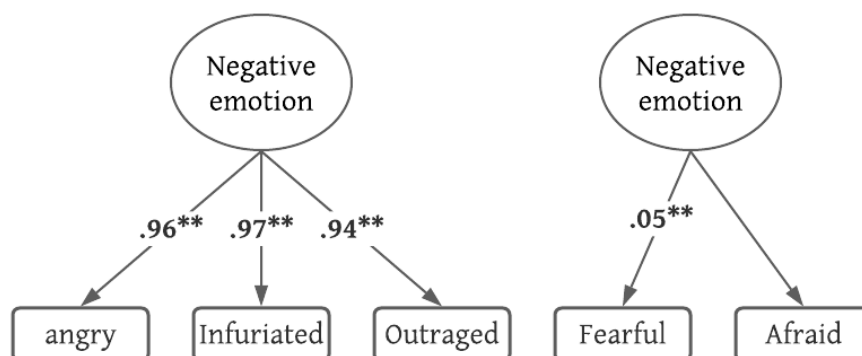
Variable	<i>M</i>	<i>SD</i>	1	2	3	4
1. Angry	1.37	1.05				
2. Infuriated	1.35	1.10	.94** [.92, .96]			
3. Fearful	1.36	1.12	.02 [-.13, .17]	.04 [-.10, .19]		
4. Outraged	1.35	1.12	.90** [.86, .92]	.91** [.89, .94]	.03 [-.12, .17]	
5. Afraid	1.33	1.06	.84** [.79, .88]	.83** [.77, .87]	.06 [-.09, .21]	.84** [.79, .88]

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Figure 25*Single-factor model of negative emotion*

Fit statistics: Robust $\chi^2 = (5, N = 179) = 13.42, p = .02, \chi^2/df = 2.68$, Robust CFI = .99,

Robust RMSEA = .02 90% CI [.16 to .09]

Figure 26*Two-factor model of negative emotion*

Fit statistics: Robust $\chi^2 = (4, N = 179) = 12.74, p = .01, \chi^2/df = 3.19$, Robust CFI = .99,

Robust RMSEA = .11 90% CI [.18 to .06]. *Note. Coefficients are standardized*

Note. Measurement models, empirical fit for a single-factor model of negative emotion compared to a two-factor model for negative emotion

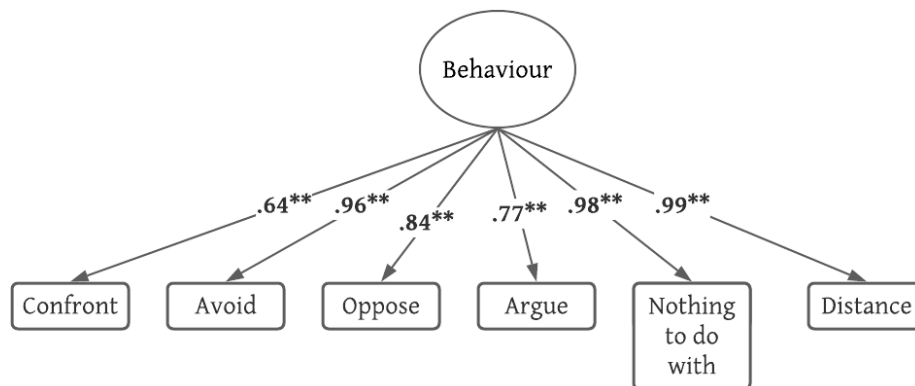
Behaviour intention. The approach–avoidance distinction is not new in analyses of motivation and intended behaviour (Elliot, 2006). Previous research has indicated that the approach–avoidance tendency scale consists of two factors that each correspond to three items a from six-item scale (Kenworthy et al., 2016). It was expected that the approach-behaviour intention factor would be indicated by the items “confront them”, “oppose them”, “argue with them” and that the avoidance behaviour intention factor would be indicated by the “avoid them”, “have nothing to do with them”, and “keep them at a distance” items. The descriptive statistics and correlations for these six behaviour intention items are set out in Table 29. Confirmatory factor analysis (CFA) was used to compare a one-factor and a two-factor model of intended approach–avoidance behaviour. The models were fitted using lavaan version 0.6-10 (Rosseel, 2012a) in R version 4.1.0. The one-factor model proposed that all six behaviour items formed a single factor for intention behaviour. The two-factor model anticipated that the six items could be clearly differentiated into two factors: approach and avoidance behaviour intentions. The fit statistics for both models are set out in Figure 20. In terms of the fit indices $c2/df$, Robust RMSEA and Robust CFI, the two-factor model was a better fit. As the approach behaviour intention was theoretically important to the analysis, the decision was taken to proceed with the analysis by creating a composite variable for approach behaviour intentions, using the three approach items (“confront them”, “oppose them”, and “argue with them”) from the approach–avoidance behaviour intention scale to form a single measure of approach behaviour tendency ($\alpha = .85$).

Table 32

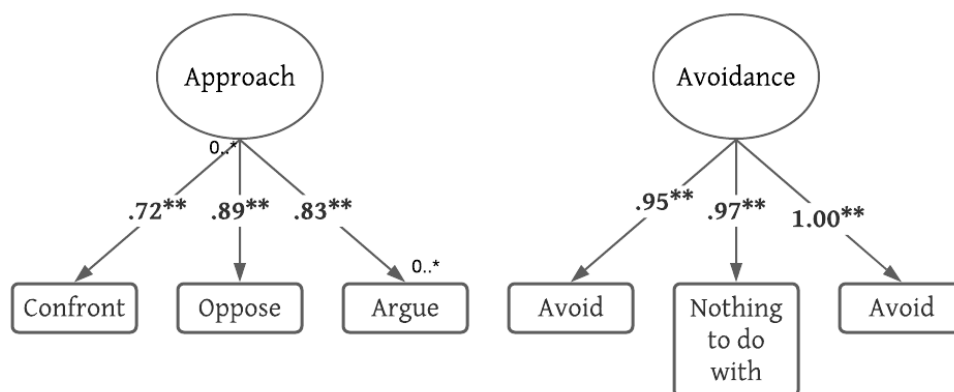
Means, standard deviations, and correlations with confidence intervals for the behaviour intention items.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Confront	1.30	0.87					
2. Avoid	1.57	1.50	.68** [.59, .75]				
3. Oppose	1.51	1.37	.63** [.53, .71]	.86** [.81, .89]			
4. Argue	1.40	1.13	.69** [.60, .76]	.80** [.73, .84]	.71** [.63, .78]		
5. Nothing to do with	1.62	1.58	.61** [.51, .70]	.92** [.90, .94]	.80** [.73, .84]	.73** [.65, .79]	
6. Distance	1.59	1.56	.62** [.52, .70]	.95** [.93, .96]	.83** [.78, .87]	.76** [.68, .81]	.97** [.96, .98]

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .001$

Figure 27*Single-factor model of behaviour intention*

Fit statistics: Robust $c^2 = (9, N = 179) = 101.50, p < .001, c^2/df = 11.28$, Robust CFI = .94, Robust RMSEA = .24 90% CI [.20 to .28].

Figure 28*Two-factor model of behaviour intention*

Fit statistics: Robust $c^2 = (8, N = 179) = 72.13, p = .01, c^2/df = 9.02$, Robust CFI = .96, Robust RMSEA = .21 90% CI [.17 to .26]. *Note. Coefficients are standardized*

Note. Measurement models, empirical fit for a single-factor model of behaviour intention compared to a two-factor model for behaviour intention.

Results

Correlations and descriptive statistics

Next, the correlations among all the variables were examined. These are presented in Table 30 along with the means and standard deviations. Positive contact was found to be significantly negatively correlated with the obstacle threat, anger, and approach tendency variables. Negative contact was found to be significantly positively correlated with obstacle threat, anger, and approach tendency. Anger and fear were significantly positively related, while positive and negative contact were unrelated. Fear and approach-behaviour tendency were not significantly related.

Affect matching

To test the affect-matching hypothesis of Barlow et al. (2019), regression analyses were conducted to compare the strength of positive and negative contact effects on the specific intergroup emotions anger and fear. Results set out in Table 31 show that positive and negative contact were significant independent predictors of anger but not of fear held towards Jewish people. A comparison of absolute standardized regression coefficients using the equation $z = (b^1 - b^2) / SE(b^1 - b^2)$, as per Barlow et al., (2019) showed that negative contact was a significantly stronger predictor of increased anger than positive contact was of reduced anger, $z = 2.12, p = .003$. Partial support for affect-matching was therefore obtained.

Table 33*Descriptive statistics and correlations with 95% confidence intervals for the variables*

	Mean	SD	1	2	3	4	5
1. Positive contact	4.15	1.89					
2. Negative contact	1.80	1.23	-.04 [-.18 to .11]				
3. Obstacle threat	1.79	1.53	-.37** [-.49 to -.24]	.48** [.36 to .59]			
4. Anger	1.37	1.05	-.28** [.41 to -.14]	.46** [.34 to .57]	.63** [.53 to .71]		
5. Fear	1.36	1.13	-.10 [-.24 to .05]	.10 [-.06 to .24]	.18* [.03 to .32]	.02 [-.13 to .17]	
6. Approach tendency	1.40	1.00	-.30** [-.42 to -.15]	.42** [.29 to .53]	.71** [.63 to .78]	.62** [.53 to .71]	.13 [-.02 to .27]

Table 34

Regression models testing the affect-matching hypothesis by examining the association between positive and negative intergroup contact with Jewish people and anger and fear held towards this group

Model	<i>B</i>	95% CI for <i>B</i>		<i>SE B</i>	<i>B</i>	<i>R</i> ²	<i>F</i>
		LL	UL				
Anger						.29	35.00***
Constant	1.28***	.90	1.66	.19			
Positive Contact	-.15***	-.22	-.08	.04	-.26		
Negative Contact	.39***	.28	.50	.06	.46		
Fear						.02	1.59
Constant	1.45***	.97	1.92	.24			
Positive Contact	-.06	-.15	.03	.05	-.10		
Negative Contact	.08	-.05	.22	.07	.09		

Note. * $p < .05$, ** $p < .01$; *** $p < .001$

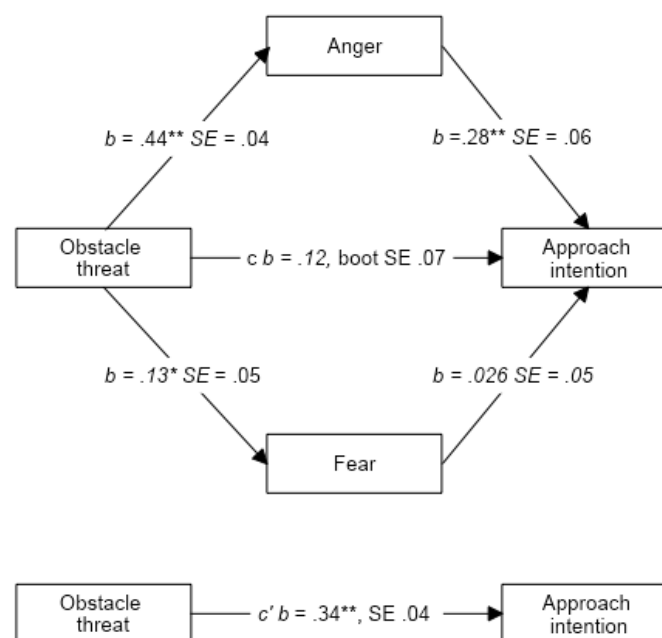
Preliminary analysis

Parallel mediation (PROCESS Model 4; Hayes 2013). It was expected that anger (not fear) would function in the model to motivate approach behaviour intentions. To test the extent to which the discrete emotions anger and fear might account for the relationship between perceived obstacle threat from Jewish people and the hostile approach behaviour intentions of participants, a parallel mediation analysis (PROCESS Model 4; Hayes, 2013) was performed. Results from this analysis (as seen in Figure 29) indicated that, as expected,

anger was the functional emotion in the model. Perceived obstacle threat was indirectly related to approach intentions via anger ($b = .12$ boot $S.E. = .07$, $p < .001$ 95% CI based on 5000 bootstrap samples [.03 to .30]), but not fear ($b = .003$ boot $S.E. = .01$, $p < .001$ 95% CI [-.01 to .03]). While threat was a significant predictor of both anger ($b = .44$, $S.E. = .040$, $p < .001$ 95% CI [.36 to .52] and fear ($b = .13$, $S.E. = .06$, $p = .017$ 95% CI [.02 to .24]), subsequently only anger ($b = .29$, $S.E. = .06$, $p < .001$ 95% CI [-.16 to .40]) and not fear ($b = .03$ $S.E. = .05$, $p = .58$ 95% CI [-.07 - .12]) predicted hostile approach behaviour intentions towards Jewish people. The direct effect of obstacle threat on approach behaviour was significant ($b = .34$ $S.E. = .043$, $p < .001$ 95% CI based on [.26 to .43]). The decision was taken to remove fear from further analyses.

Figure 29

Parallel mediation using the mediating effect of anger and fear in the relationship between obstacle threat and approach intention



Note. $*p < .05$, $**p < .01$, all presented effects are unstandardized. c' is the direct effect of obstacle threat on approach intention, c is the total effect of obstacle threat on approach intention.

Main analyses

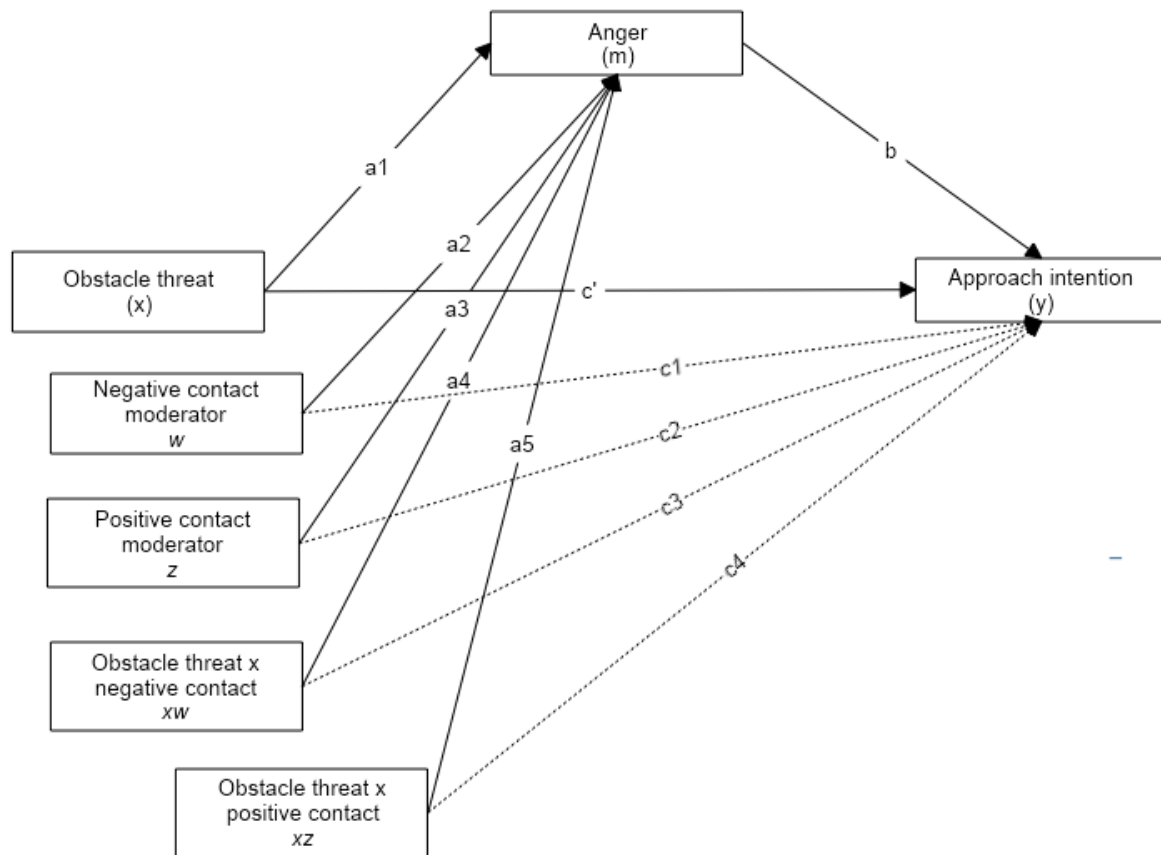
Partial moderated mediation (PROCESS Model 10, Hayes 2018). Next, positive, and negative contact were introduced as moderators to the parallel mediation model. This partial moderated mediation model tested the hypothesis that prior positive and negative contact with Jewish people would be independent moderators of the obstacle threat–anger–approach intention mediation model. It was expected that prior contact experiences with Jewish people would moderate the threat–emotion relationship. American non-Jewish ingroup members with greater positive contact experiences with Jewish outgroup members were expected to report less anger towards Jewish people, whereas those with greater negative contact experiences were expected to report greater anger. Figure 30 illustrates this partial moderated mediation model in statistical terms (PROCESS Model 10; Hayes, 2018), where the independent variable is the threat (x), anger (m) is the mediator variable, and approach behaviour intention (Y) is the outcome variable, with positive contact (w) and negative contact (z) independently moderating both the first stage (a) of the threat–anger indirect pathway and the threat–approach behaviour intention (c) path.

The model of anger. In the model of anger, as expected, negative contact (w) significantly and positively moderated the effect of obstacle threat on anger ($b = .09, p = .0001, CI = .05 \text{ to } .14$). Again, as predicted, positive contact (z) significantly but negatively moderated the same effect ($b = -.05, p = .0001, CI = -.10 \text{ to } -.01$). Table 32 contains the ordinary least squares regression coefficients and standard errors. According to Hayes (2018), researchers interested in whether one variable moderates an indirect effect (independent of moderation by a second variable) can answer this question through inference of the index of partial moderated mediation. In the current model (Figure 30), the indices of partial moderated mediation quantify the size and direction of the relationship between negative contact (w) and the size of the indirect effect of obstacle threat on approach intention through

anger, when positive contact (z) is held constant. These indices were $b = .03$ 95% CI = .001 to .079 for negative contact and $b = -.01$, CI = -.059 to .010 for positive contact. Because the bootstrap confidence intervals for the index of partial moderated mediation for negative contact do not cross zero, it can be concluded that (independent of any moderation of the indirect effect of obstacle threat on approach intention via anger from positive contact) negative contact still significantly moderates the indirect effect in this model. These results indicate that the indirect effect of obstacle threat on approach intention through anger is stronger as negative contact increases, meaning the indirect effect is significantly positively stronger for participants with greater experiences of negative contact with Jewish people, when positive contact experiences are held constant. Moreover, while the indirect effect appears to be weaker and negative among participants with positive contact experiences, these differences were not significant. In other words, the indirect effect of obstacle threat on approach tendencies (via anger) is positively and significantly greater for participants reporting greater negative contact but not positive contact.

Figure 30

First stage indirect and direct path additive dual moderated mediation model in statistical form (PROCESS Model 10; Hayes, 2018)



In this partial moderated mediation model, negative contact (w) and positive contact (z) additively moderate both the first stage obstacle threat–anger (a) indirect path and the direct obstacle threat–approach intention (c) path

Table 35

Ordinary least squares regression coefficients (with standard errors) from the conceptual conditional process model in Figure (18). The reported path labels relate to the statistical path diagram (Figure 24)

			Outcome	
	m: anger		y: approach intention	
Antecedent	Path	<i>b</i> (SE)	Path	<i>b</i> (SE)
Constant		.90* (.25)		.08 (.22)
X: Obstacle threat	a ₁ →	.23* (.09)	c' →	.50** (.08)
W: Negative contact	a ₂ →	-.03 (.09)	c ₁ →	-.15* (.07)
Z: Positive contact	a ₃ →	.02 (.05)	c ₂ →	.04 (.04)
XW: Obstacle threat x Negative contact	a ₄ →	.09* (.02)	c ₃ →	-.03 (.02)
XZ: Obstacle threat x Positive contact	a ₅ →	-.05 (.02)	c ₄ →	-.04 (.02)
M: Anger			b →	.28** (.07)
		$R^2 = .58$	$R^2 = .49$	
		$F(5, 173) = 33.49, p < .001$	$F(6, 172) = 39.07, p < .001$	
Moderator	Index of partial moderated mediation		95% bootstrap CI ^a	
W	a ₄ b = .025		.001 - .079	
Z	a ₅ b = -.014		-.059 - .010	

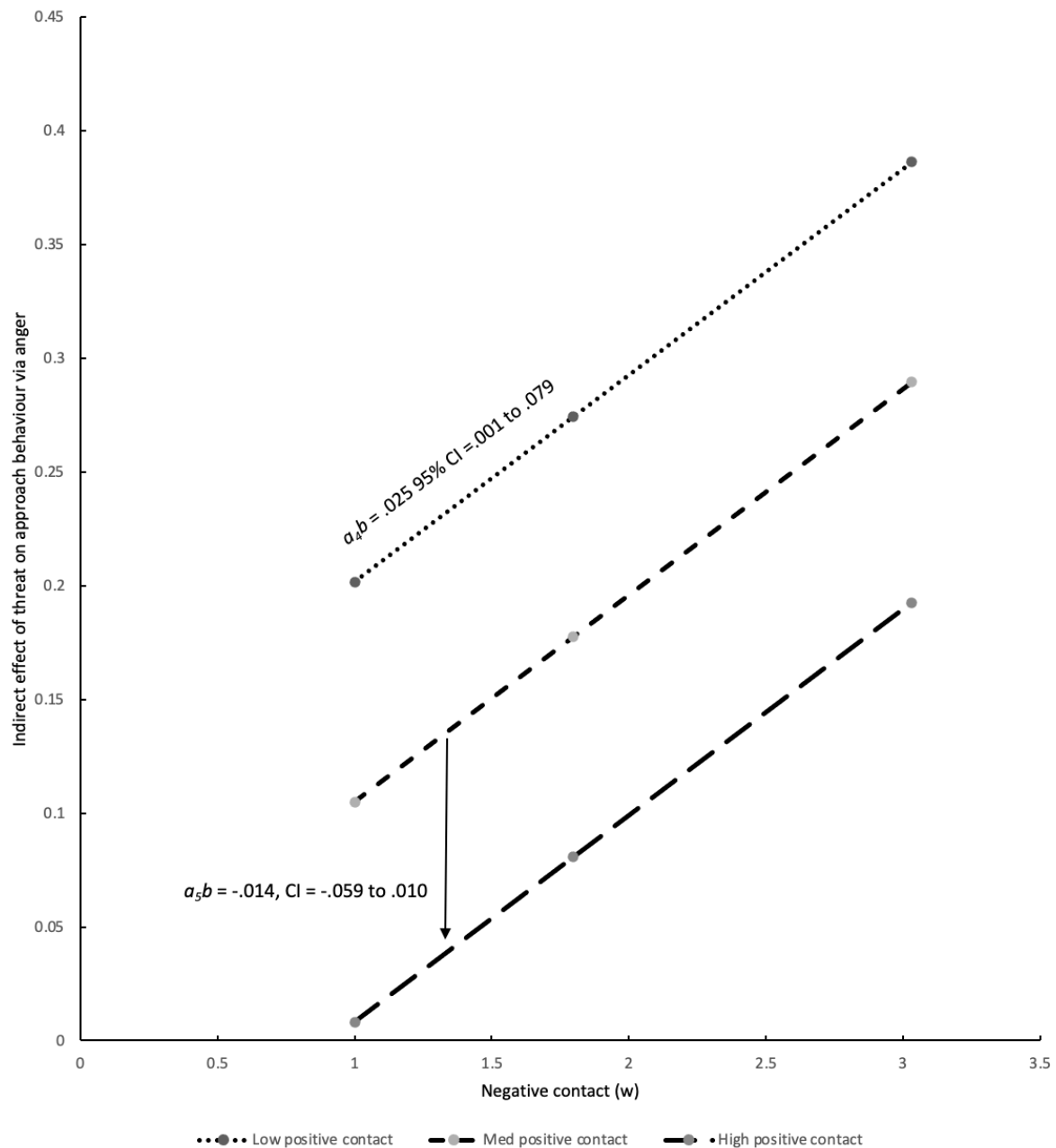
Simple slopes analysis. The presence of a second moderator complicates applying a procedure to probe or carry out a simple slopes analysis with a partial moderated mediation model. Unlike a moderated mediation model with a single moderator, in a partial moderated mediation, the indirect effect is additive (i.e., the function of two moderators); it is therefore necessary to choose values for each of the moderators. This means that the probing exercise becomes dependent on the values chosen by the researcher and such an investigation, according to Hayes (2018), can become meaningless, so caution should be applied when evaluating such an analysis. In this case, the continuous moderators of positive and negative contact were conditioned at the mean, a standard deviation below the mean and a standard deviation above the mean. The result was nine conditional indirect effects with bootstrap confidence intervals for people with low (2.26) positive contact scores and negative contact scores for low (1.00), medium (1.80), and high (3.03); people with medium (4.15) positive contact scores and low, medium, and high negative contact scores; and people with high (6.03) positive contact scores and low, medium, and high negative contact scores. These nine conditional indirect effects were used to create a simple slopes chart, which can be seen in Figure 31. The index of the partial moderated mediation by positive contact is represented by the slopes of the three lines, and the index of partial moderated mediation by negative contact is the distance between the three lines. The indirect effect of threat on approach behaviour intention can be seen through anger decreases with increases in positive contact, meaning the indirect effect is “larger” among people with greater positive contact when negative contact is held constant. The indirect effect of threat on approach behaviour through anger increases with increases in negative contact, meaning the indirect effect is “smaller” among people with greater negative contact experiences when positive contact is held constant. However, as only the indices of partial moderated mediation for negative contact are entirely below zero, it can be concluded that independently of any moderation effect of positive contact on the

mediation chain, only negative contact significantly moderates the indirect effect. Therefore, it can only be concluded that in this context, increased negative contact experiences with Jewish people facilitate the indirect effect of obstacle threat via anger on approach intentions; positive contact does not significantly buffer the same effect.

The model of approach behaviour intention. In the model of approach behaviour intention, neither negative ($b = -.03$, $p = .106$, $CI = -.09$ to $.01$) nor positive contact ($b = -.04$, $p = .834$, $CI = -.08$ to $.05$) moderated the direct effect of obstacle threat on approach intention. Table 32 (above) sets out the full details of the ordinary least squares' regression coefficients and the standard errors for this model.

Figure 31

A visual depiction of the indirect effect of obstacle threat on approach behaviour through anger as a function of negative (w) and positive (z) contact



Notes: a_4b = Index of partial moderated mediation for negative contact; a_5b = Index of partial moderated mediation for positive contact.

Next, for completeness' sake positive, and negative contact were introduced again as moderators to a parallel mediation model but this time the partial moderated mediation model to test an alternative hypothesis that prior positive and negative contact with Jewish people would be independent moderators of an obstacle threat–anger–avoid intention mediation model. As the perceived threat from Jewish people was predicted to be obstacle threat, and as according to Seip et al., (2014) anger motivates punishment of unfair behaviour, it is not expected that anger towards the Jewish outgroup would mediate avoidance based behavioural intentions. However, in line with contact theory, it might be expected that American non-Jewish ingroup members with greater positive contact experiences with Jewish outgroup members were expected to report less anger towards Jewish people, whereas those with greater negative contact experiences were expected to report greater anger. The indirect effect of obstacle threat on avoid tendencies (via anger) will be positively but not significantly greater for participants reporting greater negative contact and negatively but not significantly greater for participants reporting greater positive contact.

In this partial moderated mediation model in statistical terms (PROCESS Model 10; Hayes, 2018), the independent variable is the threat (x), anger (m) is the mediator variable, and avoidance behaviour intention (Y) is the outcome variable, with positive contact (w) and negative contact (z) independently moderating both the first stage (a) of the threat–anger indirect pathway and the threat–avoid behaviour intention (c) path.

The model of anger. In the model of fear, positive contact (z) significantly and negatively moderated the effect of obstacle threat on anger ($b = -.05, p = .03, CI = -.10$ to $-.004$). Negative contact (w) positively and significantly moderated the same effect ($b = .09, p = .0001, CI = .04$ to $.13$). Table 35 contains the ordinary least squares regression coefficients and standard errors. In the current model, the indices of partial moderated mediation quantify

the size and direction of the relationship between negative contact (w) and the size of the indirect effect of obstacle threat on avoidance intention through anger, when positive contact (z) is held constant. These indices were $b = -.017$ 95% CI = $-.08$ to $.01$ for positive contact and $b = .03$, CI = $-.001$ to $.093$ for negative contact. Because the bootstrap confidence intervals for the index of partial moderated mediation for both positive and negative contact do not cross zero, it can be concluded that (independent of any moderation of the indirect effect of obstacle threat on avoidance intention via anger from positive contact) while the indirect effect appears to be weaker and negative among participants with positive contact experiences, these differences were not significant. Similarly, while the indirect effect appears to be stronger and positive among participants with negative contact experiences, these differences were also not significant. In other words, as expected in line with the threat matching hypothesis, the indirect effect of obstacle threat on avoid tendencies (via anger) is not significant for participants either reporting greater negative or positive contact.

Ordinary least squares regression coefficients (with standard errors) from the partial moderated mediation model to test an alternative hypothesis that prior positive and negative contact with Jewish people would be independent moderators of an obstacle threat–fear–avoid intention mediation model.

			Outcome	
	m: anger		y: avoid intention	
Antecedent	Path	<i>b</i> (SE)	Path	<i>b</i> (SE)
Constant		.90* (.24)		-.12 (.33)
X: Obstacle threat	a ₁ →	.23* (.09)	c' →	.71** (.12)
W: Negative contact	a ₂ →	-.03 (.08)	c ₁ →	.25* (.11)
Z: Positive contact	a ₃ →	.02 (.05)	c ₂ →	.07 (.06)
XW: Obstacle threat x Negative contact	a ₄ →	.09* (.02)	c ₃ →	-.002 (.03)
XZ: Obstacle threat x Positive contact	a ₅ →	-.05* (.02)	c ₄ →	-.12** (.03)
M: Fear			b →	.33 (.09)
		$R^2 = .49$	$R^2 = .58$	
		$F(5, 173) = 33.49,$ $p < .001$	$F(6, 172) = 40.17,$ $p < .001$	
Moderator	Index of partial moderated mediation		95% bootstrap CI ^a	
W	a ₄ b = .030		-.001 - .093	
Z	a ₅ b = -.017		-.076 - .009	

Discussion

The results from study 1 provide some evidence for the effectiveness of prior contact to independently moderate the threat–emotion–behaviour pathway. It was found that greater prior negative (but not positive) contact experiences may mould the effect of threat on subsequent emotional reactions, which in turn positively predict greater threat coping behaviour intentions. These findings are in line with the appraisal theory of emotion and the proposition that our (at least negative) prior contact experiences may inform subsequent emotional reactions, which can in turn guide threat coping behaviours. A key limitation of this study was that the participants reported a low perception of obstacle threat from Jewish people. With low levels of threat perception and a small sample size, it is difficult to assess the ability of contact to moderate the threat–emotion pathway. A second limitation was the difficulties in creating latent variables for anger, fear, and approach behaviour intentions. Therefore, a decision was taken to run a second study using a larger sample in an experimental design where threat perception could be manipulated. Both these limitations will be discussed further at the conclusion of study 4b.

Study 4b

In line with the discussion of study 4a, this second study provided a further empirical test of the ability of both positive and negative contact to independently moderate the threat–emotion–behaviour pathway. Study 2a investigated how experience of intergroup contact with Chinese people predicted discrete intergroup emotions in the context of the outbreak of COVID-19 and how these emotions, in turn, predicted support for anti-Chinese restrictions. In line with the threat-matching hypothesis, the study found that positive contact was associated with lower support for discriminatory Chinese restrictions over and above support for general restrictions and that negative contact was associated with increased policy support. Importantly, these effects were more strongly driven by fear than by anger.

Therefore, it might be expected that in the context of the COVID-19 pandemic in June 2020, if a White British ingroup continues to perceive a welfare threat from a Chinese outgroup, the specific intergroup emotion of fear might motivate White British to avoid Chinese people.

In the current study, an experimental design was used to manipulate the independent variable of threat perception. Specifically, participants were assigned to one of two conditions, a treatment condition, or a control condition. In the treatment condition, participants were exposed to information intended to increase the perception of a welfare threat, whereas participants in the control condition received no such information. In accordance with appraisal theory (Roseman, 2001), it was expected that participants in the threat condition compared to those in the control condition would experience a greater emotional response, prompting coping behaviour tendencies. Importantly, though, and in line with the hypothesis, prior positive and negative contact with the outgroup were expected to be independent moderators of the welfare threat–fear–avoidance behaviour tendency pathway. In other words, this mediation chain of relationships was expected to be weaker among participants with greater positive contact experiences and stronger among participants with greater negative experiences.

Context

In June 2020, before COVID-19 vaccinations were available in Britain, COVID-19 continued to pose a salient welfare threat to British people. According to the England and Wales Office for National Statistics, COVID-19 was the third most frequent underlying cause of death, accounting for 23% of all deaths in England and Wales between March 1 and June 30, 2020 (Office for National Statistics, 2020). The threat from COVID-19 was influencing British attitudes and behaviours towards Chinese people, who were perceived by some to be the source of the disease. According to a YouGov poll conducted the same day as study 4b (Abraham, 2020), *Sinophobia*, which is the consistent act of discrimination towards ethnic

Chinese people, was becoming increasingly common in Britain, presumably because the pandemic's threat to well-being was being conflated with Chinese ethnic and national identity. The socio-functional model of intergroup affect (Cottrell & Neuberg, 2005) proposes that when an outgroup is perceived to pose a threat to people's physical welfare, they are likely to experience fear, prompting an avoidance reaction and self-protective behaviours. Such a discriminatory avoidant reaction is exemplified by acts such as the disinvitation of An Nguyen, a Vietnamese artist, from the Affordable Arts Fair as an exhibitor because her ethnicity would "create hesitation on the part of the audience to enter the exhibition space" (Coates, 2020). Hence, it might be expected that some British people facing a welfare threat from COVID-19 also perceived a threat to their welfare from Chinese people, which in line with appraisal theory, was hypothesized to drive ingroup fear and avoidance intentions towards Chinese people.

Hypothesis 4b: Prior positive and negative contact experiences of the ingroup with a Chinese outgroup are independent moderators of the welfare threat–fear–avoidance behaviour tendency pathway. It is expected that prior contact experiences with Chinese people moderate the relationship between welfare threat and fear. Fear is expected to be related avoidance behaviour. Participants in the experimental group will experience greater welfare threat. However, as the perceived welfare threat posed by Chinese people was generally salient at the time of the study, these effects may still be significant but smaller in size in the control condition. The relationship between threat and emotion will be weaker among participants with greater positive contact experiences and stronger among participants with greater negative contact experiences.

Method

Participants

On June 10, 2020, 515 White participants born in the UK were recruited via an online participant panel, Prolific (325 females; age [18–82 years old, $M = 42.02$, $SD = 15.80$]).

Although samples recruited from online panels are not fully representative of the population, the respondents typically vary more broadly in age, education background, political ideology, and geographic distribution than those recruited from undergraduate populations (Huff & Tingley, 2015; Levay et al., 2016). In line with Prolific’s policy, participants were paid a fixed fee per unit of average time subjects need for completing a study. In the current study, I estimated that Prolific participants would take 5 minutes to complete the study and earn £0.60 for their participation, which is equivalent to £7.20 per hour.

Procedure and materials

The study was advertised as research on how coronavirus was affecting British people. Participants were randomly allocated to one of two conditions (welfare threat, $N = 255$; control condition, $N = 260$). To manipulate threat perception, participants in the welfare threat condition were presented with a short block of text, which was reported to be an extract taken from a popular news source. The text specifically highlighted China as the accepted source of COVID-19 and emphasised the threat to British families’ physical welfare.⁷ Participants in the control condition were presented a white screen and notification that the button to continue would appear in 60 seconds. The threat manipulation was intended to heighten perceived welfare threat.

Contact. All participants were asked about their contact experiences with Chinese people using two single item measures. To measure prior intergroup contact, participants indicated how often they had had positive/good and negative/bad contact with Chinese people

⁷ See Appendix one for complete materials

on a 7-point Likert scale (1 = *never*, 7 = *very often*; Barlow et al., 2012). Single-item measures of positive and negative intergroup contact are commonly used and correlate strongly with longer measures (Hayward et al., 2018). All participants were then presented with the following scales, where the order was counterbalanced.

Attitudes. Generalized prejudice was measured by asking participants to indicate their attitudes towards Chinese people using an attitude thermometer ranging from 0 to 10 (Haddock et al., 1993). Scores were reverse coded such that higher scores reflected higher prejudice.

Threat. The perceived welfare threat posed by Chinese people was assessed by using three items adapted from Alston et al. (2020). Responses were given on a Likert scale with seven response categories ranging from 1 = *Strongly disagree* to 7 = *Strongly agree*, with the stem “Please rate the extent to which you agree with the following statements”. That stem was followed by three items: (1) “Chinese people increase the risk of physical illness to British people like me”; (2) “Chinese people threaten the welfare of British people like me”; and (3) “Chinese people increase the risk of British people like me contracting an infectious disease.”

Emotions. Participants’ discrete intergroup emotions were assessed by asking to what extent they experienced a variety of emotions towards Chinese people (‘angry’, ‘infuriated’, ‘fearful’, ‘outraged’, ‘afraid’) using 7-point Likert scales (1 = *not at all*, 7 = *very much*; Giner-Sorolla & Russell, 2019).

Outcome variable: Avoidance behaviour tendency. A novel seven-item scale was used to assess participants’ tendency of participants to engage in avoidance behaviour. Participants were asked, “In light of the Coronavirus pandemic originating from Wuhan in China, people around the world have taken steps limit the impact of the disease on themselves. We are

interested in what measures everyday British people might take.⁸ Please indicate the extent to which you would follow these measures. (1 = *Strongly disagree*, 7 = *Strongly agree*). (1) avoid eating in a Chinese restaurant; (2) avoid using a bus or railway carriage at the same time as a Chinese person; (3) avoid sitting near a Chinese person in a public space, even if they were two metres away from me; (4) avoid going to a Chinese market; (5) if I saw a Chinese person approaching me, I would go out of my way to avoid crossing paths with them; (6) if I saw a Chinese person become unwell in public, I would avoid touching them; and (7) avoid a supermarket checkout if I noticed the operator was Chinese.” To conclude the study participants provided demographic information and were thanked and debriefed.

Data preparation

Manipulation check. Before carrying out a manipulation check to make sure participants in the experimental condition had a stronger rating of welfare threat than that of the control participants, I evaluated the welfare threat scale. The three-item scale was assessed using confirmatory factor analysis to test whether the relationships observed among the scale items exist because they are influenced by the same latent construct of an avoidance behaviour tendency (Brown, 2015). It was expected that the welfare threat latent construct would be indicated by three items: (1) “Chinese people increase the risk of physical illness to British people like me”; (2) “Chinese people threaten the welfare of British people like me”; and (3) “Chinese people increase the risk of British people like me contracting an infectious disease”. The descriptive statistics and correlations for these three welfare threat items are set out in Table 33. The model was fitted using lavaan version 0.6-10

⁸ On 19th June 2020 the English regulations found in The Health Protection (Coronavirus, Restrictions) (England) Regulations 2020 included (subject to various exceptions):

The requirement to close premises and businesses on which food or drink is sold for consumption on those premises but open for takeaway services. The requirement that holiday-accommodation cease to carry on business. Restrictions on movement, for example people cannot stay overnight at a place other than where they are living, or where their linked household is living and restrictions on gatherings of more than 6 people outside and 2 people inside. However, in England, unlike in Wales, Scotland and Northern Island, there was no legislation mentioning the much cited ‘two-metre’ rule; it was only (sensible) Government advice.

(Rosseel, 2012a) in R version 4.1.0. The one-factor model proposed that the latent construct welfare threat indicated all three welfare items. The model fit statistics indicated an excellent fit for the data ($\chi^2 = (3, N = 515) = 0, p < .001, \chi^2/df = 0, CFI = .1, RMSEA = 0$).

Then, as a manipulation check, a *t*-test was conducted to determine whether the mean level of welfare threat experienced was different in the experimental condition compared to the control condition. The mean welfare threat score for the control group ($M = 1.70, SD = 1.11$) was significantly lower than the experimental group ($M = 2.07, SD = 1.44$; mean difference = .373, 95% *CI* [-0.60 - -0.15], $t(476.04) = -3.30, p = .001$, Cohen's $d = .29$), indicating the manipulation was successful.

Table 37

Means, standard deviations, and correlations with confidence intervals

Variable	<i>M</i>	<i>SD</i>	1	2
1. Threaten illness	1.85	1.40		
2. Threaten health	1.84	1.43	.84**	
			[.82, .87]	
3. Threaten infection	2.02	1.55	.86**	.84**
			[.84, .88]	[.81, .86]

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Specific intergroup emotions. In line with study 4a, again I wished to explore the negative emotions anger and fear in this study as separate constructs. The data for the five emotion items were treated as continuous variables and explored. Descriptive and correlation statistics for these items are set out in Table 34. Inspection of the emotion item correlations revealed strong relationships between all the emotional variables ranging from $r = .69$ to $r = .91$. Initial exploratory data analysis revealed that the negative emotion item variables were not normally distributed. Confirmatory factor analysis (CFA) was used to compare one-factor and two-factor models of negative emotion. The models were fitted using lavaan version 0.6-10 (Rosseel, 2012a) in R version 4.1.0. The one-factor model proposed that all five negative emotion items form a sign factor for negative emotion. The two-factor model anticipated that the five items could be clearly differentiated into two factors: anger and fear. The statistics for both models are set out in Figure 32 and 33. In terms of the fit indices (χ^2/df , *Robust RMSEA*, and *Robust CFI*), the two-factor model was a better fit. Given the subjectivity of evaluating the fit of models such as these, some scholars suggest using the chi-square divided by degrees of freedom (χ^2/df) as a measure of model fit, with values of less than 5 being treated as a common bench mark (Hu & Bentler, 1999). If the chi-square divided by degrees of freedom approach is taken, the two-factor model is demonstratively the better fit. Equally the comparative fit index (CFI) was larger for the two-factor model, and the root mean square error of approximation (RMSEA) was equal to .05 (the cut-off sometimes used for good fit), also indicating that the two-factor model of emotion was a better fit for the data. As the discrete emotion constructs of fear and anger were theoretically important to the analysis, the decision was taken to proceed with the two-factor model.

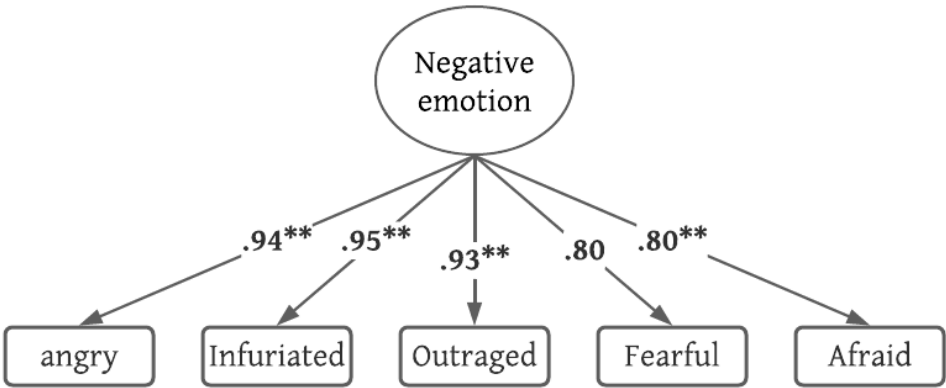
Table 38*Means, standard deviations, and correlations with confidence intervals*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Angry	1.87	1.50					
2. Infuriated	1.81	1.50	.91** [.89, .92]				
3. Fearful	1.65	1.29	.72** [.67, .76]	.73** [.69, .77]			
4. Outraged	1.73	1.41	.87** [.85, .89]	.89** [.87, .91]	.74** [.70, .78]		
5. Disgusted	1.78	1.52	.83** [.80, .85]	.82** [.78, .84]	.69** [.64, .73]	.86** [.83, .88]	
6. Afraid	1.63	1.32	.72** [.68, .76]	.74** [.69, .77]	.89** [.87, .90]	.75** [.71, .78]	.69** [.64, .73]

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Figure 32

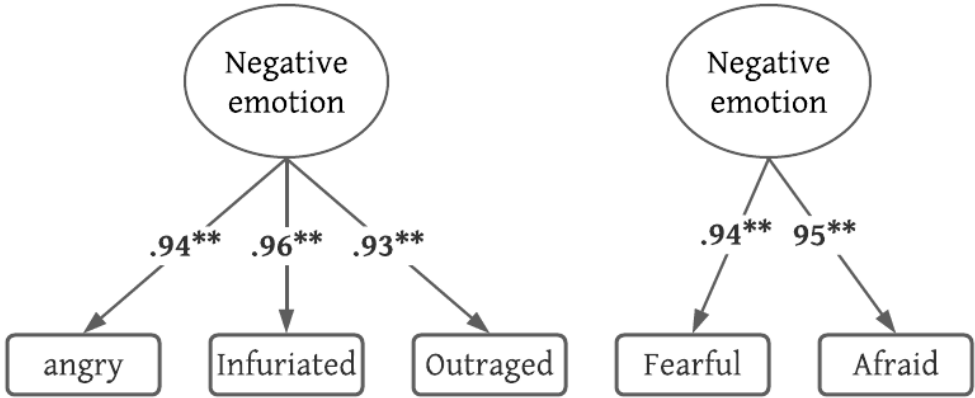
Single-factor model of negative emotion



Fit statistics: Robust $\chi^2 = (5, N = 515) = 361.45, p < .001, \chi^2/df = 72.29$, Robust CFI = .88, Robust RMSEA = .37 90% CI [.34 to .40].

Figure 33

Two factor model of negative emotion



Fit statistics: Robust $\chi^2 = (4, N = 515) = 9.58, p = .05, \chi^2/df = 2.40$, Robust CFI = .99, Robust RMSEA = .052 90% CI [.09 to .40].

Note. Coefficients are standardized. Measurement models, empirical fit for a single-factor model of negative emotion compared to a two-factor model for negative emotion

Behaviour intention

The novel seven-item scale for avoidance behaviour tendency was evaluated using confirmatory factor analysis to test whether the relationships observed among the scale items exist because they are influenced by the same avoidance-behaviour-tendency latent construct (T. A. Brown, 2015). It was expected that the approach behaviour intention factor would be indicated the seven items: (1) “avoid eating in a Chinese restaurant”; (2) “avoid using a bus or railway carriage at the same time as a Chinese person”; (3) “avoid sitting near a Chinese person in a public space, even if they were two metres away from me”; (4) “avoid going to a Chinese market”; (5) “if I saw a Chinese person approaching me, I would go out of my way to avoid crossing paths with them”; (6) “if I saw a Chinese person become unwell in public, I would avoid touching them”; and (7) “avoid a supermarket checkout if I noticed the operator was Chinese”. The descriptive statistics and correlations for these seven behaviour intention items are set out in Table 35.

The model was fitted using lavaan version 0.6-10 (Rosseel, 2012a) in R version 4.1.0. The one-factor model proposed that all seven behaviour items formed a single factor for avoidance behaviour tendency. The model fit statistics indicated that the model was poorly specified and did not fit the data ($\chi^2 = (5, N = 515) = 45.64, p < .001, \chi^2/df = 9.13, CFI = .98, RMSEA = .13$ 90% CI [.09 to .16]). After removing two items (“avoid going to a Chinese market” and “avoid a supermarket checkout if I noticed the operator was Chinese”) because they had r^2 values below .30, the five-factor CFA revealed strong support for the model $\chi^2 = (10, N = 515) = 11.86, p < .004, \chi^2/df = 1.19, CFI = .99, RMSEA = .052$ 90% CI [.01 to .09]. The remaining five scale items were averaged to form a mean score for avoidance intention behaviours.

Table 39

Means, standard deviations, and correlations with confidence intervals for the avoidance tendency scale items

Scale item	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Restaurants	1.78	1.51						
2. Transport	1.46	1.07	.56** [.50, .62]					
3. Sitting	1.54	1.22	.66** [.61, .70]	.70** [.65, .74]				
4. Chinese market	3.21	2.29	.50** [.44, .57]	.38** [.31, .45]	.46** [.39, .53]			
5. Path's crossing	1.68	1.34	.63** [.57, .68]	.60** [.54, .65]	.72** [.67, .76]	.42** [.35, .49]		
6. Touching	3.26	2.16	.39** [.31, .46]	.36** [.28, .43]	.45** [.38, .52]	.48** [.41, .55]	.46** [.39, .53]	
7. Checkout	1.35	0.95	.58** [.52, .63]	.73** [.69, .77]	.78** [.75, .81]	.41** [.33, .48]	.62** [.56, .67]	.35** [.27, .42]

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Results

Correlations and descriptive statistics

First, a series of *t*-tests were conducted to determine if the mean level of contact experiences, prejudice, welfare threat, emotion, and behaviour intention was different in the experimental condition compared to the control condition. The results of these tests are set out in Table 36. Participants in the experimental condition expressed significantly greater prejudice, fear, anger, and avoidance tendency compared to those in the control condition.

Next, the correlations among all the variables were examined. These are presented in Table 37, along with the means and standard deviations. Positive contact was found to be significantly negatively correlated with prejudice, fear, anger, and avoidance behaviour tendency. Negative contact was found to be significantly positively correlated with prejudice, fear, anger, and avoidance behaviour tendency. Anger and fear were significantly positively related, and positive and negative contact were unrelated. Both fear and anger were significantly positively associated with avoidance behaviour tendency.

Table 40

Means, standard deviations, and independent samples t-tests for equality of means for between-group comparisons for all variables

	Experimental		Control							95% CI	
	Group		Group		<i>t</i> -test for Equality of Means					Difference	
								Mean	Std. Error		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>	Difference	Difference	Lower	Upper
Positive contact	4.16	1.82	4.01	1.88	0.94	513.00	.35	.15	.16	-.17	.47
Negative contact	1.56	1.05	1.52	1.06	0.36	513.00	.72	.03	.09	-.15	.22
Prejudice	4.14	2.42	3.55	2.30	2.80	513.00	.01	.58	.21	.17	.99
Fear	1.77	1.37	1.51	1.14	2.40	493.74	.02	.27	.11	.05	.49
Anger	1.98	1.53	1.63	1.27	2.80	492.43	.01	.35	.12	.10	.59
Avoidance intention	2.04	1.27	1.85	1.02	1.92	486.67	.06	.19	.10	.00	.39

Note. *M*, *SD*, *df* represent mean, standard deviation, and degrees freedom, respectively.

Table 41

Means, standard deviations, and correlations with confidence intervals for all variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Positive	4.09	1.85					
2. Negative	1.54	1.05	.05 [-.04, .13]				
3. Prejudice	3.84	2.38	-.33** [-.41, -.26]	.16** [.07, .24]			
4. Fear	1.64	1.27	-.11* [-.19, -.02]	.25** [.16, .33]	.39** [.32, .46]		
5. Anger	1.80	1.41	-.09* [-.18, -.01]	.30** [.22, .38]	.43** [.36, .50]	.78** [.75, .81]	
6. Avoid	1.94	1.15	-.18** [-.26, -.09]	.27** [.19, .35]	.42** [.35, .49]	.64** [.59, .69]	.61** [.55, .66]

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Affect matching

To test the affect-matching hypothesis, regression analyses were conducted to compare the strength of positive and negative contact effects on the specific intergroup emotions of fear and anger. Results showed that positive and negative contact were both significant independent predictors of fear and anger towards Chinese people (see Table 36). A comparison of absolute standardized regression coefficients using the equation $z = \frac{b_1 - b_2}{\sqrt{SE(b_1 - b_2)^2}}$ as per Barlow et al. (2019), showed that negative contact was a significantly stronger predictor of increased fear than positive contact was of reduced fear $z = .2.19, p = .03$. Moreover, the difference in strength between the negative and positive contact associations with anger were greater for negative contact than positive contact, $z = 3.33, p < .001$. Full support for affect-matching was therefore obtained.

Table 42

Regression models testing the affect-matching hypothesis by examining the association between positive and negative intergroup contact with Chinese people and fear and anger towards this group

Model	Unstandardised Coefficients				Standardised	
	<i>B</i>	95% CI for <i>B</i>		<i>SE B</i>	<i>B</i>	<i>R</i> ²
		LL	UL			<i>F</i>
Fear						.08 20.69***
Constant	1.52***	1.21	1.80	.15		
Positive Contact	-.08**	-.14	-.02	.03	-.12	
Negative Contact	.30***	.20	.40	.05	.25	
Anger						.10 28.59***
Constant	1.51***	.784	1.83	.		
Positive Contact	-.081*	-.14	-.02	.03	-.11	
Negative Contact	.41***	.30	.52	.06	.30	

Note. * $p < .05$, ** $p < .01$; *** $p < .001$

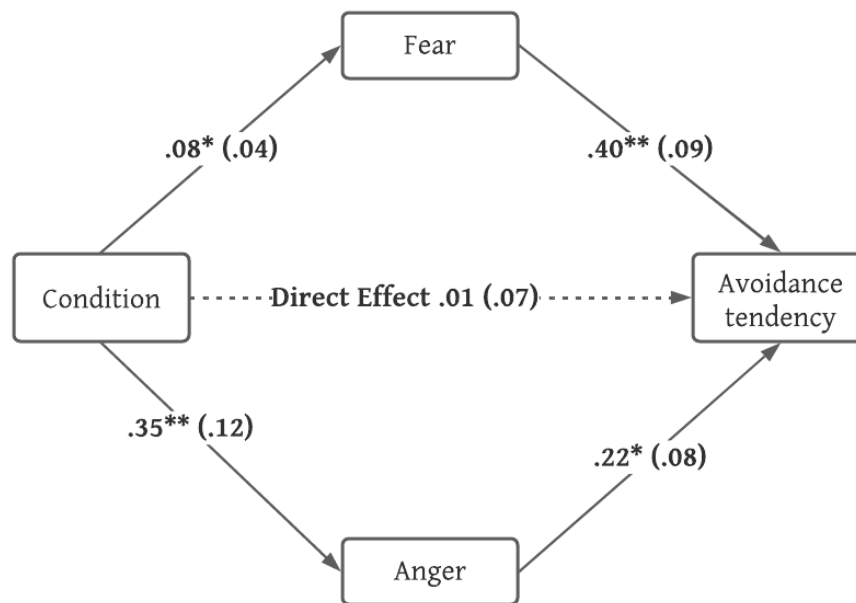
Preliminary analysis

Parallel mediation (PROCESS Model 4; Hayes 2013). It was expected that the specific emotion of fear (not anger) would function in the model to motivate White British people's intentions to avoid Chinese people. A parallel mediation analysis (see Figure 34) was carried out using Gallucci's (2020) module in jamovi version 1.6 (jamovi project, 2021) to test the extent to which the discrete emotions of anger and fear might account for the relationship between the manipulated threat condition (Control = 0, Experimental = 1) from Chinese people and participants' avoidance behaviour intentions.

Results from this analysis (as seen in Figure 34) indicate that threat condition was significantly indirectly related to avoidance behaviour intentions via fear ($b = .11$ boot S.E. = .0, 95% CI based on 1000 bootstrap samples [.01 to .21]), but not anger ($b = .08$ boot S.E. = .04, 95% CI [-.01 to .15]). This finding supports the threat-matching hypothesis and indicates that fear (not anger) motivates avoidance tendency when White British people perceive Chinese people as posing a welfare threat. The threat condition was a significant predictor of both anger ($b = .35$, S.E. = .12, $p < .001$ 95% CI [.11 to .59]) and fear ($b = .27$, S.E. = .11, $p = .02$ 95% CI [.05 to .49]). Subsequently, both anger ($b = .22$, S.E. = .04, $p < .001$ 95% CI [.13 to .30]) and fear ($b = .40$ S.E. = .05, $p < .001$ 95% CI [.30 - .49]) independently predicted participants' behaviour intentions to avoid Chinese people. The direct effect of the threat condition on avoidance intention was not significant ($b = .01$, S.E. = .08, $p = .86$ 95% CI [-.14 to .16]). The total effect of threat condition on avoidance intention did not reach significance ($b = .19$, S.E. = .10, $p = .86$ 95% CI [-.01 to .39]). Therefore, the indirect effect of threat condition via fear of Chinese people fully explained the effect of the threat condition on behaviour intentions to avoid Chinese people. The decision was taken to remove anger from further analyses.

Figure 34

Parallel mediation model using the mediating effect of anger and fear in the relationship between threat condition and avoidance intention.



Notes: * $p < .05$, ** $p < .01$, all presented effects are unstandardized. Categorical independent variables (factors) are shown with only one rectangle, but their effect was estimated using contrast variables when coded (0 = control condition, 1 = experimental condition)

Main analyses

Partial moderated mediation (PROCESS Model 10, Hayes 2018). Next, positive, and negative contact were introduced as moderators to the parallel mediation model. This partial moderated mediation model tested the hypothesis that prior positive and negative contact with Chinese people would be independent moderators of the welfare threat–fear–avoidance tendency pathway. It was expected that prior contact experiences with Chinese people would moderate the threat–emotion relationship. Participants with greater positive contact experiences were expected to report less fear towards Chinese people, whereas those with

greater negative contact experiences were expected to report greater fear. However, while the mean welfare threat score for the control group ($M = 1.70$, $SD = 1.11$) was significantly lower than the experimental group ($M = 2.07$, $SD = 1.44$; mean difference = .373, 95% $CI [-0.60 - -0.15]$, $t(476.04) = -3.30$, $p = .001$, *Cohen's d* = .29), the perceived welfare threat posed by Chinese people was generally salient at the time of the study, so these effects may still be significant but smaller in size in the control condition. Figure 35 illustrates this partial moderated mediation model in conceptual terms (PROCESS Model 10; Hayes, 2018), where the independent variable is the threat condition (x ; Control condition = 0, Threat condition = 1), fear (m) is the mediator variable, and avoidance tendency (Y) is the outcome variable, with positive contact (w) and negative contact (z) independently moderating both the first stages of the threat condition \rightarrow fear (a) indirect pathway and the direct threat condition \rightarrow avoidance tendency (c) path.

Table 39 contains the ordinary least squares regression coefficients and standard errors. In the model of fear, both positive ($b = -.13$, $p = .02$, $CI = -.25, -.02$) and negative contact ($b = -.29$, $p = .004$, $CI = -.49, -.09$) significantly and negatively moderated the effect of the threat condition on fear. Negative contact ($b = .45$, $p < .001$, $CI = .30, .58$) but not positive contact ($b = -.02$, $p = .62$, $CI = -.10, .06$) was significantly positively associated with fear. In the model of avoidance tendency, negative contact significantly moderated the direct effect of the threat condition on avoidance tendency ($b = .14$, $p = .05$, $CI = .00, .28$) but not positive contact ($b = -.07$, $p = .09$, $CI = -.15, .01$). Fear was significantly and positively associated with avoidance tendency ($b = .55$, $p < .001$, $CI = .48, .61$). Inference of the indices of partial moderated mediation (IPMM) were made. The linear association was significant between positive contact (w) and the indirect effect of threat condition (x) on avoidance intention (Y) through fear (m) when negative contact (z) is held constant (IPMM = -.16, *boot SE* = .08, *boot CI* = -.31, -.01). When the roles of positive and negative contact were reversed

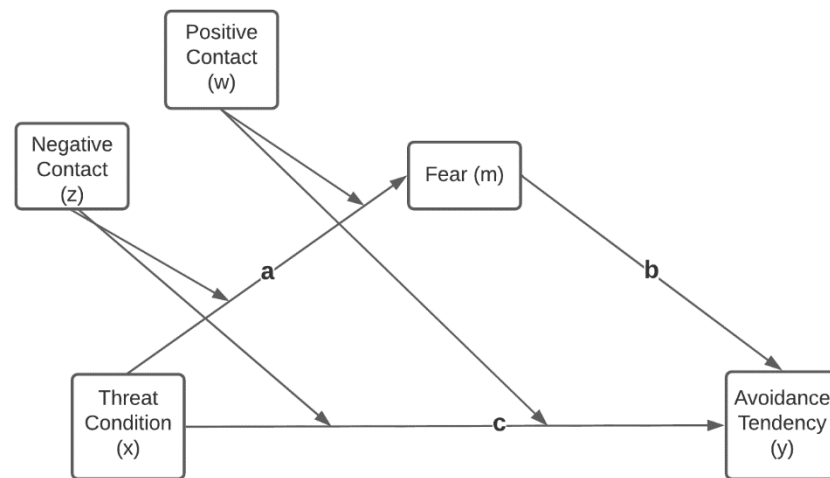
and positive contact (w) was held constant, the linear association between negative contact (z) and the indirect effect of threat condition (x) on avoidance intention (Y), through fear (m) was also significant (IPMM = $-.07$, *boot SE* = $.03$, *boot CI* = $-.14, -.01$).

The indices of partial moderated mediation were the weights for positive contact and negative contact ($a_4b = -.07 + a_5b = -.16$) and quantify the relationship between one moderator and the size of the indirect effect of the threat condition on avoidance tendency through fear when the other moderator is held constant. The continuous moderators of positive and negative contact were conditioned at the mean, a standard deviation below the mean, and a standard deviation above the mean. The result was nine conditional indirect effects with bootstrap confidence intervals for people with low (2.24) positive contact scores and negative contact scores for low (1.00), medium (1.54), and high (2.59); people with medium (4.09) positive contact scores and low, medium, and high negative contact scores; and people with high (5.94) positive contact scores and low, medium, and high negative contact scores. These nine conditional indirect effects were used to create a model, which is visualised in Figure 36. The index of the partial moderated mediation by positive contact is represented by the slopes of the three lines, and the index of partial moderated mediation by negative contact is the distance between the three lines. The indirect effect of threat condition on avoidance tendencies through fear decreases with increases in positive contact, meaning the indirect effect is smaller among people with greater negative contact when positive contact is held constant. The indirect effect is also smaller among people reporting greater positive contact. As both the indices of partial moderated mediation for negative and positive contact are entirely below zero, it can be concluded that independently of any moderation effect of negative contact on the mediation chain, positive contact moderates the indirect effect; likewise, negative contact moderates the indirect effect independently of positive contact. These results indicate that the indirect effect of threat condition on avoidance

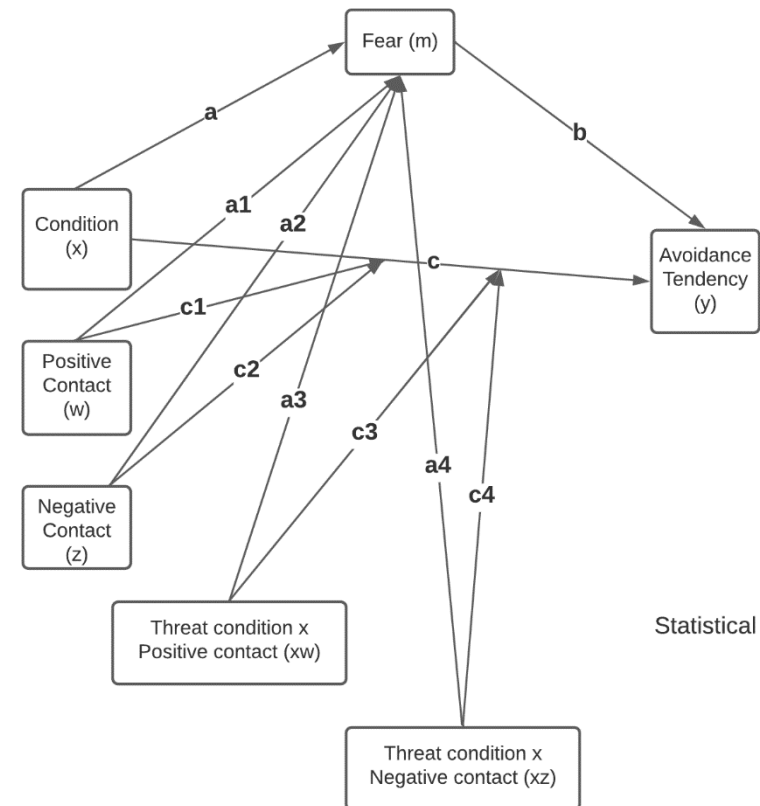
intention through fear decreases with both positive and negative contact. In other words, it was established that the indirect effect of threat condition on avoidance tendencies (via fear) is negatively and significantly less for participants reporting greater both positive and, perhaps surprisingly, negative contact experiences.

Figure 35

First-stage indirect and direct path additive dual moderated mediation model in both conceptual and statistical form (PROCESS Model 10; Hayes, 2018)



Conceptual model



Statistical model

Notes: In this partial moderated mediation model, negative contact (z) and positive contact (w) additively moderate both the first stage of the indirect pathway via fear (a-path) and the direct effect of experimental condition (x)

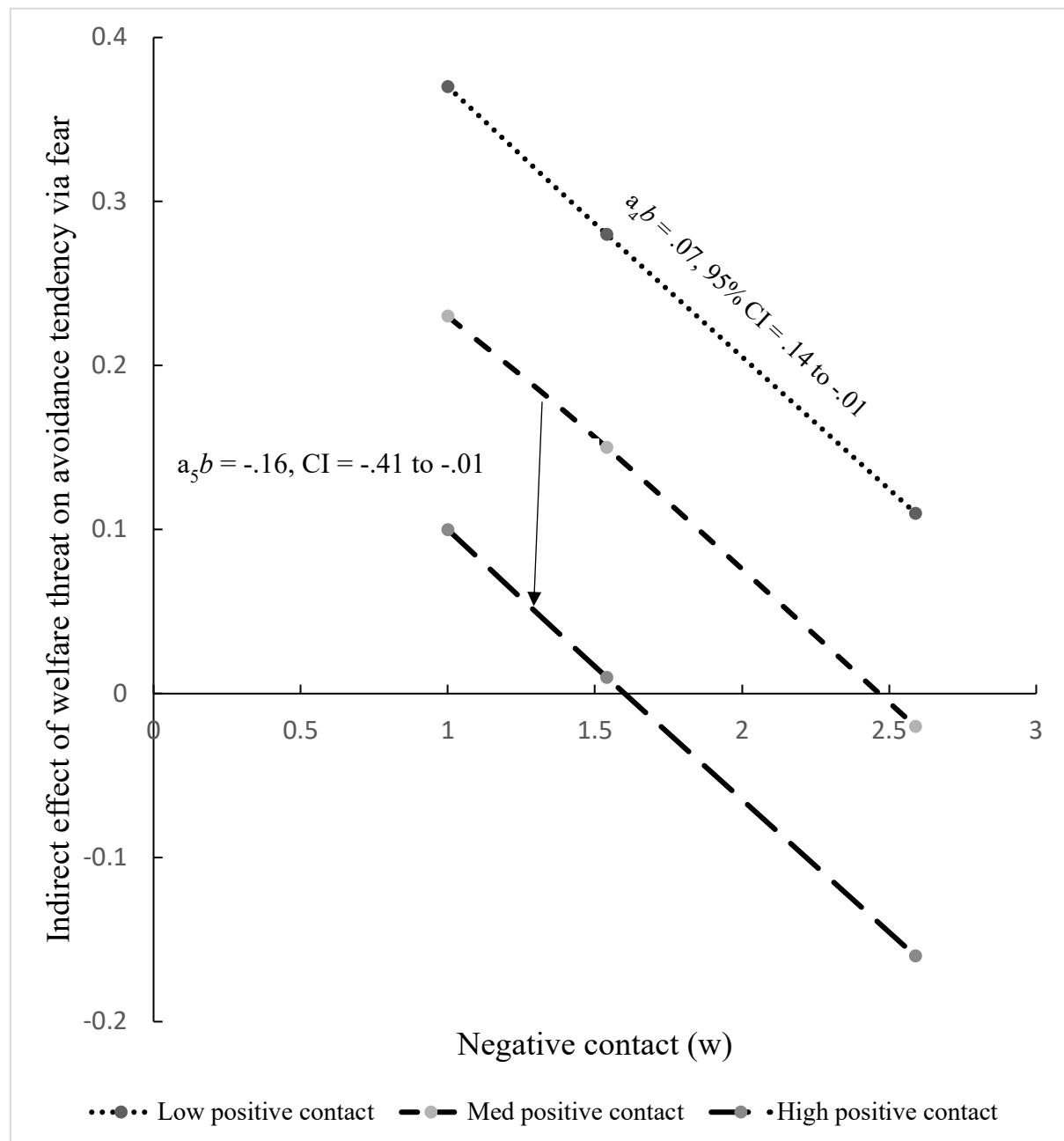
Table 43

Ordinary least squares regression coefficients (with standard errors) from the conceptual conditional process model in Figure (35). Path name labels relate to the statistical path diagram (Figure 35)

Antecedent	Mediator: fear		Outcome y: avoid intention	
	Path	<i>b</i> (SE)	Path	<i>b</i> (SE)
Constant		.91 (.20) **		1.08 (.15) **
X: Threat condition	$a_1 \rightarrow$	1.26 (.29) **	$c' \rightarrow$.13 (.22)
W: Positive contact	$a_2 \rightarrow$	-.02 (.04)	$c_1 \rightarrow$	-.04 (.03)
Z: Negative contact	$a_3 \rightarrow$.44 (.07) **	$c_2 \rightarrow$.07 (.05)
XW: Threat x positive contact	$a_4 \rightarrow$	-.13 (.06) *	$c_3 \rightarrow$	-.07 (.04)
XZ: Threat x negative contact	$a_5 \rightarrow$	-.29 (.10) **	$c_4 \rightarrow$.14 (.07)
M: Fear			$b_1 \rightarrow$.55 (.03) **
	<i>R</i> =	.33	<i>R</i> =	.67
Moderator	Index of partial moderated mediation (IPMM)		95% bootstrap CI	
W	$a_4b = -.7$ (Boot SE = .03)		-.14 to -.01	
Z	$a_5b = -.16$ (Boot SE = .08)		-.31 to -.01	

Figure 36

A visual depiction of the indirect effect of welfare threat on avoidance tendency behaviour through fear as a function of negative (w) and positive (z) contact



Notes: a_4bw = index of partial moderated mediation for negative contact; a_5bz = index of partial moderated for positive contact. The lines represent the function $a_1b + a_4bw + a_5bz = 0.69 - 0.7w - 0.16z$

Study 4b Discussion

This study investigated how White British experiences of intergroup contact with Chinese people might transform the relationship between welfare threat and fear that may motivate avoidance as intended threat-coping behaviour. In line with hypothesis 4b, it was expected that the relationship between threat and emotion would be weaker among participants with greater positive contact experiences and stronger among participants with greater negative contact experiences. The results from study 4b provide evidence for the effectiveness of prior contact to independently moderate the threat–emotion–behaviour pathway. However, it was found that both participants' prior positive and negative contact experiences appear to lessen the indirect effect of threat via fear on avoidance tendencies. This finding means that the links between perceived Chinese welfare threat, through its association with the specific intergroup emotion fear, on avoidance of Chinese people behaviour tendencies are weaker for participants who report more prior contact experiences regardless of the contact valence. The threat–emotion–behaviour relationship was less pronounced for participants who had both greater positive and negative contact experiences. There was also full support for the affect-matching hypothesis (Barlow et al., 2019), with negative contact being more strongly related to both increased anger and fear than positive contact was of reduced anger and fear. These findings further reinforce the importance of examining discrete intergroup emotions, suggesting that the consequences of intergroup contact may depend both on the type of contact (affect-matching) and on the specific threat posed by the outgroup (threat-matching).

The results of study 4b do not replicate those of study 4a. In study 4a it was found that for gentile ingroup members with greater negative contact experiences the links were more pronounced between a perceived Jewish obstacle threat, through its association with the specific intergroup emotion anger, on hostile approach behaviours towards a Jewish

outgroup. In this study, it was found that both participants' prior positive and negative contact experiences lessened the indirect effect of threat via fear on avoidance tendencies. Although it is intuitive that positive contact experiences improve group relations and that negative experiences likely weaken them, exceptions can be found, of course; within marriages, negative interactions are more strongly related to relationship satisfaction than positive ones (Gottman & Krokoff, 1989). There are several possible explanations for this finding, including that survey respondents with lots of intergroup contact tend to report both positive and negative contact but also reveal less prejudice comparable to those who report only positive contact (Pettigrew & Tropp, 2011). These findings are discussed in more detail in the next chapter. Nonetheless, in both studies, the effects of contact conditioned the threat–emotion–behaviour process, providing further evidence that the processes underlying the effects of contact are likely founded on the specific emotional responses that, as the appraisal theory of emotion proposes, elicit specific intergroup behaviours intended to manage the perceived intergroup threat within the framework of the threatening situation. Put another way, the process and outcomes of contact likely vary as a function of both the target outgroup and the threat context.

Summary and Conclusions

The results from these two studies show how integrating intergroup contact theory with intergroup emotion and the consequences of threat appraisal on behaviour intentions can provide a fine-grained understanding of how prior contact experiences may shape the way specific threats and emotions drive intergroup behaviour tendencies. The present findings recognize that threat appraisals can be contextual and responsive to events, such as a pandemic or geo-political event like the Russian invasion of Ukraine. Such events can change which intergroup threats are most salient or relevant in a situation. Importantly, we may not necessarily expect the results observed here—where anti-vaxxer sentiment is driven by moral

outrage—to generalize beyond the moment in time and cultural context in which they were found. Unlike the general approach to the dynamics of intergroup contact research, which assumes that the factors which determine the success (or failure) of contact are effectively generic regardless of time and place (Brewer & Miller, 1984) - these findings indicate that intergroup threat appraisal is contextual. Intergroup threat is not only based on stable group-level perceptions proposed by the socio-functional threat model (Cottrell & Neuberg, 2005) but also as long assumed by cognitive appraisal theories of emotion (Scherer, 2009) and intergroup emotion literature (Mackie et al., 2008), is contextual and respondent to idiosyncratic meaning attributed by the perceiver in light of their target specific contact history. Therefore, Importantly, the implications of studies 4a and 4b are that our prior positive and negative intergroup contact encounters may shape the way we appraise intergroup threats, which in turn may exacerbate or attenuate specific emotions that predict the avoidance or approach nature of our intergroup behaviour intentions.

Chapter 7: General Discussion, Conclusions and Future Research Directions

This final chapter provides a summary of the work presented within this thesis. Following a brief review of the theoretical background that underlined the aims of the thesis, the main empirical findings are summarised. Potential limitations that affect the external validity of the conclusions are discussed. The theoretical implications and applied potential of the threat-matching hypothesis, which predicts that the emotional processes underlying contact effects depend on the specific threat posed by the outgroup, are considered. The chapter concludes by proposing a programme for future research.

Theoretical Background and Aims

This thesis draws upon five substantial intergroup relations theories to clarify the relationships between outgroup threat, valenced-contact, and specific intergroup emotions to explain outgroup-specific bias behaviours. Intergroup threats play a significant role in negative attitudes towards people that are different to ourselves (Stephan et al., 2009). Prejudicial attitudes can lead to both a range of negative feelings about various outgroups and distinctive, target specific discriminatory behaviours and even violence at the extreme. According to intergroup contact researchers, prejudice is a negative attitude and feelings toward an individual or group, which are informed by one's membership to a particular social group (Allport, 1954; R. Brown, 2010). However, when prejudice is defined in this generalised way, it is not possible to explain how an individual's general prejudicial attitude may lead to distinctly different emotions and behaviours toward different outgroups. One of the most promising approaches for reducing prejudice is to bringing members of different social groups into contact (Christ & Kauff, 2019). It is well established that the effects of contact between different social groups, work through affective pathways to reduce prejudice (Pettigrew & Tropp, 2008). It is less clear however, what specific emotional mechanisms underlie this effect. Without this knowledge, we cannot explain an individual's outgroup-

specific bias behaviours. However, the appraisal theory of emotion indicates that specific emotions function to motivate threat-coping behaviours (Roseman, 1984). Usefully, the socio-functional threat approach to prejudice argues that outgroups perceived to pose qualitatively different threats to an ingroup would evoke distinctive and functionally relevant emotional reactions that motivate threat coping behaviours (Cottrell & Neuberg, 2005). The theoretical and empirical aim of the present thesis is to synthesise intergroup contact theory and the socio-functional threat approach to prejudice, to explore whether specific threat-based emotions can help explain if the target-specific effects of contact differentially affect intergroup behaviours.

The critical review of the intergroup relations literature presented in chapter 2, draws a line under the generalised approach to intergroup relations and argued that several existing socio-psychological theories can be synthesised into an encompassing theoretical model to explain how the target-specific emotional effects of contact may account for the target-group specific nature of bias-behaviours. Building upon existing intergroup relations literature; it was argued that the relationships between target-specific intergroup contact and intergroup-specific threat coping behaviours may be explained by threat-specific intergroup emotions. In summary, it is suggested that by investigating the structural relationship between positive and negative contact, specific intergroup emotions, and threats, it is possible to identify the detailed mechanism(s) responsible for contact effects, enabling both a differentiated and an integrated view of the process and outcome of intergroup contact.

Considering this theoretical basis, chapter 2 concluded by posing a novel threat-matching hypothesis, which predicted that the emotional processes underlying contact effects depend not only on contact valence but also on the threat posed by the outgroup. This threat-matching hypothesis expected that past experiences of positive contact with a target group will be associated with a reduction in the specific negative emotions that can motivate

specific negative threat-coping behaviours. Negative contact, meanwhile, was expected to be associated with an increase in the specific negative emotions that may motivate the same negative intergroup behaviours. Providing support for this prediction represented the main empirical aim of this the present thesis.

Review of Empirical Findings

Study 1 aimed to provide two initial tests of the theoretical framework underpinning the threat-matching hypothesis. The first tested Cottrell and Neuberg's (2005) assertion that different outgroups can evoke qualitatively different profiles of emotional reactions. The second, using the same data, tested Barlow et al., (2019) affect-matching hypothesis that positive contact is more likely to be effective at increasing positive feelings than working to reduce negative feelings (and vice versa). To test these assertions, participants were asked to both report the frequency of their positive and negative contact experiences and the specific emotions they would feel if they were to meet a person from one of four randomly allocated outgroups. Results provided strong endorsement for Cottrell and Neuberg's hypothesis that different social groups arouse distinct profiles of specific emotions. The results also uphold and extended Barlow and colleagues' (2019) threat-matching hypothesis to demonstrate that not only are positive and negative emotions differentially affected by contact valence, not only positive and negative affect, but also the more nuanced and specific emotions, are differentially affected by contact valence. In all outgroup cases, positive contact had a greater association with admiration than with anger, fear, or disgust. Negative contact was more strongly associated higher negative emotion than lower admiration. These results reinforced the notion that emotional factors might be at the heart of the effects of contact on intergroup attitudes and represented a foundation for the threat-matching hypothesis: patterns of

emotions elicited by positive and negative contact are dependent on the threat that the outgroup is perceived to pose.

Having provided initial support for the theoretical framework underpinning the threat-matching hypothesis, it was important to test the threat-matching hypothesis next. Research suggests that positive intergroup contact reduces prejudice, in part, by reducing threat perception (Aberson et al., 2021), while negative contact is associated with worsening group relationships partly through increased threat perception (Corenblum & Stephan, 2001). However, the implication of socio-functional approach suggests that intergroup contact processes are likely to be more nuanced. Rather than simply shaping a general prejudicial attitude emerging from a global outgroup threat perception, intergroup contact processes are more fine-grained and related to the salient outgroup threat. Therefore, the threat-matching hypothesis predicts that the patterns of emotions elicited by positive and negative contact are dependent on the threat perceived to be posed by the outgroup.

To test the threat matching hypothesis, Study 2a and 2b investigated, in two different contexts, whether negative contact experiences have a disproportionately strong association with the distinct negative emotions that are associated with the specific threat-type perceived to be posed by the minority group – a phenomenon that would support the threat matching hypothesis. In line with Cottrell and Neuberg (2005) it was expected that these specific and threat-based emotions (e.g., anger vs fear) would be linked to specific threat-coping behaviours (hostile approach v avoidance). Cottrell and Neuberg's (2005) socio-functional model identified several fundamental intergroup threats and connects each of them to a primary functional emotional reaction and its prototypical behavioral motivation. For instance, groups that threaten obstacles to economic wellbeing may arouse anger which can motivate behaviours intended to remove the obstacle.

Study 2a tested the threat-matching hypothesis considering Cottrell and Neuberg's (2005) welfare-fear-avoidance profile, while study 2b tested the hypothesis using the obstacle-anger-approach profile. In line with predictions, the results of study 2a revealed that positive contact with a welfare-threatening outgroup was associated with less support of discriminatory policy measures, whereas negative contact was associated with more support for the same policies. In support for the threat-matching hypothesis, the effects of contact were more strongly related to fear, an emotion associated with welfare threat, than anger.

In replication of study 2a, the results from study 2b further showed that positive contact with a group threatening to place obstacles to political power was associated with less hostile behaviour intention. Also, negative contact was associated with more hostile behaviour towards the outgroup. Again, in support of the threat-matching hypothesis, the effects of contact were most strongly related to anger, an emotion associated with obstacle threat, compared to fear.

Having determined the reliability of the threat-matching hypothesis across two different threat contexts, the next step involved testing the hypothesis across multiple threat contexts. A multi-group study was required because it cannot be assumed that when a person has contact with a variety of outgroups, the emotional processes underlying will vary to reflect the specific threat posed by each outgroup. Although Cottrell and Neuberg (2005) do indicate that intergroup threats can be specific to an outgroup and these specific threats arouse diverse emotional arrays that motivate threat-coping behaviours. The results from the multi-group study provided further evidence that the specific emotional processes underlying contact, even within an individual, vary depending upon the specific threat(s) posed by the outgroup considered, which likely motivate specific behaviours intended to deal with the threat-at-hand. While the findings did not map exactly to Cottrell and Neuberg's (2005) outgroup threat-specific, threat-emotion-behaviour profiles, the effects of contact appeared to

operate through unique arrays of emotion, which in turn was related to specific threat-coping behaviours. The results also confirmed that the frequency of intergroup contact experiences was associated with levels of negative emotion towards the target outgroup. In all cases, positive contact was related to less negative-emotion reactivity and reduced harm intention; negative contact on the other hand was associated with increased negative-emotion reactivity and greater harm intention. These findings robustly support the threat-matching hypothesis that patterns of emotions elicited by target-specific positive and negative contact are dependent on the threat perceived to be posed by that specific outgroup. Together, studies 2a, 2b and 3 established that the effects of intergroup contact are typically nuanced and outgroup threat-specific in nature because they likely serve a function to promote outgroup-threat-dependent and ingroup-goal-orientated behaviours.

Once the threat-matching hypothesis was confirmed in multiple contexts, it became important to consider under what circumstances target-specific contact experiences may shape the outgroup threat-emotion-behaviour relationship. Studies 4a and 4b revealed that a person's contact history can create the conditions under which the threat-emotion-behaviour relationship occurs. Intergroup threat theory research (Stephan & Renfro, 2002) evidentially supports the existence of a relationship between intergroup threat and intergroup contact (Corenblum & Stephan, 2001; Stephan & Stephan, 2000). This evidence base supported the notion that prior outgroup-specific contact experiences may shape the links between outgroup-threat, threat-specific emotion, and threat-coping behaviour tendencies. The results of two studies (4a and 4b) in two different contexts, showed that prior outgroup-specific positive and negative contact encounters may shape the way people appraise intergroup threats, which in turn may exacerbate or attenuate the threat-specific emotions (e.g., anger) that predict threat-coping behaviour intentions (e.g., hostile approach behaviour). For instance, study 4a found people with a greater history of negative contact experiences with

Jewish people were more likely to perceive Jewish people to pose an economic threat, also experience greater anger and hostile behaviour intentions. It was concluded therefore that the effects of contact likely influence the threat-emotion-behaviour process. Therefore, the processes and outcomes of contact likely vary as a function of the outgroup threat-at-hand, within context of the current situation.

Taking together the main empirical findings of the six studies in this thesis, it can be shown how a synthesis of intergroup contact and intergroup emotion theories can be used to explain the variation in intergroup threat perception and its effect on behaviour intentions. These results indicate that the processes underpinning the effect of contact are likely nuanced threat-specific-emotion processes. Moreover, the findings indicate how a person's contact history with a specific outgroup, together with fine-grained emotional processes, can shape the perceptions of outgroup threat and resulting intergroup behaviour tendencies. Thus, the specific emotional process underpinning one's contact history or lack of contact history, may help account for one's specific behaviour intentions. These contact experiences likely explain why an individual may choose to aggressively approach outgroup members that threaten goal obstruction and avoid members of an outgroup perceived as a welfare threat.

Intergroup contact researchers have argued that the effects of contact are underpinned by affective processes. Intergroup emotion scholars propose that intergroup threat-specific emotions are functional and are intended to guide intergroup threat coping behaviours. Together with the empirical evidence presented in this thesis, which supports the threat-matching hypothesis, it can be concluded that the emotional processes underlying the effects of contact likely depend on the specific threat posed. In other words, the effects of positive and negative group-specific contact experiences may shape threat perception via specific emotional pathways, which in turn likely influence differentiated behaviour intentions towards specific outgroups. See table 40 for a condensed summary of all empirical studies.

Table 44: Summary of Empirical Studies

Study	Outgroup(s)	Participants	Independent variables	Dependent measures, mediators, and moderators	Key findings
Chapter 3					
Study 1	<ul style="list-style-type: none"> • Gay men • Black people • Immigrants • Muslims 	1,186 American MTurk workers	IV: Frequency of contact: <ul style="list-style-type: none"> • Positive • Negative 	DV: Specific emotions <ul style="list-style-type: none"> • Anger • Fear • Disgust • Respect 	(1) Support for extension of the Barlow et al., (2019) affect-matching hypothesis, specific emotions are related to frequency of both positive and negative contact experiences. (2) Support for extension of Cottrell and Neuberg's (2005) hypothesis, social groups arouse different profiles of both positive and negative specific emotion.

Study	Outgroup(s)	Participants	Independent variables	Dependent measures, mediators, and moderators	Key findings
Chapter 4					
Study 2a	Chinese people	340 White British Adults	IV: Frequency of contact: <ul style="list-style-type: none"> • Positive • Negative 	DV: Restriction policies <ul style="list-style-type: none"> • Chinese • General MV: Specific emotions <ul style="list-style-type: none"> • Anger • Fear • Disgust 	Positive contact linked to lower support for Chinese restriction policies, negative contact linked to increased support for Chinese restriction policies. Support for the threat-matching hypothesis the effects of contact were more strongly related to fear than to anger.
Study 2b	US Democrats	440 Republicans	IV: Frequency of contact: <ul style="list-style-type: none"> • Positive • Negative 	DV: Hostile behaviour intension <ul style="list-style-type: none"> • Anger • Fear MV: Specific emotions <ul style="list-style-type: none"> • Anger • Fear 	Positive contact linked to weaker hostile behaviour intension. Negative contact linked to stronger hostile behaviour intention. Support for the threat-matching hypothesis the effects of contact were more strongly related to anger than to fear.

Study	Outgroup(s)	Participants	Independent variables	Dependent measures, mediators, and moderators	Key findings
Chapter 5					
Study 3 (Pilot)	<ul style="list-style-type: none"> • Black men • Psychiatric patients • Muslims • Gay men • Drug addicts • Obese people • Far-right activists • Enviro-activists • Anti-vaxxers 	96 U/Graduates	IV: Outgroup	DV: Threat perceptions <ul style="list-style-type: none"> • Safety • Obstacle • Contamination 	Support for Cottrell & Neuberg's (2005) premise that people perceive different patterns of specific effects from different outgroups. The following groups were selected for study 3. <ul style="list-style-type: none"> • Psychiatric patients • Far-right activists • Anti-vaxxers
Study 3	<ul style="list-style-type: none"> • Psychiatric patients • Far-right activists • Anti-vaxxers 	480 British adults	IV: Frequency of contact: <ul style="list-style-type: none"> • Positive • Negative 	DV: Harm intention <ul style="list-style-type: none"> • Passive harm • Active harm MV: Specific emotions <ul style="list-style-type: none"> • Anger • Fear • Disgust 	Frequency of intergroup contact is associated with levels of intergroup emotion. Positive contact is associated with weakened emotional reactivity and reduced harm intention. Negative contact is related to greater emotional reactivity and increased harm intention. The effects of contact likely to operate via unique arrays of emotion that motivate threat-coping behaviours.

Study	Outgroup(s)	Participants	Independent variables	Dependent measures, mediators, and moderators	Key findings
Chapter 6					
Study 4a	<ul style="list-style-type: none"> Jewish people 	150 US gentiles	IV: Obstacle threat perception	DV: Hostile approach intention. MV: Specific emotions <ul style="list-style-type: none"> Anger Fear ModV: Frequency of contact: <ul style="list-style-type: none"> Positive Negative 	The indirect effect of obstacle threat on hostile approach tendencies (via anger) is positively and significantly greater for participants reporting greater negative contact but not positive contact.
Study 4b	<ul style="list-style-type: none"> Chinese people 	515 White British adults	IV: Threat condition: control vs threat	DV: Avoidance behaviour intention. MV: Specific emotions <ul style="list-style-type: none"> Anger Fear ModV: Frequency of contact: <ul style="list-style-type: none"> Positive Negative 	The indirect effect of the threat condition on avoidance behaviour intention (via fear) were significantly weaker for participants with the greatest frequency contact, regardless of the valence.

Summary of Theoretical Implications

Intergroup contact theory has attracted the attention of social psychologists for almost 70 years. Research work building on Allport's (1954) landmark publication *The Nature of Prejudice*, has inspired integration policies, peacebuilding programmes and research tackling prejudice around the world for many decades. This thesis contributes to the literature by drawing a line under a general-attitudinal-approach-prejudice and instead synthesises existing intergroup contact, threat, emotion, and behaviour research to provide a more fine-grained, nuanced approach to understanding the effects of contact on intergroup-threat-coping behaviours. The theoretical implications of drawing together these bodies of work indicate that prejudice is more than a general attitude and therefore supports the development of the threat-matching hypothesis.

The threat-matching hypothesis predicts that the emotional processes underlying contact effects depend on the specific threat posed by the outgroup. From this hypothesis we can expect that positive contact with a target group will be associated with a reduction in the specific negative emotions that can motivate specific negative threat-coping behaviours. Negative contact is expected to be associated with an increase in the specific negative emotions that may motivate the same negative intergroup behaviours. The threat-matching hypothesis represents a new intuitive way of understanding the diverse nature of prejudice. I argue that logically, despite the reliability of the effect of contact on prejudice attitudes, if we are to understand the effect of contact on different prejudicial behaviour, it is necessary to consider the effects of contact on outgroup-specific threats, emotions, and behaviours.

So far, intergroup contact's literature on the reduction of prejudice through intergroup interactions (Allport, 1954) includes analysis of intergroup anxiety (Paolini, Harris, et al., 2016) and some work on intergroup empathy (For review see Pettigrew & Tropp, 2008). This literature however lacks sophistication in the classification of emotions (Seeger et al., 2017).

Alternatively, intergroup emotions literature indicates that people experience specific-emotions because of threat-appraisals made from their group membership perspective (Yzerbyt, 2003). Cottrell and Neuberg (2005) argue these specific group-based appraisals, trigger group-based emotions which function to promote specific threat-coping behaviours. Cottrell and Neuberg's socio-functional approach may help explain the different type of prejudicial behaviours towards distinct outgroups, but only contact theory offers an explanation for the variation in levels of perpetration.

Context

The findings obtained in this thesis present theoretical implications for intergroup contact, intergroup threat, and intergroup emotions researchers. From an intergroup contact perspective, the findings demonstrate that the nature of prejudice is likely to be target-specific and more nuanced than originally conceived by Allport in 1954. Similarly, from an intergroup emotion stance, the findings indicate the effects of intergroup contact may play an important role in the regulation of group-based emotions triggered by group-based appraisals. Also, from an intergroup threat viewpoint, the results highlight the importance of considering specific emotional responses beyond intergroup anxiety in explaining prejudicial behaviour. Importantly, the evidence presented in this thesis suggests that both researchers and policy developers should reflect on the idea that a general approach to prejudice ignores that the effects of contact appear to vary across different types of social relationships. Context matters or how else can we explain why a gay couples' experience of homophobia in a public space is likely to be different to a woman's experience of sexual harassment in the same location.

This general approach to prejudice has dominated contact research. Brewer and Miller (1984) describe this generic approach as one which assumes that "... many basic factors that determine the success or failure of intergroup contact are essentially the same across times and places, provided that the processes are conceptualised at an appropriate level of

abstraction.” (p.2). While this approach has provided many valuable insights, it should be complemented with research informed by studies that consider the target-specific effects of contact within “specific social, historical, political and cultural contexts” as Dixon and McKeown (2021, p. 253) describe, to explain target specific prejudicial behaviours.

Secondary contact effects

Previous research has shown that intergroup contact has the potential to reduce prejudice generally, not simply prejudice towards groups the individual has had contact with but also towards other unrelated group members through a process of generalisation. The assumption that ‘secondary transfer effects of intergroup contact’ (Pettigrew, 2009) exist potentially undermines the threat-matching hypothesis. Pettigrew and Tropp’s (2006) meta-analysis of intergroup contact found four different significant effects of contact. These included reduced prejudice only toward outgroup members involved in the contact, reduced prejudice across situations, reduced prejudice toward the entire outgroup and finally, reduced prejudice toward other outgroups that were not involved in the contact (see also Pettigrew, 2009, illustrating that the evidence for secondary contact effects is not consistent. In fact, most evidence to support the secondary transfer effect has found the effect to be stronger the more similar the primary and secondary groups are (Vezzali & Stathi, 2021). Indeed, previous studies have shown that secondary transfer effects are stronger the more similar groups are based on varying factors relating to demographics, stigma, and social status in terms of minority groups (Shook et al., 2016; Tausch et al. 2010, etc.).

This inconsistency in support for the secondary transfer effect suggests that the effect may be limited to similar outgroups – or at least outgroups that pose similar threats. In line with this idea, Zingora and Graf (2019) provide evidence that positive and negative contact with Roma people predicted greater intentions to support gay rights via intergroup realistic and symbolic threat but not via outgroup attitudes. Future studies of the secondary contact

effect should consider if the emotional processes underlying contact effects depend on the specific threats posed by both the primary and second outgroups considered.

Practical Implications

Alongside addressing the theoretical implications of the current research, the practical implications should also be considered. Contact theory holds that contact between two social groups can promote tolerance and acceptance. Yet, today in Britain and many other western cultures, diversity training ignores the effects of contact, and instead focuses on knowledge, valuing difference, inclusion and meeting the needs of a diverse population. The findings in this thesis highlight the importance of context, intergroup threat, and affective experiences in cross-group relationships. In terms of understanding prejudice, intergroup threats play a significant role in causing the problems that plague intergroup relations and often elicit negative emotions such as fear and anger. Emotions (both positive and negative) help organise interpersonal relationships and play an important role in the cultural functioning of human societies (Matsumoto et al., 2008), including guiding behaviour in social interactions (Marsh et al., 2005). Future interventions should address the threat specific emotional responses that underpin the effects of contact on prejudicial behaviours. Interventions should create opportunities for pleasant contact that also challenges the specific perceived threat posed by the outgroup. Such contact experiences may reduce negative emotions such as fear and anger which in turn may promote a reduction in prejudicial behaviour.

If future research can tease out the effects target-specific contact has on specific intergroup emotions, applied solutions such as bias training can focus directly on strategies that facilitate meaningful and positive target-specific contact that challenge threat perception. In many respects, cognitive behaviour therapy (CBT) works to challenge a wide range of threat beliefs. The key principle behind CBT is that an individual's thought patterns affect

their emotions, which, in turn can affect their behaviour. In CBT, a therapist works to challenge a client's beliefs and broaden their thinking. Like CBT, meaningful and positive target-specific contact may help individuals reframe their threat perception in a more positive way, lessening negative feelings, which, in turn can reduce dependency on negative threat-coping behaviours.

In practical terms CBT therapists use behaviour experiments such as guided discovery and exposure therapy to challenge assumptions. In small increments, exposure can make you feel less vulnerable and more confident in your coping abilities. Imagine, for example the anti-racism training for student London Metropolitan police officers moving away from lectures that "...provide learners with the foundation on which to build their knowledge of equality and diversity legislation and good practice" (Metropolitan Police Service, 2017), to training sessions that enabled positive and meaningful across group encounters. Just as in a CBT homework exercise, pre-training, participants could be encouraged to reflect on the extent they feel threatened by the planned encounter. Then, in-training experience a pleasant and meaningful cross group encounter; and finally, participants could reflect on their experiences to further challenge their specific intergroup threat-based assumptions. This means student police officers could use positive and meaningful encounters to reframe their threat perception, in turn, reduce negative emotions and their reliance on negative threat-coping behaviours.

Teasing out the roles of specific intergroup emotions in group relationships might also allow us to better understand the impact of journalistic and political threat manipulation on intergroup relations. For example, Post the 9-11 attacks, President Bush frequently used the word "terror" to shore up internal support for a "righteous war" against "an evil enemy" in his speeches (Black, 2004). Also, more recently according to the Economist British MP Natalie Elphicke, who represents Dover, accused incomers of "breaking into our country";

and a group of 25 members of the parliamentary party visiting Dover, saw not bedraggled groups of people desperate enough to risk drowning but hordes of “invading migrants” (The Economist, 2020). Undoubtedly, these remarks manipulate obstacle and safety threats in the population, arousing threat-based emotions, and subsequent negative behaviours.

Limitations and future directions.

Notwithstanding the contributions of this research, I acknowledge several limitations. which should be addressed in future research.

Measurement properties of key variables

As often found in contact research studies, mean levels of contact, prejudice and threat are reported by participants in the current studies are low and likely reflect real-world processes. While it is important to note that most studies in this thesis were carried out during a global pandemic where governments and health bodies placed restrictions on social interactions between all people and so opportunities for contact were greatly reduced. Even beyond a pandemic, it is somewhat challenging to identify outgroups that participants have knowingly had high levels of positive and negative contact with, especially outgroups that they found highly threatening and have opportunity to show prejudice towards. Indeed, it could be argued that low levels of contact, threat and prejudice hinder the interpretation of these results. However, the results from study 2b offers some reassurance. Study 2b took place when the US was wracked by political polarization, political institutions were set up against another within the same political system (a Republican president against the Congress, a House against the Senate) and a \$14.4-billion election campaign focused on intensifying negative sentiments against the opposition party (Horncastle, 2020). In this study, Republican participants had no difficulty in recalling prior positive and negative contact with Democratic supporters, political campaigns had made obstacle threat highly

salient and Republican participants reported high levels of negative behaviour intention, highlighting the extent these variables reflect the participants' real-world experiences. It is likely therefore that mean levels of contact, prejudice and threat reported by participants in the current studies likely reflect real-world processes in both low contact/threat and high contact/threat contexts.

Self-report

An important limitation of the studies presented here is their reliance on self-reported measures for contact, affect and behaviour, restricting the conclusions that can be drawn from the data concerning the predictions of the socio-functional, threat-matching account of the effect of contact on bias behaviours.

Intergroup contact

The findings in this thesis indicate that positive and negative contact are separate constructs, each yielding different effects on both intergroup emotions and behaviour tendencies. This finding is also backed up by the result that across the samples in this thesis, positive and negative intergroup contact frequency were only mildly correlated. It has also been shown that the effects of negative contact are not an inverse of the effects of positive contact (Study 1, chapter 1). In most circumstances, the frequency of positive contact is greater than that of negative contact (Studies 2a, 2, 3, 4a, 4b; see also Pettigrew & Tropp, 2011) but this is less likely in situations of open conflict (see Study 2b). It should therefore be concluded in future work that positive and negative contact are generally better studied together.

Recent research carried out by Schäfer and colleagues (2021) indicate that there is no clear tendency for either positive or negative intergroup contact to yield stronger effects on intergroup relations. The findings in this thesis, however, suggest that an individual's prior

intergroup contact history could play a crucial role in how they appraise intergroup threat. However, not much is known about the ways positive and negative contact experiences interact. Evidence has emerged that positive contact may buffer the effects of negative contact and that negative contact may enhance the benefits of positive contact (Árnadóttir et al., 2018), especially in conflict zones (Paolini et al., 2014). The results from study 4 in this thesis, suggest that when the volume of both positive and negative contact is high, the effects of intergroup contact are positive. However, more evidence is needed to understand and back up this claim.

Critics may argue that self-report contact studies have important limitations including recall bias, as well as, social desirability, acquiescent and extreme responding. However, the reliability and validity of intergroup contact studies relying on self-reports is seen to be robust and has been found to match observer-based report, allowing the prediction of contact with some reliability (Sharp & Hewstone, 2010). Another point to consider is that the contact measures used in the current studies focus on retrospective accounts of direct, face-to-face contact. It might be that the gap between the events of contact and actual data recording means the memory of the event might be somewhat limited. Nevertheless, by focusing on the aggregate-level validity and reliability of retrospective data, recall bias can be overcome with larger, representative samples (Reuband, 1994).

Although the aggregation of data alleviates problems with reliability, it can conceal any meaningful quality of contact experiences. To mitigate this problem in the current research, participants were asked to report separately the quantity of their prior positive contact and negative contact experiences. As suggested by recent work by Schäfer and colleagues (2021), suggests contact researchers should also consider the perceived intensity of intergroup contact, the intensity of different contact experiences should be measured. It might be expected that contact intensity would be strongly associated with intensity of

specific emotion. Low intensity contact may arouse lower levels of emotional response, whereas high intensity contact may arouse greater levels of emotional responding.

Alongside concerns about self-reported contact measures, work by Keil (2017) highlights that experiences and perceptions of intergroup contact vary greatly between individuals. Her work illustrates that contact can be ‘complex and idiosyncratic’ Keil (2017, pg., 21) which can have important implications for how it is measured. For instance, Keil’s second study revealed that among 498 undergraduates, traditional outgroup contact (e.g., social interaction) was most strongly perceived as contact and thus more likely to be reported than other types of contact such as in public spaces and negative contact, which were likely under-reported. As McKeown and Dixon (2017) suggest, there is likely to be a disconnect between an intergroup contact research between the perspective of contact within intergroup contact research and the experiences of participants in their daily lives and their subjectivities/perceptions of said contact of contact. One strength of the work in this thesis is that it begins to investigate more closely the cognitive and emotional dynamics of contact which underpin prejudicial behaviour.

Intergroup emotions

Everyday discussions of prejudice are highly saturated with negative emotional language, such as fear, anger, and lack of trust (Kubota et al., 2012), indicating a link between contact and prejudice. A key idea in many emotion theories, including Cottrell and Neuberg (2005), is the link between each emotion and a “specific action tendency” (Frijda, 1986; Frijda et al., 1989; Lazarus, 1991). Ekman’s (1992) widely accepted theory of basic emotions and their expressions proposes that the negative anger, fear, and disgust are universally recognizable, produced automatically and cannot be further deconstructed. More complex emotions (e.g.) envy, jealousy and anxiety can be harder to differentiate meaning it is more difficult to predict the specific action tendencies that flow from these feelings. Understanding

which emotions might predicting specific prejudicial action tendencies was a key aim of this thesis, thus the focus on Ekman's three universally recognisable negative emotions – anger, fear, and disgust.

Intergroup anxiety was excluded from the studies in this thesis, despite being extensively investigated in the intergroup contact literature (Paolini, 2016), because it is a complex emotional construct that predicts a range of specific prejudicial action tendencies. Intergroup anxiety is known to be related to intergroup threat and this line of research posits that intergroup anxiety predicts prejudice towards any given outgroup (Stephan & Stephan, 2000; Stephan et al., 1998). Intergroup anxiety is a negative affective process that is experienced when anticipating future, or expecting actual, contact with outgroup members (Stephan & Stephan, 1985). However, the experience of intergroup anxiety is distinct from chronic or trait measures of anxiety (Britt et al., 1996).

As discussed in the introduction, Van Zomeren and colleagues (2007) findings and the Richeson and Trawalter (2008) results indicate that intergroup anxiety is associated with diverse approach and avoidance behaviours. Across three studies, these authors found that increased threat appraisal explained how the amplification of intergroup anxiety increased individual's negative and offensive responses. Interestingly, the results show that intergroup anxiety can also translate into offensive approach behaviours, as well as avoidance responses, especially when outgroup-initiated contact is outside the accepted social norm. This suggests that intergroup anxiety is not a specific emotion but instead a complex construct that describes an array of negative threat-based feelings that are associated with both approach and avoidance intergroup behaviours.

Positive emotion is less likely to occur in threatening intergroup situations, and on the surface, positive emotion do not present the same obvious adaptive value as negative-emotion-driven tendencies (Ekman, 1992; Fredrickson, 1998; Lazarus, 1991). However,

while positive emotion is less likely to occur in threatening intergroup situations, it might appear that positive emotion does not present the same obvious adaptive value as negative-emotion-driven tendencies (Ekman, 1992; Fredrickson, 1998; Lazarus, 1991). Conversely though, the broaden-and-build theory of positive emotion (Fredrickson, 1998) posits that positive emotions serve to broaden an individual's momentary thought–action repertoire, potentially building an individual's physical, intellectual, and social resources. Positive emotion therefore may play an important role in the effects of contact on group relationships, particularly as broadened social attention has been shown to reduce distinctions between different groups (Dovidio et al., 1998). Also, positive emotion according to Cacioppo and colleagues (1994) facilitates curiosity in the form of approach and explore behaviour.

Despite the clear role for positive emotions in all relationships, positive emotions are fewer and less differentiated than negative emotions (de Rivera, 1989), an imbalance that is reflected in English-language emotion expressions (Averill, 1980). It is challenging to find discrete positive intergroup emotional terms participants can readily identify with. Regardless of that difficulty, Miller et al. (2004) found that prior positive intergroup contact experiences were associated with a reduction in negative emotions and an increase in positive emotions. While contact may reduce threat-related emotions like fear or anger, it is also likely to increase positive emotions and friendly approach behaviours. Intergroup friendship particularly has a known association with feelings of sympathy and admiration towards a friend's social group (Davies, Tropp, et al., 2011). Logically, it can be expected that positive emotions, like admiration for members of a social group, may stimulate an individual to pursue mutually beneficial interactions with members of that group.

In line with the expectation that positive emotions play a role in positive intergroup relationships, Study one findings in this thesis indicate that positive emotions related to status and esteem (e.g., admiration) may be involved in contact processes. Similarly, Seger et al.

(2017) found that the relationship between contact and prejudice was only mediated by increased levels of a positive emotion (admiration) and decreased levels of a threat-based emotion (disgust). Together these findings indicate not only that outgroup-threat-specific emotions (e.g., anger or disgust) mediate effects of contact on attitudes toward those outgroups (with several different target groups) but also positive emotions, including admiration have a role to play in the same relationship.

Beyond admiration, empathy has also been associated with positive outcomes in group relations. In an intergroup context, empathy for an outgroup involves taking the outgroup's perspective as well as experiencing emotions like sympathy and compassion. Comparatively less attention has focused on the mediating effect of empathy in the contact literature compared to intergroup anxiety (Pettigrew & Tropp, 2008). Nonetheless, Armstrong et al. (2016) found that empathy explains the effect of students' contact and attitudes towards peers with disability. Johnston and Glasford (2018) also found that empathy explains the connection between contact and increases in outgroup helping. However, these findings are not consistent. For instance, empathy did not emerge as a significant mediator of heterosexuals' contact experiences with sexual minorities and LGBT activists (Fingerhut, 2011) and subsequent behaviour intentions.

This inconsistency in finding may occur because empathy is not as Ekman's (1992) theory basic emotion states, universally recognizable, produced automatically and cannot be further deconstructed. Indeed, emotion researchers differentiate between two forms of empathy: affective and cognitive empathy. *Cognitive empathy* is the cognitive process of adopting another's psychological point of view (Davis et al., 1994, p. 45). *Affective empathy* is the capacity to experience affective reactions to the observed experience of others (Davis, 1994, p. 45). Whilst empathy it is frequently listed as an affective mediator of the contact prejudice relationship in intergroup literature, the construct is fused with feelings of

“warmth”, “sympathy”, and “pity” (E.g., Grütter et al., 2018; Selvanathan et al., 2018; Tapias et al., 2007). If empathy describes a conflation of positive emotions, it becomes more difficult to predict the specific action tendencies that flow from these feelings. For instance, pity may predict behaviours that diminish or patronise outgroup members, such as the infantilisation of the elderly (Marson & Powell, 2014) whereas sympathy can motivate collective action tendencies (Lantos et al., 2020). Nonetheless despite these challenges, future tests of the threat-matching hypothesis should test the effects of positive and negative contact on distinct positive emotions such as “pride” and “sympathy” to predicting support for affirmative action policies and importantly desire for further contact.

Critics may also point out that self-reported emotional states are highly subjective. For instance, individuals high in social desirability maybe less willing or capable of reporting emotional states (Welte & Russell, 1993). Though, this suggestion has proven somewhat contentious (Shedler et al., 1993; Taylor et al., 2003). However, this suggestion has proven to be contentious (Robinson & Clore, 2002), with self-reports of contemporaneous emotional experiences being likely to be more valid than self-reports made somewhat distant in time from the relevant experience. Thus, participants in my studies were asked to report contemporaneously, the extent they experienced a range of feelings as they thought about meeting a specific outgroup.

In relying upon self-reported specific state emotions, it is important to note that there is no consensus of definition for the term “emotion” in social psychology. In fact, many psychological scientists consider emotions to influence cognition, decision-making, actions, social interactions, and mental wellbeing. Emotion theorists categorise emotional experiences in several different ways, nonetheless they do show some agreement in emotion activation, functions, and processes of regulation. In defining specific state emotion constructs, I rely on the discrete emotions perspective which asserts that each emotion (e.g., anger, disgust, fear)

relates to a unique profile in experience, physiology, and behaviour (Ekman, 1992; Panksepp, 1998). Researchers have shown that, at least on a semantic level, people do distinguish between specific emotions (Fiske et al., 2002; Hutcherson & Gross, 2011; Mackie & Smith, 2002; Rozin et al., 1999).

For instance, Hutcherson and Gross (2011) found that threat appraisal influenced the emotions people considered to be relevant to a particular situation, and that these emotions were associated with unique profiles of responses and judgements in real-life situations. Across five studies, the authors indicate that anger appears to be evoked by threat appraisals of self-relevance, disgust seems to be related most strongly to appraisals that a person is morally untrustworthy, and contempt seems uniquely related to the judgment that someone is incompetent or unintelligent. Importantly, the Hutcherson and Gross findings also illustrate that people label emotional experiences because they have different consequences and use them in free speech to communicate likely actions, real-world behaviours, and judgements. Nonetheless, it is also important to note how much overlap was observed between the specific emotions in my studies. Even when participants claimed that disgust most strongly described their emotional reaction towards a specific outgroup, they also reported anger or fear. The considerable overlap and co-occurrence observed in my studies, combined with the observation of clear distinctions between them in outgroup threat appraisals and functional consequences, lends support to models in which social emotions like anger, disgust, and fear share a common socioemotional core.

Behaviour intentions

As with self-reported measures of contact and emotions, critics may argue self-reported behaviour intentions are also limited by social desirability, acquiescent and extreme responding. However, a key aim of the current work was to move beyond the prejudice-as-general-attitude approach to investigate the role that intergroup contact plays in predicting

functionally distinct emotional and behavioural reactions in response to salient threats. To mitigate the effect of socially desirable responding outgroups were thoughtfully selected. For instance, in study 2b, Republican Voters were unlikely to feel unable to express their dislike for their political opponents post an election. It is also notable that in my early December 2020 study, Republican participants recorded strong hostile behaviour intentions towards Democrats actively preventing the inauguration of Biden as the 46th president of the United States of America, a behaviour intention prediction that would unfold on January 6th, 2021, in an attack on the US Capitol.

Critics of my novel self-report behaviour intention outcome measures may note that the size of associations between behaviour intention outcomes and the emotional variables are small. The effect sizes reported, however, are not dissimilar from the average strength of the traditional contact-prejudice association observed in Pettigrew and Tropp's (2006) metaanalysis ($r = .205$ to $.214$). Ultimately, the size of the effects observed in the current studies are encouraging given the novelty of the outcome variables and complement studies that predict attitudes from contact.

Intergroup threat

The findings in this thesis also indicate that intergroup threats appraisal can be contextual and responsive to specific events such as acts of violence or geopolitical events. Research based on Cottrell and Neuberg's (2005) work has typically only considered normative or stereotype perceptions of threats that groups pose, not threats that vary by context or situation. On the other hand, the intergroup emotions literature proposes that specific manifestations of intergroup emotions are context dependent (Mackie & Smith, 2018; Mackie, Smith, & Ray, 2008). It is probable that a different intergroup context would influence which threats were salient, which means that context plays a critical, if currently invisible moderating role in the threat-matching model. Future experimental tests of the

threat-matching hypothesis should consider manipulating threat-context to explicate the conditions under which, and the mechanisms whereby, emotions influence intergroup behaviour.

Social hierarchy power dynamics

In addition to the limitations discussed above, the research with the present thesis did not address questions relating to social hierarchy power dynamics. Social groups, Sidanius and colleagues (2001) argue, become organised into hierarchies because, according to evolutionary psychology, can offer a high survival rate. Social groups with high-power have control over resources (e.g., information, food, economic) which lower powered groups may depend on. Advantaged group members privileged access to resources may lead to better psychological and health outcomes, increased reproductive fitness, and reduced mortality (Sidanius & Pratto, 2001). This indicates a group's social position within a hierarchy is related to both access to resources and increased capacity to manage existential threat. Notably, research has also linked a group's social status to particular social behaviours including discrimination (Blader & Chen, 2012). Future investigations of the threat-matching hypothesis should consider effect of the target group's social ranking relative to the ingroup status.

Social hierarchy power dynamics have also been associated with threat magnitude perception. The studies presented in this thesis have only considered threats perceived by high power groups, that is threats to a majority White European, advantaged population. Stephan and colleagues (2009) argue from an intergroup threat theory perspective that in general, lower powered groups are more likely than high powered groups to experience threats, but high power groups likely react more strongly because they have more to lose. Consistent with this concept, research has indicated that low power ethnic groups (e.g., Native Canadians) perceive greater threat from high power groups (e.g., Anglo Canadians)

(Corenblum & Stephan, 2001). Research has found that high power groups, on the other hand, likely react more strongly than low powered groups to feeling threatened because they have more to lose and the resources to respond to threats (Johnson et al., 2005; Riek et al., 2006). The studies in this thesis find that ingroup participants experiencing the greatest threat also express greater emotion and threat-coping behaviours, however, the studies do not consider the value of what might be lost, or the resources/skills required to counteract the threat are available. In a sense, however, the magnitude of the threat and the perceivers capacity to cope are not of crucial importance. The threat-matching hypothesis simply predicts that past experiences of positive contact with a target group will be associated with a reduction in the specific negative emotions that can motivate specific negative threat-coping behaviours. Negative contact, meanwhile, is expected to be associated with an increase in the specific negative emotions that may motivate the same negative intergroup behaviours. Nonetheless, to address the influence of power dynamics, future investigations of the threat-matching hypothesis should include the magnitude of threat and consider the ingroup's coping capacity relative to the outgroup's capacity to harm.

Future directions

All but one (Chapter 6, study 4b) of my studies are cross-sectional. A general limitation of such studies is that while they can determine an association between exposure to specific out group contact and behavioural outcomes, they cannot predict causation. To address this, future studies should test the novel threat-matching hypothesis using experimental and longitudinal designs to establish how and under what circumstances the effects of contact work through emotion to shape bias behaviour intentions.

Manipulating contact

A future experimental study for example could manipulate contact with different outgroups using a computer-mediated-chat (CMC) fast-friends procedure (Aron et al., 1997;

Tidwell & Walther, 2002). The Fast Friends procedure constitutes a series of increasingly intimate questions intended to enhance connection between unacquainted people. Self-disclosure is the primary mechanism that helps build this connection. The process is intended to be reciprocal, meaning that individuals reveal things about themselves and that partners respond in a responsive way, generally creating positive contact experiences. Typically when completing these series of questions, respondents report high feelings of closeness and a high degree of overlap between them and their partner (Sprecher, 2020). However, such a procedure can be manipulated using computer-mediated-chat. In a CMC procedure, participants can be led to believe positive or negative scripted responses come from a real person from a specific outgroup. It might be expected that partners receiving negative and unfriendly scripted responses, compared to positive friendly responses experience negative contact and therefore report low feelings of closeness and a low degree of overlap.

In this proposed study it would be hypothesized that when participants experience contact with an outgroup member that poses an obstacle threat, computer mediated positive contact will reduce anger more strongly than fear and negative contact will predict increased anger more strongly than fear. Similarly, when participants experience computer mediated contact with an outgroup member that poses a safety threat, positive contact will predict lower fear more strongly than lower anger and negative contact will predict greater fear more strongly than anger. The study design would require two independent variables (Outgroup and Contact), each variable would have two levels (outgroup type and contact nature), representing four conditions. Participants would be assigned to meet an outgroup member that was either (1) An outgroup that poses as safety threat (e.g.) An antivaxxer; or (2) An outgroup that poses an obstacle threat (e.g.) An immigrant; and then experience either (1) positive or (2) negative contact with that outgroup member. Participants would be asked to assess the subjective quality of their computer mediated contact experience using the

questions – “To what extent did you experience contact with your partner as positive/negative” and “To what extent did you experience contact with your partner as friendly/unfriendly”. The specific emotions – fear and anger would be mediating variables and behaviour intention the outcome measure.

In simple terms, at the start of the online procedure the participant would respond to some questions intended to increase their salience of their relevant ingroup identity, for example “To what extent do you consider vaccination important to protect your wellbeing” and “To what extent do you consider the rising immigrant population impacts UK education resources”. Once complete, the participant will receive their “supposed” partner’s responses will indicate (according to condition) member to either the AntiVaxxer or Immigrant outgroup. Next, participants will commence by posing and responding to the fast-friends question set (Aron et al., 1997). Participants in the positive contact condition will receive friendly, interested responsive answers to their questions, participants in the negative contact will receive unfriendly, uninterested responses.

After the experimental computer-mediated-chat interaction, to assess the subjective quality of their computer mediated contact experience using the questions – “To what extent did you experience contact with your partner as positive/negative” and “To what extent did you experience contact with your partner as friendly/unfriendly”. Participants would also be asked to assess discrete intergroup emotions by indicating when thinking about the relevant outgroup, to what extent they felt five different emotions towards this group (‘angry’, ‘infuriated’, ‘fearful’, ‘outraged’, and ‘afraid’) using 7-point Likert scales (1 = *not at all*, 7 = *very much*; Giner-Sorolla & Russell, 2019). Then to measure behaviour intentions, participants would be asked to what extent the relevant outgroup made them want to “confront them”, “oppose them”, “argue with them”, “avoid them”, “have nothing to do with them”, and “keep them at a distance” (1 = *not at all*, 7 = *very much*; Kenworthy et al., 2016).

Then to conclude, the study participants would provide demographic information be thanked and debriefed.

Then the data will be used to test the partial moderated mediation model set out in figure x (PROCESS Model 10; Hayes, 2018), where the independent variable will be the outgroup encountered (x), where the mediator variables will be anger (m_1), and fear (m_2), and where the outcome variable is behaviour intention (y), with negative contact (w) and positive contact (z) independently moderating both the first stage threat–emotion pathways (a_1) and (a_2). Tests of this partial moderated mediation model can help answer several important questions: (1) Does negative contact moderate the indirect effect of presumed outgroup threat–behaviour intention, via emotion, when positive contact as the second moderator is held constant. And (2) does negative contact moderate the direct effect of presumed outgroup threat–behaviour intention when positive contact is similarly held. (3) When participants experience contact with an outgroup member that poses an obstacle threat, does computer mediated positive contact reduce anger more strongly than fear and does negative contact predict increased anger more strongly than fear. (4) Similarly, when participants experience computer mediated contact with an outgroup member that poses a safety threat, does positive contact will predict lower fear more strongly than lower anger and does negative contact predict greater fear more strongly than anger. Support for these four hypotheses would provide further experimental evidence for the threat matching hypothesis which predicts that the emotional processes underlying contact effects depend on the specific threat posed by the outgroup.

Testing causal associations between contact, emotion, and behaviour.

A future study could be used to test causal associations between contact, emotion, and behaviour intentions if survey data were collected longitudinally. For example, data from a

four-wave survey of 1,000 participants that regularly probed Republican positive and negative contact experiences with Democrats, anger emotion experienced towards the outgroup and approach behaviour intentions could be tested via cross-lagged structural equation modelling. While cross-lagged panel models mix between and within person estimates and can explain little about change over time, the cross-lagged panel model can still provide valuable information. Particularly in this situation where the question relates to the strength of association between contact, affect and behaviour intention, rather than separation of between- and within-person effects. Specifically, a structural equation model can look at the associations between positive and negative contact at time one, and emotion and behaviour intention in a later period, while considering the initial standing of all variables. If the analyses provide support for the threat matching hypotheses, it would be expected that Republican experiences of negative contact with Democrats would be more strongly predict greater anger that positive contact would predict less anger. Greater anger would positively be associated with greater approach behaviour intentions.

Summary and Conclusions

This thesis has considered the problem of the different styles of discriminatory behaviour inflicted upon minority groups. Rather than accept the general attitudinal nature of prejudice, it was argued that researchers should look to advance our understanding of the functionally specific emotional responses that underpin the effects of contact on prejudicial behaviours. To this aim, five previously unconnected intergroup relationship theories have been synthesised to form a single threat-matching hypothesis. This hypothesis predicted that the emotional processes underlying contact effects depend on the specific threat posed by the outgroup. It was argued that past experiences of positive contact with a target group are associated with a reduction in the specific negative emotions that can motivate specific negative threat-coping behaviours. Negative contact, meanwhile, are associated with an increase in the specific negative emotions that might motivate the same negative intergroup behaviours. Crucially, it was argued that only by investigating the structural relationship between positive and negative contact, specific intergroup emotions and threats are we ultimately able to identify the finely grained mechanisms responsible for the effects of contact on behaviour tendencies. In so doing, this may allow the development of practical intergroup contact strategies to help individuals regulate the specific threat-based emotion that drive prejudicial behaviours.

The empirical chapters within this thesis provided support in line with the threat-matching hypothesis. Results support the conclusion that past experiences of intergroup contact with a specific outgroup can predict discrete and functional intergroup emotions that in turn can predict specific intergroup behaviour tendencies. The present findings leave us optimistic that intergroup contact interventions with focus on intergroup emotions and behaviour tendency has the potential to bring about important social change.

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Appendix A:

Summary of four hierarchical regression models for variables predicting *admiration* for the four outgroups.

<i>admiration</i>	Gay Men		Black People		Immigrants		Muslims	
	<i>b</i>	<i>sr</i> ²	<i>b</i>	<i>sr</i> ²	<i>b</i>	<i>sr</i> ²	<i>b</i>	<i>sr</i> ²
Constant	1.86		.75		1.81**		2.58**	
Age	.00	.00	.01	.01	0	.00	-.01	.00
Sex	-.02	.00	.25	.01	.19	.00	-.08	.00
Anger	.44**	.03	.11	.01	-.33*	.02	.04	.00
Fear	.15**	.01	.06	.00	.22*	.00	-.07	.00
Disgust	-.40	.05	.21	.05	.14	.02	-.01	.00
Positive Contact	.51**	.25	.52**	.25	.52**	.24	.54**	.33
Negative Contact	-.13	.01	-.25*	.06	-.22*	.02	-.10	.01
R ²	.34		.33		.38		.39	
ΔR ²	.21		.27		.24		.38	
F	17.80**		20.25**		20.41**		32.72**	
ΔF	36.55**		57.85**		44.69**		100.04**	

Notes: ***p* > 0.01 level (2-tailed), **P* > 0.05 level (2-tailed), *b* represents unstandardized

regression weights *sr*² represents the semi-partial correlation squared

Appendix B

Summary of four hierarchical regression models for variables predicting *anger* for the four outgroups.

<i>anger</i>	Gay Men		Black People		Immigrants		Muslims	
	<i>b</i>	<i>sr</i> ²	<i>b</i>	<i>sr</i> ²	<i>b</i>	<i>sr</i> ²	<i>b</i>	<i>sr</i> ²
Constant	.06		-.46		1.39**		.96**	
Age	.00	.00	-.01	.02	-.01	.00	.00	.00
Sex (Male)	-.03	.00	.34**	.02	.02	.00	.02	.00
Admire	.12*	.03	.24***	.08	-.07	.01	-.01	.00
Positive Contact	-.08	.01	-.10*	.02	-.18**	.05	-.07	.01
Negative Contact	.76**	.59	.80**	.51	.71**	.46	.71**	.43
R ²	.60		.60		.54		.46	
ΔR ²	.57		.59		.53		.41	
F	68.14**		73.89**		45.83**		58.47**	
ΔF	160.32**		178.80**		103.80**		155.10**	

Notes: ** $p > 0.01$ level (2-tailed), * $P > 0.05$ level (2-tailed), *b* represents unstandardized regression weights *sr*² represents the semi-partial correlation squared

Appendix C

Summary of four hierarchical regression models for variables predicting *fear* for the four outgroups.

<i>fear</i>	Gay Men		Black people		Immigrants		Muslims	
	<i>b</i>	<i>sr</i> ²	<i>b</i>	<i>sr</i> ²	<i>b</i>	<i>sr</i> ²	<i>b</i>	<i>sr</i> ²
Constant	.66	.00	.91*		1.37***		2.49**	
Age	-.01	.00	.00	.00	.00	.00	-.01	.01
Sex (Male)	.00	.00	-.12	.00	-.19	.01	-.25*	.01
Admire	.10*	.02	.22**	.05	.09	.01	.05	.00
Positive Contact	-.14*	.03	-.25**	.06	-.24**	.08	-.20**	.04
Negative Contact	.80**	.58	.70**	.38	.62**	.38	.65**	.36
R ²	.59		.49		.44		.43	
ΔR ²	.56		.44		.38		.34	
F	66.24**		47.33**		29.85**		50.46**	
ΔF	155.78**		125.80**		78.68**		120.78**	

Notes: ***p* > 0.01 level (2-tailed), **P* > 0.05 level (2-tailed), *b* represents unstandardized regression weights *sr*² represents the semi-partial correlation squared

Appendix D

Summary of four hierarchical regression models for variables predicting disgust for the four outgroups.

<i>disgust</i>	Gay Men		Black People		Immigrants		Muslims	
	<i>b</i>	<i>sr</i> ²	<i>b</i>	<i>sr</i> ²	<i>b</i>	<i>sr</i> ²	<i>b</i>	<i>sr</i> ²
Constant	1.00*	.00	-.83*		.79*		1.28**	
Age	.00	.00	-.01	.01	.00	.00	-.01	.01
Sex	-.18	.01	-.35**	.02	.16	.01	.13	.00
Admire	-.02	.00	.27***	.09	.00	.00	-.01	.00
Positive Contact	-.17**	.04	-.09	.01	-.14*	.04	-.11*	.02
Negative Contact	.83**	.55	.79***	.46	.64**	.44	.72**	.45
R ²	.56		.55		.49		.48	
ΔR ²	.55		.44		.41		.42	
F	57.44**		60.67**		37.79**		62.00**	
ΔF	140.04**		144.30**		92.24**		163.69**	

Notes: ** $p > 0.01$ level(2-tailed), * $P > 0.05$ level (2-tailed), *b* represents unstandardized regression weights *sr*² represents the semi-partial correlation squared

Appendix E

Index of avoidance behaviour intention for Study 2a

Policy Support

Support for the two policy constructs were measured using the following nine items:

(1 = *strongly disagree*, 7 = *strongly agree*)

Chinese restriction policies

- Close Chinese restaurants in the UK
- Ban all flights from China
- Ban all Chinese nationals from entering the UK
- Ban Chinese imports to the UK
- Enforce a quarantine of all Chinese nationals in the UK

General restriction policies

- Ban large public gatherings, such as football matches and concerts
- Close public transportation in UK cities where coronavirus has been reported
- Close any schools where a student or staff member tests positive for coronavirus
- Close nightclubs in cities where coronavirus has been reported

Additional items

- Quarantine of individuals who have been to China within the last 14 days
- Send UK Government financial aid to help China contain the Coronavirus
- Build emergency hospitals for Coronavirus patients
- Shut borders to all non-UK citizens

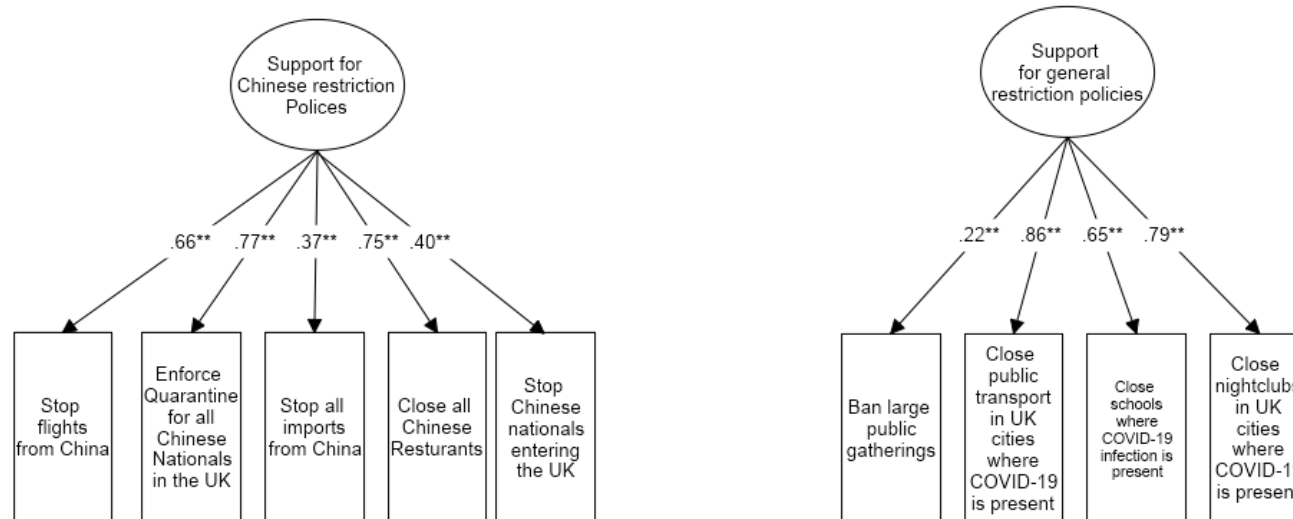
Appendix F

Alternative Model (including disgust)

Measurement Model

Figure 37

Measurement Model, empirical fit for support for Chinese restriction policies and support for General restriction policies.



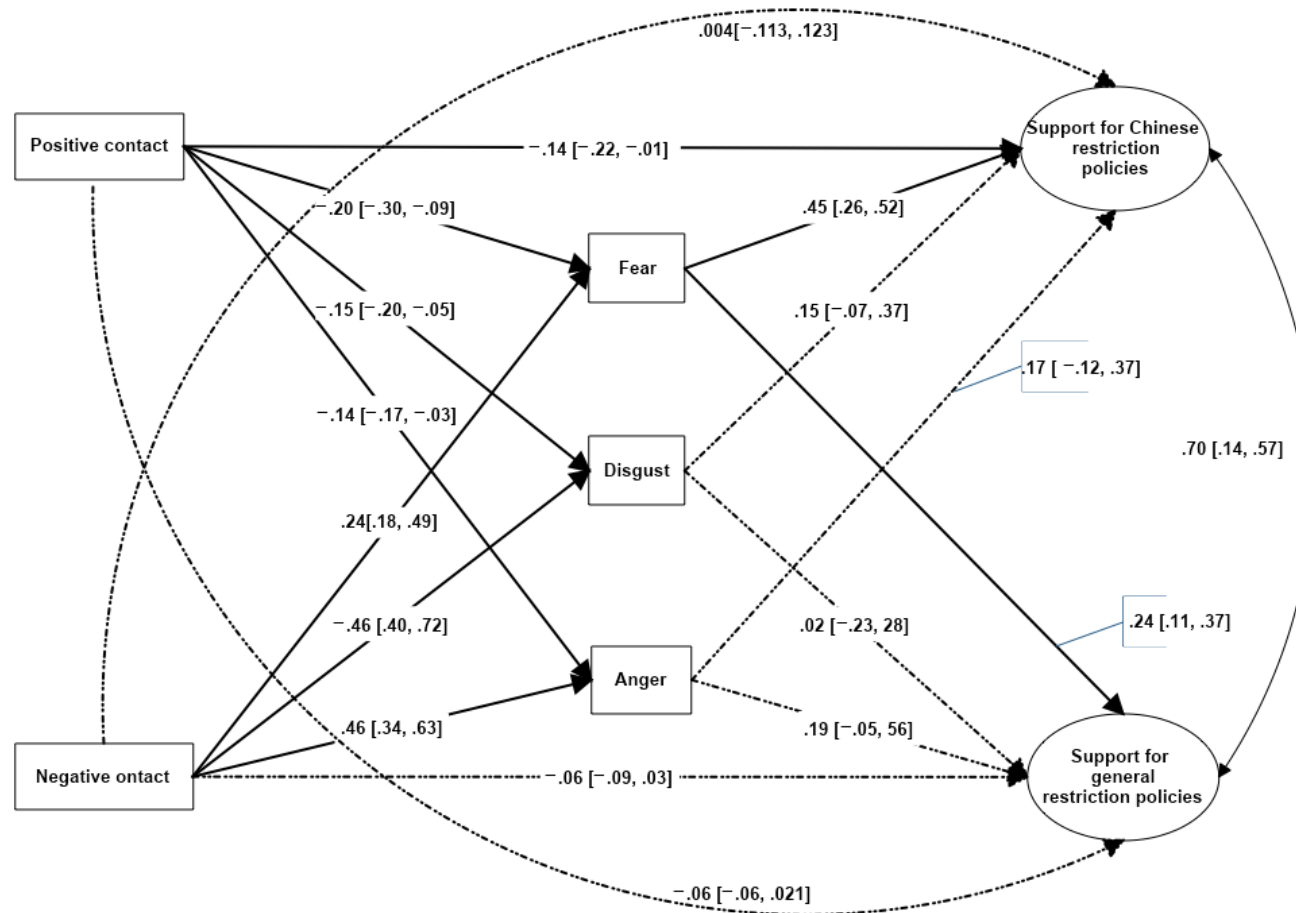
Note. * $p < .05$ ** $p < .001$; Coefficients are standardized

Fit statistics: robust χ^2 (26) = 91.524, $p < .001$, χ^2/df ratio = 3.52,

robust RMSEA = .086 [90% CI 0.052 – 0.079], SRMR = .046, robust CFI = .939.

Appendix G

Alternative Structural Model (Includes Disgust)



Note. Fit statistics:

Robust χ^2 (61) = 143.78,

$p < .001$, χ^2/df ratio =

2.35,

Robust RMSEA = .062

[90% CI 0.49 – 0.075],

SRMR = .044, Robust

CFI = .948, N = 340.

Figure 38: Empirical fit of structural equation model two of the associations between contact, emotion (fear, disgust, and anger) and support for Chinese and General restriction policies. All paths except the dashed lines are significant. Coefficients are standardized and 95% confidence intervals are reported in square brackets.

Appendix H

Obstacle Threat Study 2b

Obstacle threat salience was measured using the following 12 items:

(1 = *strongly disagree*, 7 = *strongly agree*)

Economic

- In general, I feel that Democrats represent a threat for jobs for Republicans like me.
- In general, I feel that Democrats represent a threat for Republicans like me at an economic level.

Possessions

- In general, I feel that Democrats represent a threat for possessions belonging to Republicans like me.
- In general, I feel that Democrats threaten the personal possessions belonging to Republicans like me, (e.g., cars and houses).

Rights

- In general, I feel that Democrats represent a threat for freedoms of Republicans like me.
- In general, I feel that Democrats represent a threat for the rights of Republicans like me.

Choices

- In general, I feel that Democrats choose to take more from our country than they give back.
- In general, I feel that Democrats do not want to contribute as much to our country as they take from it.

Social coordination

- In general, I feel that Democrats represent a threat for social order
- In general, I feel that Democrats disrupt social functioning in our country.

Trust

- In general, I feel that Republicans cannot trust Democrats
- In general, Republicans are rightfully suspicious of Democrats

Appendix I

Index of Hostile Behaviour Intention - Study 2b

Hostile behaviour intention was measured using the following 8 items:

(1 = *strongly disagree*, 7 = *strongly agree*)

- I would endorse the use of military force to stop Democrat protestors who support the inauguration of Joe as the president.
- I would support the arrest of the Democratic candidate, Joe Biden, for election fraud.
- I would refuse to publicly acknowledge the Democratic candidate, Joe Biden, as the president-elect
- I would support my state legislatures to ignore the counted popular vote in our state and appoint electors favourable to the Republican candidate, Donald Trump.
- I would share, on social media, articles that suggest the Democrats stole the election
- I would rally with other Republicans to back the claims of voter fraud.

**Appendix J Summary of Pairwise Differences in Threat Perception Between Outgroups,
Pilot study Chapter 5**

Table 45 *Pairwise differences of safety threat perception between outgroups*

Outgroup comparisons	Estimate	Lower CI	Upper CI
Black men - Psychiatric patients	.06	-.18	.30
Black men – Muslims	-.15	-.39	.09
Black men - Gay men	-.06	-.30	.18
Black men - Drug addicts	.04	-.20	.28
Black men - Obese people	-.07	-.31	.17
Black men - Far-Right activists	.15	-.09	.39
Black men - Environmental activist	-.04	-.28	.20
Black men - Antivaxxers	-.12	-.36	.12
Psychiatric patients - Muslims	-.21	-.45	.03
Psychiatric patients - Gay men	-.13	-.37	.12
Psychiatric patients - Drug addict	-.02	-.26	.22
Psychiatric patients - Obese person	-.13	-.37	.11
Psychiatric patients - Far-Right activists	.08	-.16	.32
Psychiatric patients - Environmental activist	-.10	-.34	.14
Psychiatric patients - Antivaxxers	-.18	-.42	.06
Muslims - gay men	.08	-.16	.32
Muslims - drug addicts	.19	-.05	.43
Muslims - Obese people	.08	-.16	.32
Muslims - Far-Right activists**	.29	.05	.53
Muslims - Environmental activists	.11	-.13	.35
Muslims - Antivaxxers	.03	-.21	.27
Gay men - Drug addicts	.10	-.14	.34
Gay men - Obese people	-.01	-.25	.23
Gay men - Far-Right activists	.21	-.03	.45
Gay men - Environmental activists	.03	-.21	.27
Gay men - Antivaxxers	-.06	-.30	.18
Drug addicts - Obese people	-.11	-.35	.13
Drug addicts - Far-Right activists	.10	-.14	.34
Drug addicts - Environmental activists	-.08	-.32	.16
Drug addicts - Antivaxxer	-.16	-.40	.08
Obese people - Far-Right activists*	.21	-.03	.45
Obese people - Environmental activists	.03	-.21	.27
Obese people - Antivaxxers	-.05	-.29	.19
Far-Right activists - Environmental activists	-.18	-.42	.06
Far-Right activists – Antivaxxers*	-.27	-.51	-.03
Environmental activists - Antivaxxers	-.08	-.32	.16

Note: Degrees of freedom method: Kenward-Roger, *p* value adjustment: tukey method for comparing family of nine estimates. * Indicates $p < .05$. ** indicates $p < .01$.

Table 46 *Pairwise differences of contamination threat perception between outgroups*

Outgroup comparisons	Estimate	Lower CI	Upper CI
Black men - Psychiatric patients	-.32	-.72	.08
Black men – Muslims	-.04	-.44	.36
Black men - Gay men	.02	-.37	.42
Black men - Drug addicts**	-.87	-1.27	-.47
Black men - Obese people	-.07	-.47	.32
Black men - Far-Right activists**	-.93	-1.33	-.53
Black men - Environmental activist	-.06	-.46	.34
Black men – Antivaxxers**	-3.98	-4.37	-3.58
Psychiatric patients - Muslims	.28	-.12	.67
Psychiatric patients - Gay men	.34	-.05	.74
Psychiatric patients - Drug addict**	-.55	-.95	-.15
Psychiatric patients - Obese person	.25	-.15	.64
Psychiatric patients - Far-Right activists**	-.61	-1.01	-.21
Psychiatric patients - Environmental activist	.26	-.14	.66
Psychiatric patients – Antivaxxers**	-3.66	-4.05	-3.26
Muslims - Gay men	.07	-.33	.46
Muslims - Drug addicts**	-.83	-1.22	-.43
Muslims - Obese people	-.03	-.43	.37
Muslims - Far-Right activists**	-.89	-1.29	-.49
Muslims - Environmental activists	-.02	-.41	.38
Muslims – Antivaxxers**	-3.93	-4.33	-3.54
Gay men - Drug addicts**	-.89	-1.29	-.50
Gay men - Obese people	-.10	-.49	.30
Gay men - Far-Right activists **	-.95	-1.35	-.56
Gay men - Environmental activists	-.08	-.48	.31
Gay men – Antivaxxers **	-4.00	-4.40	-3.60
Drug addicts - Obese people **	.80	.40	1.19
Drug addicts - Far-Right activists	-.06	-.46	.33
Drug addicts - Environmental activists **	.81	.41	1.21
Drug addicts – Antivaxxer **	-3.11	-3.50	-2.71
Obese people - Far-Right activists**	-.86	-1.25	-.46
Obese people - Environmental activists	.01	-.38	.41
Obese people – Antivaxxers **	-3.90	-4.30	-3.51
Far-Right activists - Environmental activists**	.87	.47	1.27
Far-Right activists – Antivaxxers**	-3.05	-3.44	-2.65
Environmental activists – Antivaxxers**	-3.92	-4.31	-3.52

Note: Degrees of freedom method: Kenward-Roger, *p* value adjustment: tukey method for comparing family of nine estimates. * Indicates $p < .05$. ** indicates $p < .01$.

Table 47 *Pairwise differences of obstacle threat perception between outgroups*

Outgroup comparisons	Estimate	Lower CI	Upper CI
Black men - Psychiatric patients	.08	-.21	.36
Black men – Muslims	-.23	-.52	.06
Black men - Gay men	-.13	-.41	.16
Black men - Drug addicts	-.13	-.42	.16
Black men - Obese people	-.31	-.60	-.02
Black men - Far-Right activists**	-1.30	-1.58	-1.01
Black men - Environmental activist**	-.52	-.81	-.23
Black men – Antivaxxers**	-1.24	-1.53	-.95
Psychiatric patients – Muslims*	-.31	-.59	-.02
Psychiatric patients - Gay men	-.20	-.49	.09
Psychiatric patients - Drug addict	-.21	-.50	.08
Psychiatric patients - Obese person**	-.39	-.67	-.10
Psychiatric patients - Far-Right activists**	-1.37	-1.66	-1.08
Psychiatric patients - Environmental activist*			
* Psychiatric patients – Antivaxxers**	-.60	-.89	-.31
Psychiatric patients – Antivaxxers**	-1.32	-1.61	-1.03
Muslims - Gay men	.10	-.18	.39
Muslims - Drug addicts	.10	-.19	.39
Muslims - Obese people	-.08	-.37	.21
Muslims - Far-Right activists**	-1.07	-1.35	-.78
Muslims - Environmental activists*	-.29	-.58	.00
Muslims – Antivaxxers**	-1.01	-1.30	-.73
Gay men - Drug addicts	-.01	-.30	.28
Gay men - Obese people	-.18	-.47	.10
Gay men - Far-Right activists **	-1.17	-1.46	-.88
Gay men - Environmental activists**	-.40	-.68	-.11
Gay men – Antivaxxers **	-1.12	-1.41	-.83
Drug addicts - Obese people **	-.18	-.47	.11
Drug addicts - Far-Right activists**	-1.16	-1.45	-.87
Drug addicts - Environmental activists **	-.39	-.68	-.10
Drug addicts – Antivaxxer **	-1.11	-1.40	-.82
Obese people - Far-Right activists**	-.99	-1.27	-.70
Obese people - Environmental activists	-.21	-.50	.08
Obese people – Antivaxxers **	-.93	-1.22	-.65
Far-Right activists - Environmental activists**	.77	.49	1.06
Far-Right activists – Antivaxxers	.05	-.24	.34
Environmental activists – Antivaxxers**	-.72	-1.01	-.43

Note: Degrees of freedom method: Kenward-Roger, p value adjustment: tukey method for comparing family of nine estimates. * Indicates $p < .05$. ** indicates $p < .01$.

Appendix K

Newspaper article from study 4b

Please read a following extract taken from a popular news source

“CORONAVIRUS IS THE BIGGEST THREAT TO BRITISH PEOPLE IN A GENERATION”

Brits are facing unprecedented times as the country battles against the coronavirus. The coronavirus outbreak, which was first detected in China, has infected people across the globe. Its spread has left people around Britain sheltering in their homes to avoid infection.

The virus, thought to originate from a Chinese “wet market”, has caused 60,000 excess UK deaths and hundreds of British people are still dying from the virus in the UK every-day.

The Coronavirus has caused the worst global pandemic in 100 years. The risk of COVID-19 infection has created major strains for millions of British people. A third of British COVID-19 patients taken to hospital die. No one is immune.

Whole families are affected. Eighteen-year-old Miriam from Bradford was rushed to hospital with the virus, she was struggling to breathe and had chest pains. Shortly after she arrived, she was admitted to intensive care. She was followed by her 84-year-old grandfather and then her mother. Tragically her grandfather did not recover, and Miriam and her mother remain weakened from the disease, requiring round the clock care from Miriam’s father.

Professor Michael Rawlings of Imperial College, London said, “Some people persist in believing this Coronavirus, that emerged from China, is no worse than a bad dose of flu. They are gravely mistaken.” “People need to hear this and get it into their heads” Rawlings added, “because we are all at risk from this incredibly infectious and dangerous disease.”

Appendix L: Pairwise differences of threat perception between outgroups, Study 3**Table 48:** *Pairwise differences of safety threat perception between outgroups*

Outgroup comparisons	Estimate	Lower CI	Upper CI
Black men - Psychiatric patients	-0.32	-0.72	0.08
Black men – Muslims	-0.04	-0.44	0.36
Black men - Gay men	0.02	-0.37	0.42
Black men - Drug addicts**	-0.87	-1.27	-0.47
Black men - Obese people	-0.07	-0.47	0.32
Black men - Far-Right activists**	-0.93	-1.33	-0.53
Black men - Environmental activist	-0.06	-0.46	0.34
Black men – Anti-vaxxers**	-3.98	-4.37	-3.58
Psychiatric patients - Muslims	0.28	-0.12	0.67
Psychiatric patients - Gay men	0.34	-0.05	0.74
Psychiatric patients - Drug addict**	-0.55	-0.95	-0.15
Psychiatric patients - Obese person	0.25	-0.15	0.64
Psychiatric patients - Far-Right activists**	-0.61	-1.01	-0.21
Psychiatric patients - Environmental activist	0.26	-0.14	0.66
Psychiatric patients – Anti-vaxxers**	-3.66	-4.05	-3.26
Muslims - Gay men	0.07	-0.33	0.46
Muslims - Drug addicts**	-0.83	-1.22	-0.43
Muslims - Obese people	-0.03	-0.43	0.37
Muslims - Far-Right activists**	-0.89	-1.29	-0.49
Muslims - Environmental activists	-0.02	-0.41	0.38
Muslims – Anti-vaxxers**	-3.93	-4.33	-3.54
Gay men - Drug addicts**	-0.89	-1.29	-0.5
Gay men - Obese people	-0.1	-0.49	0.3
Gay men - Far-Right activists **	-0.95	-1.35	-0.56
Gay men - Environmental activists	-0.08	-0.48	0.31
Gay men – Anti-vaxxers **	-4	-4.4	-3.6
Drug addicts - Obese people **	0.8	0.4	1.19
Drug addicts - Far-Right activists	-0.06	-0.46	0.33
Drug addicts - Environmental activists **	0.81	0.41	1.21
Drug addicts – Anti-vaxxer **	-3.11	-3.5	-2.71
Obese people - Far-Right activists**	-0.86	-1.25	-0.46
Obese people - Environmental activists	0.01	-0.38	0.41
Obese people – Anti-vaxxers **	-3.9	-4.3	-3.51
Far-Right activists - Environmental activists**	0.87	0.47	1.27
Far-Right activists – Anti-vaxxers**	-3.05	-3.44	-2.65
Environmental activists – Anti-vaxxers**	-3.92	-4.31	-3.52

Note. Degrees of freedom method: Kenward-Roger, *p* value adjustment: tukey method for comparing family of nine estimates. * indicates $p < .05$. ** indicates $p < .01$.

Table 49*Pairwise differences of contamination threat perception between outgroups*

Outgroup comparisons	Estimate	Lower CI	Upper CI
Black men - Psychiatric patients	-0.32	-0.72	0.08
Black men – Muslims	-0.04	-0.44	0.36
Black men - Gay men	0.02	-0.37	0.42
Black men - Drug addicts**	-0.87	-1.27	-0.47
Black men - Obese people	-0.07	-0.47	0.32
Black men - Far-Right activists**	-0.93	-1.33	-0.53
Black men - Environmental activist	-0.06	-0.46	0.34
Black men – Anti-vaxxers**	-3.98	-4.37	-3.58
Psychiatric patients - Muslims	0.28	-0.12	0.67
Psychiatric patients - Gay men	0.34	-0.05	0.74
Psychiatric patients - Drug addict**	-0.55	-0.95	-0.15
Psychiatric patients - Obese person	0.25	-0.15	0.64
Psychiatric patients - Far-Right activists**	-0.61	-1.01	-0.21
Psychiatric patients - Environmental activist	0.26	-0.14	0.66
Psychiatric patients – Anti-vaxxers**	-3.66	-4.05	-3.26
Muslims - Gay men	0.07	-0.33	0.46
Muslims - Drug addicts**	-0.83	-1.22	-0.43
Muslims - Obese people	-0.03	-0.43	0.37
Muslims - Far-Right activists**	-0.89	-1.29	-0.49
Muslims - Environmental activists	-0.02	-0.41	0.38
Muslims – Anti-vaxxers**	-3.93	-4.33	-3.54
Gay men - Drug addicts**	-0.89	-1.29	-0.5
Gay men - Obese people	-0.1	-0.49	0.3
Gay men - Far-Right activists **	-0.95	-1.35	-0.56
Gay men - Environmental activists	-0.08	-0.48	0.31
Gay men – Anti-vaxxers **	-4	-4.4	-3.6
Drug addicts - Obese people **	0.8	0.4	1.19
Drug addicts - Far-Right activists	-0.06	-0.46	0.33
Drug addicts - Environmental activists **	0.81	0.41	1.21
Drug addicts – Anti-vaxxer **	-3.11	-3.5	-2.71
Obese people - Far-Right activists**	-0.86	-1.25	-0.46
Obese people - Environmental activists	0.01	-0.38	0.41
Obese people – Anti-vaxxers **	-3.9	-4.3	-3.51
Far-Right activists - Environmental activists**	0.87	0.47	1.27
Far-Right activists – Anti-vaxxers**	-3.05	-3.44	-2.65
Environmental activists – Anti-vaxxers**	-3.92	-4.31	-3.52

Note. Degrees of freedom method: Kenward-Roger, *p* value adjustment: tukey method for

comparing family of nine estimates. * indicates $p < .05$. ** indicates $p < .01$.

Table 50*Pairwise differences of obstacle threat perception between outgroups*

Outgroup comparisons	Estimate	Lower CI	Upper CI
Black men - Psychiatric patients	0.08	-0.21	0.36
Black men – Muslims	-0.23	-0.52	0.06
Black men - Gay men	-0.13	-0.41	0.16
Black men - Drug addicts	-0.13	-0.42	0.16
Black men - Obese people	-0.31	-0.6	-0.02
Black men - Far-Right activists**	-1.3	-1.58	-1.01
Black men - Environmental activist**	-0.52	-0.81	-0.23
Black men – Anti-vaxxers**	-1.24	-1.53	-0.95
Psychiatric patients – Muslims*	-0.31	-0.59	-0.02
Psychiatric patients - Gay men	-0.2	-0.49	0.09
Psychiatric patients - Drug addict	-0.21	-0.5	0.08
Psychiatric patients - Obese person**	-0.39	-0.67	-0.1
Psychiatric patients - Far-Right activists**	-1.37	-1.66	-1.08
Psychiatric patients - Environmental activist**	-0.6	-0.89	-0.31
Psychiatric patients – Anti-vaxxers**	-1.32	-1.61	-1.03
Muslims - Gay men	0.1	-0.18	0.39
Muslims - Drug addicts	0.1	-0.19	0.39
Muslims - Obese people	-0.08	-0.37	0.21
Muslims - Far-Right activists**	-1.07	-1.35	-0.78
Muslims - Environmental activists*	-0.29	-0.58	0
Muslims – Anti-vaxxers**	-1.01	-1.3	-0.73
Gay men - Drug addicts	-0.01	-0.3	0.28
Gay men - Obese people	-0.18	-0.47	0.1
Gay men - Far-Right activists **	-1.17	-1.46	-0.88
Gay men - Environmental activists**	-0.4	-0.68	-0.11
Gay men – Anti-vaxxers **	-1.12	-1.41	-0.83
Drug addicts - Obese people **	-0.18	-0.47	0.11
Drug addicts - Far-Right activists**	-1.16	-1.45	-0.87
Drug addicts - Environmental activists **	-0.39	-0.68	-0.1
Drug addicts – Anti-vaxxer **	-1.11	-1.4	-0.82
Obese people - Far-Right activists**	-0.99	-1.27	-0.7
Obese people - Environmental activists	-0.21	-0.5	0.08
Obese people – Anti-vaxxers **	-0.93	-1.22	-0.65
Far-Right activists - Environmental activists**	0.77	0.49	1.06
Far-Right activists – Anti-vaxxers	0.05	-0.24	0.34
Environmental activists – Anti-vaxxers**	-0.72	-1.01	-0.43

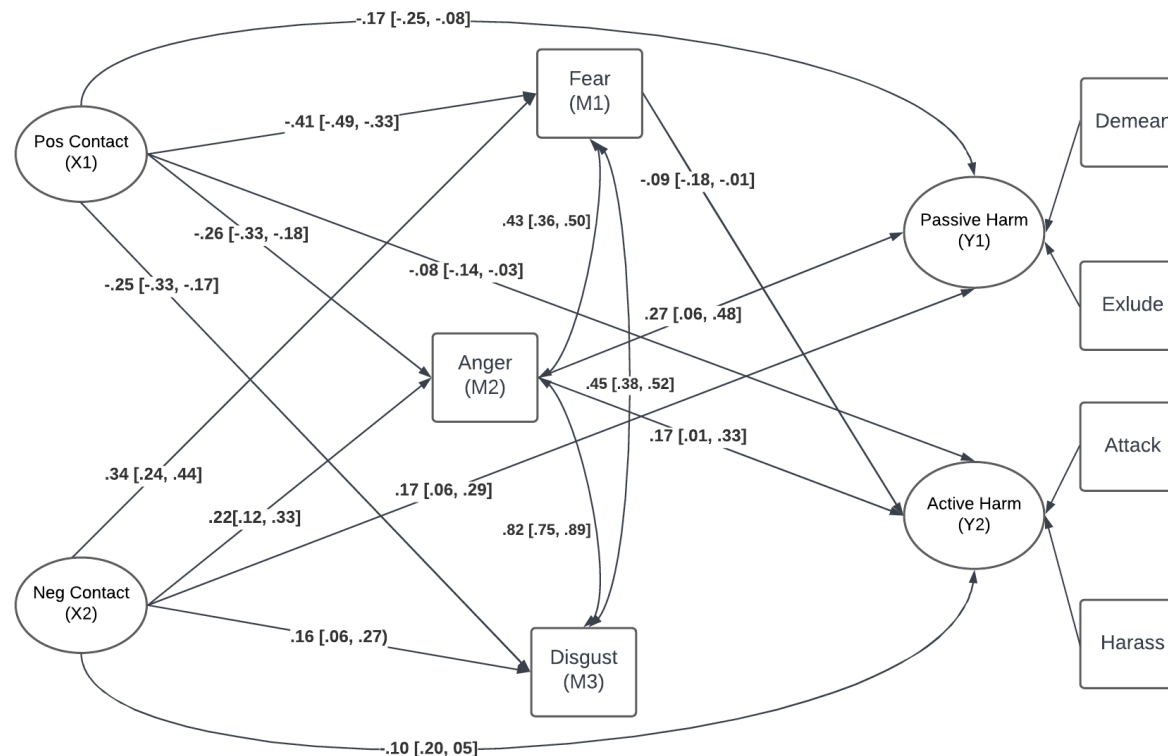
Note. Degrees of freedom method: Kenward-Roger, p value adjustment: tukey method for

comparing family of nine estimates. * indicates $p < .05$. ** indicates $p < .01$

Appendix M: Empirical fit of Study 3 data to the Structural Equation Model

Figure 39

Empirical fit of the psychiatric patient data to structural equation model for the associations between contact, emotion, and harm intentions.

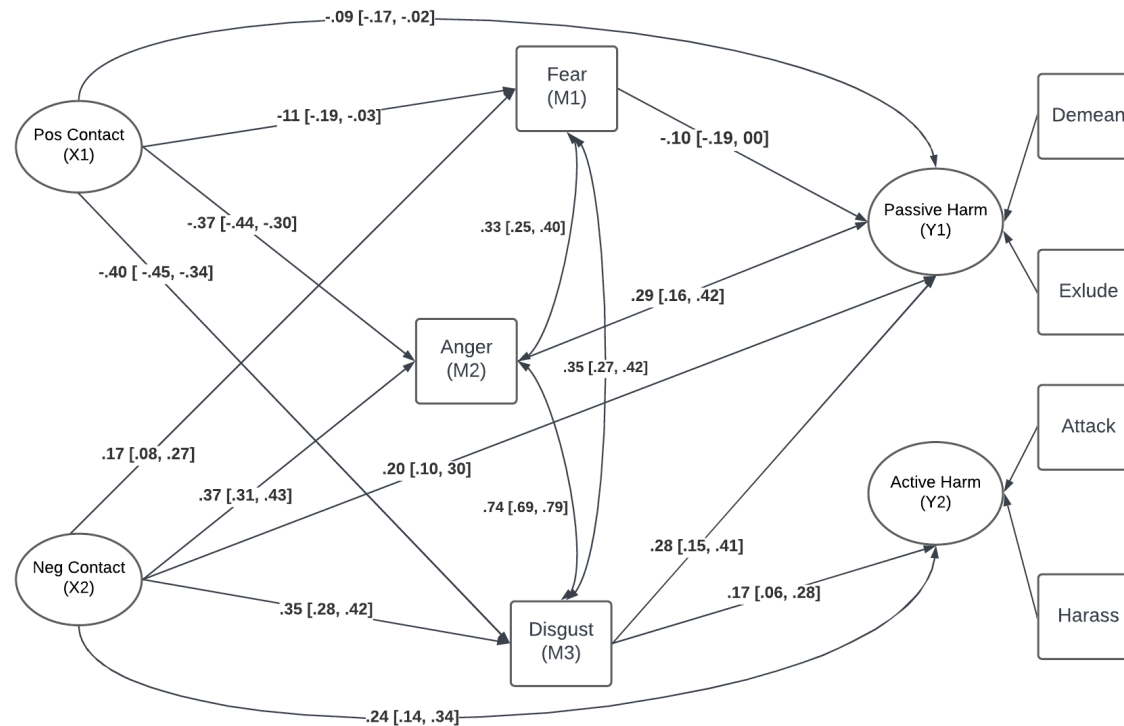


Fit statistics: $\chi^2 (11) = 39.15, p < .001, \chi^2/df$ ratio = 3.56, RMSEA = .07 [90% CI .05– 0.9], SRMR = .03, CFI = .97.

Note. Only significant paths are included. Coefficients are standardised, 95% lower and upper confidence intervals are shown in square brackets.

Figure 40

Empirical fit of the anti-vaxxer data to structural equation model for the associations between contact, emotion, and harm intentions.

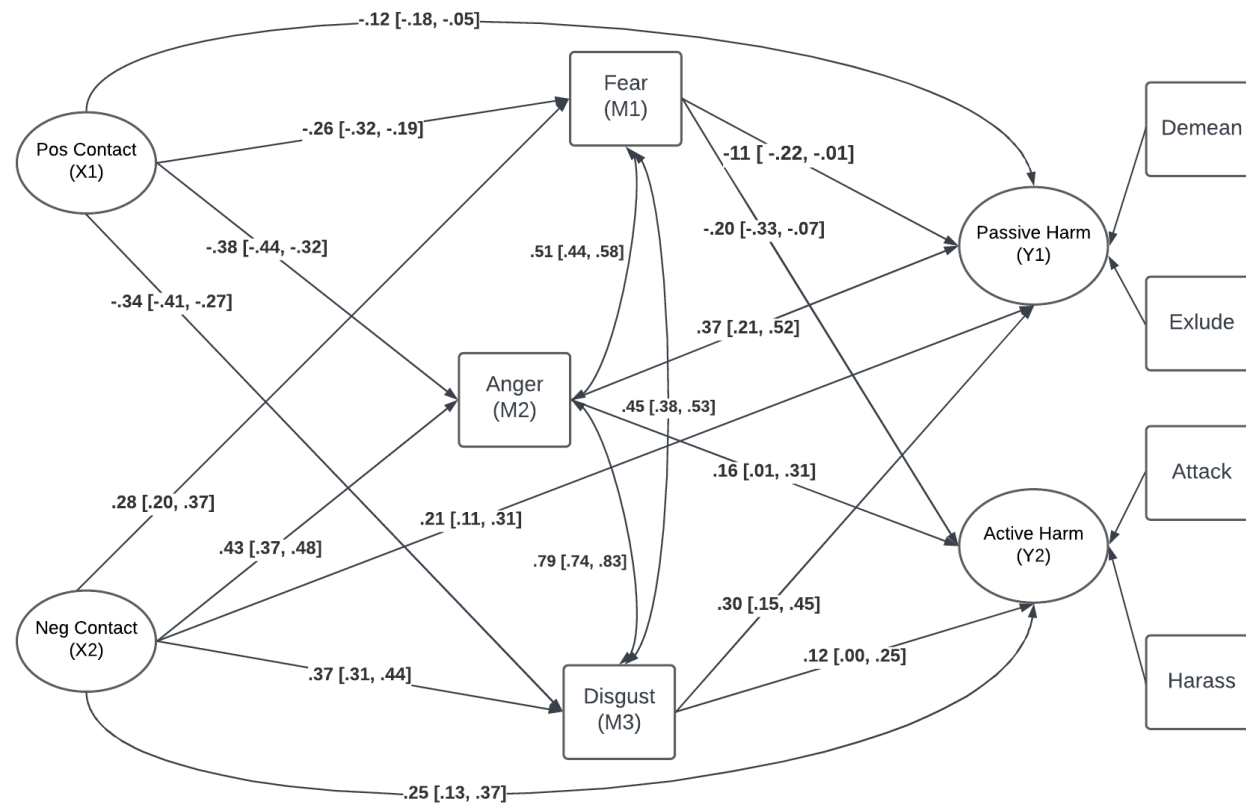


Fit statistics: $\chi^2 (11) = 22.52, p = .02, \chi^2/df \text{ ratio} = 2.05, \text{RMSEA} = .05 [90\% \text{ CI } .02\text{--}0.8], \text{SRMR} = .02, \text{CFI} = .99.$

Note. Only significant paths are included. Coefficients are standardised, 95% lower and upper confidence intervals are shown in square brackets.

Figure 41

Empirical fit of the far-right activist data to structural equation model for the associations between contact, emotion, and harm intentions.



Fit statistics: $\chi^2 (11) = 72.12, p < .001, \chi^2/df$ ratio = 6.55, RMSEA = .11 [90% CI 0.08– 0.13], SRMR = .04, CFI = .97.

Note. Only significant paths are included. Coefficients are standardised, 95% lower and upper confidence intervals are shown in square bracket

Appendix N: Research Ethics Application

**UNIVERSITY OF EAST ANGLIA
SCHOOL OF PSYCHOLOGY
RESEARCH ETHICS APPLICATION**

Section I: Project Details

Project reference:	2019-0553-001501
Project Title: This will be the title through review.(max 100 chars)	Meeting people
SONA Title: This will be the exact title you use on SONA.(max 100 chars)	Meeting people
Project Funder:	None
R project code:	
Project officer:	Lisa Alston
Can you confirm that financial gain will not be indicated in the title of your advert (if SONA credits are being awarded)	yes
Start Date:	01/03/2019
End Date:	30/06/2019
Brief Summary of the Project (not more than 100 words):	Are intergroup emotions, mediators of intergroup contact experiences on participants' prejudice attitudes? Two studies across two intergroup contexts will explore if different outgroups generate distinct emotional reactions related to the perceived type of threat the outgroup poses. Study (1) proposes that frequency of positive contact experiences increases participants' feelings of admiration and decreases anger towards Black people, whereas negative contact experiences decrease admiration but increases anger towards a Black outgroup. Study (2) expects to find positive contact experiences increases participants' admiration towards Gay men but decreases disgust; and negative contact experiences will decrease admiration and increase disgust towards this outgroup.
If a standard research protocol with existing ethics approval is being used please give the title of the protocol and the reference number.	N/A
Has your study already received a Research Ethics Review, or has been reviewed in full by another institution because it is part of a larger study? If yes, you are required to upload the approval documentation as an appendix.	no

Section II: Applicant Details

Name of applicant:	Lisa Alston
Name or researcher who is	Lisa Alston

gathering the data:	
Supervisor:	Rose Meleady
School:	Psychology
Email address:	L.Alston@uea.ac.uk
Telephone number:	07823329090

Section III: For Taught Students Only (UG and PG)

Course:	N/A
Department:	N/A
Module:	N/A
Module number:	N/A
Module leader's name:	N/A

Section IV: Research Checklist

Will the study involve recruitment of patients through the NHS or Social Care, or the use of NHS patient data or premises and/or equipment? All research involving patient data must be reviewed by the NHS NRES (Recruitment of NHS staff or use of NHS data/equipment can go through the psychology ethics committee.)	no
Does the study involve participants age 16 or over who are unable to give informed consent (e.g. people with learning disabilities: see Mental Capacity Act 2005)? All research that falls under the auspices of the MCA must be reviewed by NHS NRES	no
Will tissue samples (including blood) be obtained from participants? All research involving human tissue must be reviewed by the UEA Faculty of Medicine and Health Sciences Research Ethics Committee	no
Would you like to continue and complete the full ethics approval checklist and review even though you have answered YES to some of the above?	no

If you have answered 'Yes' to any of the questions above you will need to submit your research for ethical approval to the appropriate external body. See the [UEA Research Governance Guidance for Researchers and Supervisors](#) **Send the completed and signed Checklist to the Deputy Chair for registration.**

Once ethical approval is granted by the external body, a copy of the approval should be sent to your School Research Ethics Officer (SCI) or Faculty Research Ethics Administrator for their records.

Section IV: Research Checklist

Does the research involve animals?	no
Does the research involve vulnerable groups (children, those with cognitive impairment, or those in unequal relationships e.g. your own students in class)?	no
Will the study require the co-operation of a gatekeeper/subject panel for initial access to the groups or individuals to be recruited (e.g. students at school, members of self-help group, residents of Nursing home, prisoners)?	no
Will it be necessary for participants to take part in the study without their knowledge and consent at the time (e.g. covert observation of people in non-public places)?	no
Will deception be used?	no
Will the study involve discussion of sensitive topics (e.g. sexual activity, drug use, ethnicity, political behaviour) or involve elite interviews?	yes
Will the research involve access to records of personal/ sensitive/ confidential information , or involve commercial confidentiality/national security?	no
Are drugs, placebos or other substances (e.g. food substances, vitamins) to be administered to the study participants or will the study involve invasive, intrusive or potentially harmful procedures of any kind?	no
Is pain or more than mild discomfort likely to result from the study?	no
Could the study induce psychological stress or	no

anxiety or cause harm or negative consequences beyond the risks encountered in normal life?	
Will the study involve prolonged or repetitive testing beyond a regular laboratory experiment?	no
Will the research involve administrative or secure data that requires permission from the appropriate authorities before use?	no
Is there a possibility that the safety of the researcher may be in question (e.g. in international research: locally employed research assistants)?	no
Does the research involve members of the public in a research capacity (that is, the participants themselves will be carrying out research)?	no
Will the research take place outside the UK?	no
Will the research expose respondents to the internet or other visual/vocal methods where respondents may be identified?	no
Will research involve the sharing of data or confidential information beyond the initial consent given (e.g. secondary use of data)?	no
Will financial inducements (other than reasonable expenses and compensation for time as in regular laboratory experiments) be offered to participants?	no
Will your research involve investigation of or engagement with terrorist or violent extremist groups? Please provide a full explanation if the answer is yes.	no
Does your research have environmental implications? Please refer to the University's Research Ethics Guidance Note: Research with a Potential Impact on the Environment for further details.	no
Is there potential for your research to affect cultural objects?	no

Does the study involve the use of a clinical or non-clinical scale, questionnaire or inventory which has specific copyright permissions, reproduction or distribution restrictions or training requirements?	
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If you have answered Yes to ANY of questions on this page, please explain your YES-answers briefly:(max 300 words)

The study contains the following questions about social attitudes and experiences that individuals may find sensitive: (1) "In general, how do you feel toward (Black people/Gay men), as a group?" Scale: (1 = extremely unfavourable to 7 = extremely favourable) (2) "Please think about how you view (Black people/Gay men) in general. To what extent do you consider Black people/Gay men to be [one from list of competence items, question repeated 4 times]?" Competence items: competent, confident, capable, and skilful Scale: (1 = not at all to 7 = to a very large extent). (3) "Please think about how you view (Black people/Gay men) in general. To what extent do you consider Black people/Gay men to be [one from list of warmth items, question repeated 4 times]?" Warmth items: friendly, warm, good-natured, and sincere. Scale: (1 = not at all to 7 = to a very large extent). (4) "In general, to what extent do you anticipate feeling [one from list of emotion items, question repeated 14 times] if you were to meet (Black people/gay men) in the future?" Scale: (1 = Not at all to 7 = very much) Emotional items: (scores averaged across pairs) • Respect + admiration • Anger + resentful • Fearful + anxious • Disgusted + sickened • Jealous + envious • Pity + sympathy • Scornful + contempt (5) "How often you have had [one from list of positive & negative contact items, question repeated 6 times] interactions with (Black people/Gay men)?" Contact items: pleasant, positive, friendly, unpleasant, negative and unfriendly. Scale: (1 = not at all to 7 = very frequently).

The issues highlighted above should be considered carefully when completing the full ethical review form which follows.

Section IV: Research Checklist

Is this a project funded by a research council such as the ESRC? Y (full committee)/N – see below	no
Is this a project which is highly sensitive ethically? Y (full committee)/N see below.	no
Is this a staff or postgraduate research project? Y (2 reviewers)/N – see below.	yes
Is this an undergraduate project on a potentially vulnerable population (including participants under 18 years old)? Y (2 reviewers)/N – see below	no
Is this an undergraduate project which has some sensitive issues and the views of a second reviewer would be beneficial? Y (2 reviewers)/N – see below	no
Is this an undergraduate project in which none of the above	no

apply? Y (1 reviewer)	
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Methods

Background and issues, aims, design (e.g.interview, experimental, observational, survey), research questions / hypotheses (2-300 words):	This intergroup contact research replicates and extends Seger and colleagues' (2017) study of specific emotions as mediators of the effect of intergroup contact on prejudice. Seger et al. (2017) found specific emotions are associated with prejudice towards different groups, particularly that disgust is closely associated with anti-gay prejudice whilst anger is associated with anti-black prejudice. The proposed online, questionnaire based-studies investigate the extent to which specific intergroup emotions such as: pity, envy, contempt, disgust, admiration and anger act as mediators of the effect of both good and bad intergroup contact experiences on participants' prejudice attitudes. Two studies will be conducted across to different intergroup contexts in order to understand whether different types of outgroup generate distinct emotional reactions related to the specific type of threat they are perceived to pose. Study (1) proposes that frequency of positive contact experiences will increase participants' feelings of admiration and decrease feelings of anger towards Black people, whereas negative contact experiences will decrease feelings of admiration and increase feelings of anger towards a Black outgroup. In Study (2) it is expected positive contact experiences will increase participants' feelings of admiration towards Gay men but will decrease feelings of disgust and negative contact experiences will decrease admiration and increase feeling of disgust towards this outgroup. In both studies, participants will be invited to report: (1) The extent of any prejudice attitudes held towards the study target group; (2) The anticipated extent of experiencing fourteen listed emotions or sentiments when meeting a Black person (Study 1) or a Gay man (Study 2) in the future; and (3) The frequency of past positive and negative contact interactions with Black people (study 1) and Gay men (study 2)?" Questions (study 1) and Questions (study 2) are attached.
How many participants do you intend to include in the study?(numeric value only please)	200
What are the characteristics of the participants? (Please list all inclusion and exclusion criteria)(max 300 words)	Participants will be recruited via the UEA SONA programme and the University of Essex Psychology Participant closed membership Facebook Group. Participants must be adult to provide consent to take part but there are no other barriers to participation or exclusion criteria. As these studies explore interactions between groups of people with different ethnic backgrounds (study 1) and different sexuality (study 2). Data collected from participants that identify as non-white will be excluded from analysis in study 1 and data collected from participants that identify as homosexual men will be excluded from analysis in study 2.
What is the process of recruitment, how will participants be approached and invited to take part?(max 300 words)	UEA SONA programme participants will be invited to participate via the SONA system. Lisa Alston is a University of Essex Psychology graduate and is a member of the Essex Psychology Student FaceBook Closed Membership Group. University of Essex Psychology participants will be invited to participate via an advertisement on the Group's FaceBook page. The study will be described as "Online questionnaire study designed to explore the emotional experience of meeting and interacting with different people". Participants will be advised that the study takes approximately 10 minutes to complete. SONA participants will be advised they can earn 1 SONA credit. University of Essex participants will not be rewarded for their participation.

Will external organisations/people's consent be required?	no
If Yes please detail:(max 300 words)	N/A
Is the planned sample size achievable and appropriate for meaningful data analysis?	yes
Is this research taking place via the internet/post?	yes
If the study is conducted via the internet have you included safeguards to ensure that participants are not vulnerable or underage?	yes
What are those safeguards?(max 300 words)	UEA SONA system participants are exclusively registered students, postgraduate researchers and university staff. All SONA participants are over the age of 18 and not drawn from a vulnerable population. University of Essex Psychology Facebook Group participants are exclusively University of Essex registered students interested in participating in research in exchange for recruiting participants for their own student projects. The group maintains a closed membership and all participants are over the age of 18 and not drawn from a vulnerable population.
If data is being gathered via the internet are you gathering IP addresses?	no
If yes are you ensuring that participants explicitly consent to this?	no
Are you using the standard School of Psychology guidelines for participant reimbursement (credits for SONA or payment for funded studies)?	yes
If not why not?(max 300 words)	N/A
Is your recruitment process non-coercive and is it clear there are no consequences for non-participation?	yes
Please outline what the participants will experience including what measures, materials or apparatus will you use? (Please give details and include copies of questionnaires, interview schedules, experimental stimuli etc. Be mindful that not all research requires asking personal and sensitive questions and this should be considered when deciding on measures)(max 300 words)	Participants are invited to participate in a Qualtrics online survey via the UEA SONA system and the Essex Psychology Students Facebook Group: Participants will firstly encounter a screen of information that sets out the purpose of the study, the time required to complete the study and for UEA SONA participants, information about gaining RPS credits in exchange for participation. Consent (study 1) and Consent (study 2) are attached. Participants are warned the study contains questions about social attitudes and experiences that they may find sensitive and that they can skip questions or exit the questionnaire altogether without this affecting them. However, once survey responses are submitted at the end, it will not be possible to withdraw responses because the data is anonymous. Participants are advised that it is assumed they consent to take part and for their data to be used in academic research and publication if they proceed and answer the questions. Secondly participants will be invited to answer three blocks of questions. The first block relates to questions about contact experiences with Black people (study 1), Gay men (study 2). The second block asks questions about attitudes towards

	Black people (study 1), Gay men (study 2). The final block asks questions about feelings towards Black people (study 1), Gay men (study 2). Questions (study 1) and Questions (study 2) are attached. Thirdly participants will be asked to provide their age, gender and in study 1 ethnicity and in study 2 sexuality. Questions (study 1) and Questions (study 2) are attached. Finally, participants will be thanked, debriefed and offered sources of information, support and information about obtaining a report of the main findings of the study. Contact details for the researcher, supervisor, ethics committee and Head of School are also provided. Debrief (study 1) Debrief (study 2) are attached.
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Informed consent and briefing

Is informed consent to be obtained from participants?	yes
Will you append a copy of the invitation letter/advert?	yes
Will you append a copy of the participant information sheets?	yes
Is your participant information sheet based on the official template?	yes
If not why not?(max 300 words)	N/A
Will you append a copy of the consent form?	yes
Will participants be explicitly informed of what the researcher's role/status is?	yes
Will participants be told of the use to which data will be put (e.g., research publications, teaching purposes, media publication)?	yes

Right of withdrawal

When is the last point of withdrawal?(max 300 words)	Participants will be advised "Your participation is voluntary and you are free to withdraw at any time without giving any reason and without it affecting you at all. To exit, simply close your web browser and your data will not be saved. If you exit the study early, please contact the researcher to receive a copy of the debriefing information. Once you have submitted the survey at the end it will not be possible to withdraw your responses because the data is anonymous."
Is this clear from your consent/participant information form?	yes
How will you deal with anonymity issues for late withdrawal (e.g. use of participant codes)?(max 300 words)	Participants will be advised: "Once you have submitted the survey at the end it will not be possible to withdraw your responses because the data is anonymous."
Are participants given a genuine, unpressured opportunity to withdraw?	yes

If NO, explain why not:(max 300 words)	N/A
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Debriefing

Will the participants be debriefed? (Please append verbal or written text)	yes
If YES, how will they be debriefed (e.g., verbally, debriefing sheet; give details or attach the debriefing information to this form) or if NO, why not?(max 300 words)	Participants will be debriefed at the end of the online survey via a screen of text. This text can be see in Debrief (study 1) and Debrief (study 2)
Does the debrief offer Sources of Support where relevant?	yes
Does it offer an easily understandable lay explanation of the research?	yes
Does it contain contact details for the researcher and ethics committee?	yes
If the study is being completed via the internet remember participants may exit part way through without receiving the debrief - does the design and or initial consent information take this into account?	yes
Are you using the debrief template?	yes

Confidentiality

Will you meet the participants?	no
Will the participants sign anything?	no
Will IP addresses be collected?	no
If none of the above are answered 'yes' will the data be gathered anonymously?	yes
If NO, how will you protect the identity of your participants and ensure that any personal information you receive will be kept confidential?(max 300 words)	N/A
Will you remove identifying information from the data and, if necessary, replace it with ID numbers or pseudonyms?	yes
Will you store data securely	yes

(e.g., in a locked filing cabinet or password-protected electronic file)?	
Are you storing contact details such as email addresses separately to responses?	yes

Risk assessment

What inconveniences might participants experience?(max 300 words)	Participants will be asked to complete a number of questions about themselves, their social attitudes and experiences. Some participants may find a discussion of prejudice attitudes and experiences sensitive. It should take 15 minutes to complete the study. UEA psychology students will receive 1RPS credit in exchange for participation.
What steps will you take to minimize these?(max 300 words)	Participants will be warned that the study contains questions about social attitudes and experiences that they may find sensitive. Participants will be advised the study takes about 15 minutes to complete and that participation is voluntary and participants are free to withdraw at any time without providing a reason and without it affecting them at all.
Will involvement in the research put participants at risk of physical or psychological harm, distress or discomfort greater than that encountered in their everyday lives?	no
If YES, describe the nature of the risk and the steps you will take to minimise it(max 300 words):	N/A
Will you complete the researcher safety checklist, and will you review the researcher safety checklist for each member of the research team (see appendix)? If the details of the research are not known at this time, then details from the checklist should be logged with the committee prior to collecting data.	no
Is a risk assessment necessary?	no
Does involvement in the research put you at risk of physical or psychological harm, distress or discomfort greater than that encountered in your everyday life?	no
If YES, describe the nature of the risk and the steps you will take to minimise it: (See Researcher Safety Policy).(max 300 words)	N/A

Other permissions and clearances

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Is ethical clearance required from any other ethics committee?	no
If YES, please give the name and address of the organisation:	N/A
Has such ethical clearance been obtained yet? If YES, please attach a copy of the ethical approval letter	no

Please note that it is your responsibility to follow the University of East Anglia Research Ethics Policy, Principles and Procedures and any relevant academic or professional guidelines in the conduct of your study. **This includes providing appropriate information sheets and consent forms, following appropriate recruitment policies, and ensuring confidentiality in the storage and use of data.**

Any significant change in the question, design or conduct over the course of the research should be notified to the Research Ethics Committee and may require a new application for ethics approval.

Please enter your name and the date to confirm that you are the applicant and have read and understood the above:

Name: Lisa Alston	Date: 06-03-2019
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Consent Form and Debrief Examples

Consent Form

Title: Coronavirus is the biggest threat to British people in a generation.

Name of Researcher: Lisa Alston

Dear Potential participant,

Thank you for your interest in this research on how Coronavirus is affecting British people. The following online survey is part of a research project by postgraduate psychology researcher for her PhD thesis. You will be asked to complete a number of questions about yourself, your opinions and some of your experiences of meeting different people. It should take you about 5 minutes to complete the study carefully.

The study does contain some questions that you may find sensitive. You may skip any questions that you would prefer not to answer and exit the questionnaire. Your data will not be saved, and you will not receive payment for your participation. You will be paid £0.60 for completing this study through Prolific Academic.

Please note: Your participation is voluntary, and you are free to withdraw at any time without giving any reason and without it affecting you at all. To exit, simply close your web browser and your data will not be saved. If you exit the study early, please contact the researcher to receive a copy of the debriefing information. Once you have submitted the survey at the end it will not be possible to withdraw your responses because the data is anonymous.

Your personal information will not be shared outside of the research team or published in the final report from this study. All information which you provide during the study will be stored in accordance with the 2018 General Data Protection Regulation and kept strictly confidential. The chief investigator Lisa Alston will be the custodian of the anonymous research data. Any identifiable data will be stored separately in a password protected file and will be securely disposed of as soon as it is no longer necessary, and within 5 years. All anonymised results will be stored indefinitely in order to comply with open practice standards. Electronic data will be stored on a password protected computer. The data you provide will not be linked to your name.

By answering the questions that follow it is assumed that you consent to take part and for your data to be used in academic research and for publications.

We are interested in your genuine responses so please take the questions at face value and give your personal opinion.

If you have any questions about this study, please contact the researchers.

Contact details:

Researcher: Lisa Alston; L.Alston@uea.ac.uk

Supervisor: Dr Rose Meleady; R.Meleady@uea.ac.uk

Do also contact us if you have any worries or concerns about this research: _

School of Psychology Ethics Committee: ethics.psychology@uea.ac.uk;

Phone +441603 597146

Q58 Debrief**Coronavirus is the biggest threat to British people in a generation**

Thank you for participating in this study. Your time and efforts are much appreciated. The present research is interested in whether your experiences of positive and negative encounters with different social groups will predict your perception of the threat, particularly in this case a threat to health posed by the novel coronavirus (COVID -19). We measured your concern about the coronavirus and your general attitudes towards risk, emotional experiences and behaviours towards different social groups, including Chinese people, in a number of ways in this study.

Press the button below to submit your answers and receive completion confirmation from Prolific.

What is Novel Coronavirus (COVID-19)?

Novel coronavirus (COVID-19) is a new strain of the coronavirus, which was first identified in Wuhan City, China.

The main symptoms of coronavirus are:

- a new continuous cough
- a high temperature

Need urgent advice:

- Do not go to a GP surgery or hospital
- Use the 111 [coronavirus online service](#)
- Call 111 now if you're worried about a baby or a child.

Follow this link for the most current NHS information about the coronavirus:

<https://www.nhs.uk/conditions/coronavirus-covid-19/>

Social group relationships

Previous research has shown that people identify with groups they belong to, such as being British and tend to favour their group and its values. Often, this favouritism for our own national group can lead to discrimination against other social groups. Furthermore, our tendency to show preference for our own group can be affected by further positive or negative interaction with other groups of people from other nationalities. While most people tend to favour their own group, they are generally opposed to discrimination. Please be assured that the views you express towards other social groups are not necessarily driven by prejudice but can simply be a

result of our preference to identify with groups we belong to.

If you want to find out more about research surrounding prejudice and prejudice reduction you can visit the following website: www.understandingprejudice.org.

If you feel that you have been the subject of prejudice or discrimination on the basis of your nationality, you can receive advice from the Citizen's Advice

<https://www.citizensadvice.org.uk/law-and-courts/discrimination/>

If you would like to receive a report of the main findings of the study (or a summary of the findings) when it is completed please contact the researcher, however individual feedback on your results cannot be given.

Contact details:

Researcher: Lisa Alston; L.Alston@uea.ac.uk

Supervisor: Dr Rose Meleady; R.Meleady@uea.ac.uk

Do also contact us if you have any worries or concerns about this research.

School of Psychology Ethics Committee:ethics.psychology@uea.ac.uk; Phone 01603 597146

Appendix O: Tests of the interaction between contact and threat as a predictor of emotion and behaviour intentions – Study 2a and Study 2b

Table 51: Regression results for the direct and interaction effects of positive contact and welfare threat on British fear towards Chinese people.

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> ²	<i>sr</i> ² 95% CI [LL, UL]	<i>r</i>	Fit	Difference
(Intercept)	0.64**	[0.24, 1.07]							
Positive contact	-0.05	[-0.13, 0.03]	-0.05	[-0.14, 0.03]	.00	[.00, .02]	-.19**		
Threat	0.67**	[0.57, 0.77]	0.65	[0.57, 0.73]	.41	[.31, .51]	.67**		
								$R^2 = .445^{**}$	
								95% CI[.35,.54]	
(Intercept)	0.74*	[0.24, 1.33]							
Positive contact	-0.07	[-0.19, 0.04]	-0.08	[-0.21, 0.04]	.00	[.00, .01]	-.19**		
Threat	0.64**	[0.37, 0.88]	0.62	[0.38, 0.83]	.06	[.02, .11]	.67**		
Positive contact * Threat	0.01	[-0.05, 0.07]	0.04	[-0.19, 0.30]	.00	[.00, .01]			
								$R^2 = .445^{**}$	$\Delta R^2 = .000$
								95% CI[.36,.55]	95% CI[.00, .01]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*² represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

Table 52: Regression results for the direct and interaction effects of negative contact and obstacle threat on fear towards Chinese people

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> ²	<i>sr</i> ² 95% CI [LL, UL]	<i>r</i>	Fit	Difference
(Intercept)	0.32*	[0.09, 0.57]							
Negative contact	0.08	[-0.07, 0.24]	0.06	[-0.05, 0.18]	.00	[.00, .03]	.26**		
Threat	0.67**	[0.56, 0.78]	0.65	[0.56, 0.73]	.38	[.28, .49]	.67**		
								$R^2 = .446^{**}$	
								95% CI[.35,.54]	
(Intercept)	-0.06	[-0.42, 0.39]							
Negative contact	0.28**	[0.02, 0.53]	0.21	[0.02, 0.40]	.01	[.00, .04]	.26**		
Threat	0.82**	[0.62, 0.99]	0.79	[0.61, 0.93]	.17	[.09, .25]	.67**		
Negative contact * Threat	-0.07*	[-0.14, 0.01]	-0.26	[-0.49, 0.04]	.01	[.00, .03]			
								$R^2 = .454^{**}$	$\Delta R^2 = .008^*$
								95% CI[.37,.55]	95% CI[.00, .03]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*² represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

Table 53: Regression results for the direct and interaction effects of positive contact and welfare threat on Anti-Chinese policies

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> ²	<i>sr</i> ² 95% CI [LL, UL]	<i>r</i>	Fit	Difference
(Intercept)	2.13**	[1.72, 2.57]							
Positive contact	-0.12**	[-0.19, -0.04]	-0.14	[-0.23, -0.05]	.02	[.00, .05]	-.26**		
Threat	0.49**	[0.41, 0.57]	0.55	[0.46, 0.63]	.29	[.20, .38]	.58**		
								$R^2 = .355^{**}$	
								95% CI[.27,.44]	
(Intercept)	2.59**	[2.02, 3.18]							
Positive	-0.23**	[-0.36, -0.11]	-0.29	[-0.45, -0.13]	.02	[.00, .05]	-.26**		
Threat	0.31**	[0.10, 0.52]	0.35	[0.11, 0.57]	.02	[.00, .05]	.58**		
Positive contact * Threat)	0.05*	[-0.00, 0.10]	0.24	[-0.02, 0.50]	.01	[.00, .04]			
								$R^2 = .363^{**}$	$\Delta R^2 = .008^*$
								95% CI[.28,.46]	95% CI[.00, .03]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*² represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

Table 54: Regression results for the direct and interaction effects of negative contact and welfare threat on Anti-Chinese policies

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> ²	<i>sr</i> ² 95% CI [LL, UL]	<i>r</i>	Fit	Difference
(Intercept)	1.57**	[1.31, 1.83]							
Negative contact	0.03	[-0.08, 0.14]	0.02	[-0.06, 0.12]	.00	[.00, .01]	.20**		
Threat	0.51**	[0.43, 0.60]	0.57	[0.49, 0.65]	.30	[.21, .39]	.58**		
								$R^2 = .336^{**}$	
								95% CI[.26,.43]	
(Intercept)	1.70**	[1.31, 2.12]							
Negative	-0.04	[-0.23, 0.13]	-0.03	[-0.19, 0.11]	.00	[.00, .01]	.20**		
Threat	0.46**	[0.30, 0.62]	0.51	[0.34, 0.68]	.07	[.03, .12]	.58**		
Negative contact * Threat)	0.02	[-0.03, 0.08]	0.10	[-0.13, 0.33]	.00	[.00, .01]			
								$R^2 = .337^{**}$	$\Delta R^2 = .001$
								95% CI[.25,.43]	95% CI[.00, .01]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*² represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

Appendix P

Table 55: Cronbach α tests for internal consistency for the Safety, Contamination and Obstacle scales for study 3.

Outgroup	Threat	Cronbach α
Black people	Safety	.85
Black people	Contamination	.97
Black people	Obstacle	.61
Psychiatric patients	Safety	.75
Psychiatric patients	Contamination	.83
Psychiatric patients	Obstacle	.55
Muslims	Safety	.83
Muslims	Contamination	.98
Muslims	Obstacle	.79
Gay men	Safety	.82
Gay men	Contamination	.97
Gay men	Obstacle	.60
Drug users	Safety	.81
Drug users	Contamination	.88
Drug users	Obstacle	.49
Obese people	Safety	.77
Obese people	Contamination	.93
Obese people	Obstacle	.58
Far Right activists	Safety	.81
Far Right activists	Contamination	.86
Far Right activists	Obstacle	.73
Environmental protestors	Safety	.79
Environmental protestors	Contamination	.95
Environmental protestors	Obstacle	.60
AntiVaxxers	Safety	.79
AntiVaxxers	Contamination	.88
AntiVaxxers	Obstacle	.69