Building a green workplace: unpacking the social psychological drivers of employee green behaviour

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Abstract

The purpose of this PhD thesis is to better understand the intricacies of, and mechanisms that lead to, pro-environmental behaviours at work – generally known as employee green behaviours (EGB). The construct of EGB and factors that can lead to their prevalence were tested with a survey sample of 455 participants across the UK and USA.

First, this thesis develops a multidimensional scale by utilising the neglected green five taxonomy. This part of the research validated these categories with confirmatory factor analysis (CFA) and a nomological network. The research question built on the suggestions in the literature and resulted in a novel categorisation of EGB based on proximity of achieving the goal of the behaviour. Second, in social exchange theory and the theory of normative conduct were combined to determine their effect on EGB by employing structural equation modelling (moderated mediation analysis). It was found that support from the organisation and supervisors can influence EGB, yet categories of EGB do not interact uniformly. Furthermore, a strong green organisational climate can have a positive moderating effect. Third, this thesis further tested the effect of green norms in the workplace with another model utilising a green descriptive norm. The green descriptive norm is a currently understudied area in the literature, the results of this chapter found that the green descriptive norm had a strong effect on certain categories of EGB.

The theoretical implications of this thesis point to a ‘goal proximity’ distinction between ‘proximal’ and ‘distal’ EGB. Moreover, researchers ought to consider the ‘level’ of predictive factors when hypothesising of models with EGB. Green norms seem to be universally important and should be emphasised in future research. The findings of this research offer practical implications for organisational leaders seeking to enhance their employees' engagement in pro-environmental behaviours, ultimately fostering a workforce ready to contribute to environmental sustainability goals.

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I could not write these acknowledgments without mentioning my housemate, Anna De Laet. The sharing of thoughts, ideas, and random hypotheses we discussed about our PhDs and beyond has been invaluable. Your intellectual curiosity and willingness to play devil's advocate to all my theories really has been a blessing. Thank you to my parents for constantly worrying about my well-being. It helped talking things through, especially during lockdown – although the details may have been lost on you!

I would like to dedicate this PhD to my brother. Like all people, we have been on our unique journeys in the last few years, writing our own life stories. As I have crafted a narrative in this PhD chapter by chapter, we craft personal narratives through our decisions and the paths we take in life – an amalgamation of events, choices and perceptions that define the story of ourselves. As I finish writing this chapter of my life, I reflect on how these narratives affect us and can direct thought and action. I aspire for the story I continue to craft to have a positive impact on others and the world, just as yours did. I wish you could be there the day I graduate; I know how proud of me you always were.

Apart from the knowledge of my subject area I have gained in the last three years, another learning I will take from this chapter of my life is the power that narratives have in shaping our world at multiple levels. The deeper understandings I have had in the past three years around the creation of knowledge, the debates of epistemology, and the ambiguous world that humans inhabit is something I have not truly appreciated until now. As the 21st century becomes riddled with crises, I wonder how cultural and social narratives have shaped us and will continue to do so in an increasingly turbulent world.

This PhD has been a truly unique experience and a journey that I could not have predicted months before it started. It is too early to tell how this period of my life will change my personal narrative, but I am sure it has been significant. As always, I look forward to the next step, the new experiences, the adventures, and the narratives that I will write. And as ever Rob, life by kaizen.

Two roads diverged in a wood, and I took the one less travelled by, and that has made all the difference

Robert Frost (1916)

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1. Introduction

This chapter will introduce the context and key concepts that are used in this thesis. It will give a summary of current literature around the theories and concepts used. Following this, the research questions, objectives, and contributions that this thesis makes will be outlined, giving an overview of the proceeding chapters.

1.1 Contextualising the thesis

In the 21st century new global challenges are arising, one of the most pertinent challenges is the issue of climate change and other environmental planetary boundaries we are pushing against (Rockstrom et al., 2009). This has led to a clarion call for sustainable development to be a core goal for our global society to *"meet the needs of the present without compromising the ability of future generations to meet their own needs"* (WCED, 1987, p.49). This call is becoming ever more serious, as last year we surpassed six of the nine planetary boundaries (Richardson et al., 2023). The urgency around these issues, particularly climate change, has been brought to fore with recent global movements to 'race-to-zero' (UNFCCC, 2021), and world leaders such-as Joe Biden declaring the 'decisive decade for climate action' with the US pledging to half its emissions by 2030 (Carbon Brief, 2021). Thus, sustainability has made its way onto every organisational agenda, with laws coming into place that will require net-zero emissions for organisations in the UK by 2050 (Skidmore, 2019), bringing much impetus on understanding how to create a sustainable organisation.

The environmental discourse coming from intergovernmental conferences in the late 20th century led to the aforementioned ubiquitous definition of sustainable development (WCED, 1987), but it has been argued to have little 'operational and managerial teeth', and sustainability as a business oriented way of dealing with this issue has flourished (Bothello &

Salles-Djelic, 2018). This was compounded when intergovernmental bodies failed to bring strong binding commitments to curbing our impact on the environment throughout the 1990's, such-as the UN Rio Earth summit where these market-based mechanism driven by business interests rose out of the lacuna of action (Newell et al., 2012). Notably the term 'eco-efficiency' was introduced by the chief advisor for business at the Rio Earth Summit (Schmidheiny & BCSD, 1992). This discourse means that while organisations are a large part of the problem, they are now a large part of the solution.

It has been argued by some that corporate environmentalism deteriorates over time and is insufficient in responding to the climate crises due to market-oriented framings (Wright & Nyberg, 2017). However, in the current global landscape, with net-zero laws and stronger impetus from institutions and government, corporate environmentalism now is less of a voluntary agenda but an integral part of organisational functioning. The solutions coming from organisations to measure their environmental impact is introducing sustainability measurements to focus on audits, certifications and performance indicators (Bothello & Salles-Djelic, 2018). This has led to an introduction and growth of sustainability departments (Wright et al., 2012), as well as organisations increasingly using multiple indicators for their organisations success, for example the 'triple bottom line' of people, profits and planet (Ones & Dilchert, 2012b).

The burgeoning area of sustainability in organisations is in direct response to these mounting issues. As a result there has been a concomitant increase in research in this area, such-as the fast-growing literature on employee green behaviour (EGB) (Unsworth et al., 2021), the pro-social motivation that derives from environmental sustainability as a social responsibility (Aguilera et al., 2007), green human resource management (Renwick et al., 2012), and psychological experiences of corporate social responsibility (Gond et al., 2017). Therefore, while some may be critical of the market-based business-oriented framing of the

issue, the impetus to reach net-zero and changing the behaviour and practices of organisations has become a central part of tackling these challenges.

There is a precedent to understand why change is not occurring at a faster rate and why has there been a lack of decisive action in organisations with regard to environmental sustainability. It could be argued that historically corporate environmentalism was a 'fad' or something more ceremonial that wasn't seriously integrated into organisations (Boiral, 2007). While granting that change is occurring, it is still not happening fast enough. Motivating and committing employees to this transition is a key facet of expediting environmental transitions. Nearly 50 years ago, it was understood that altering human behaviour was part of the solution to environmental degradation, and that "*the ecological crisis is a crisis of maladaptive behaviour. Thus, the problem falls squarely in the domain of psychology*" (Maloney and Ward, 1973, p.583).

The solutions today are still the same as they were 50 years ago; utilising psychological mechanisms we can understand how change occurs and move towards a more sustainable way of organising and working. In 2022, a report from the House of Lords echo this sentiment for behaviour change (ECC, 2022). Therefore, this thesis will be situated in this space between the need for pro-environmental behaviour change, their psychological determinants, and the impetus for organisations to reach net-zero and other environmental targets. This is akin to the 'soft' variables of organisational change and involve the transformation of culture and behaviours of individuals within the organisation (Dunphy et al., 2007). A large part of this process of change is going to be how individuals within an organisation behave and the factors that affect them in their day to day work life (Kok et al., 2019; Linnenluecke et al., 2009; Norton, et al., 2015). This is crucial as employee's perception of whether environmental sustainability is a valued concept or not is going to

influence their behaviours, which ultimately contribute to the environmental sustainability of the organisation.

The organisational context is well documented as influencing the behaviour of employees. This occurs through the relationships between the employees and the organisation (Cropanzano & Mitchell, 2005), along with the influence of norms in the workplace i.e. organisational culture and climate (Schneider et al., 2013). It is likely these social psychological factors of relations and norms will be even more important for EGB due to the wider literature pro-environmental behaviour research having a strong emphasis on norms (van Valkengoed et al., 2022) and 'system' level influences (Chater & Loewenstein, 2023). Within organisations the culture and relationships between employees create conditions that can encourage behaviours that are congruent with environmental sustainability. Thus, if organisations are a "*function of persons behaving in them*" (Schneider, 1987, p.438), creating sustainable organisations requires an understanding of the multiple contextual factors that promote EGB.

1.2 Current knowledge of employee green behaviour and gaps in the literature

There is a shift towards organisational environmental sustainability as, inter alia, net-zero laws are being introduced. Organisations will need to on-board employees into this new way of working, this will mean encouraging EGB to create a workforce that acts in line with this new shift in industry. The EGB construct is understood as "*actions and behaviours that employees engage in that are linked with and contribute to or detract from environmental sustainability*"(Ones and Dilchert, 2012, p. 87). Published reviews reveal the plethora of studies that are now focusing on these pro-environmental behaviours at work (Katz et al., 2022; Lülfs & Hahn, 2014; Norton, et al., 2015; Tang et al., 2023; Unsworth et al., 2021;

Yuriev et al., 2020; Zacher et al., 2023, 2024), pointing to the burgeoning state of this literature. Despite its rapid growth, the literature focusing on the construct of EGB is somewhat scattered and not presented as a cohesive body of knowledge as will be described in the proceeding chapters.

Recent reviews seek to remedy this through bringing together the disparate streams of knowledge around this construct (Francoeur et al., 2021). Ideas have been introduced around the concept of in-role and extra-role behaviours (Norton et al., 2014), the 'difficulty' of the behaviour (Ciocirlan, 2017; Graves et al., 2013), and collective employee behaviours (Pinzone et al., 2016) have all added to the construct's development. The current thesis continues this expansion of knowledge and brings further clarity to the concept of EGB. In doing so, it continues to develop on this construct in line with the review by Francoeur *et al.* (2021), who utilised a taxonomy of green behaviours that was first introduced in the 'call to action' by Ones and Dilchert (2012b).

Ones and Dilchert's (2012b) call to action was focused on organisational psychologists to better understand environmental sustainability behaviour in the workplace. However, since the taxonomy was created many separate instruments used to measure these pro-environmental behaviours have been developed (Bissing-Olson et al., 2013; Boiral & Paillé, 2012; Graves et al., 2013; Kim et al., 2014; Robertson & Barling, 2013). There is little coherence between them, and an oversimplification of what is considered a 'green behaviour' has occurred. This simplifying of the construct is an issue as there are potentially multiple dimensions within it, which could prevent researchers from taking reliable measurements that capture the many aspects of EGB. An example is an overuse of recycling items resulting in less emphasis on behaviours that are arguably far more important for the transition to net-zero and other environmental goals (Francoeur et al., 2021). One study may measure eco-initiatives where-as another may examine recycling, yet while seemingly quite different, both

of these studies discuss these different dimensions as simply EGBs (e.g. Boiral & Paillé, 2012 and Robertson & Barling, 2013 respectively). This measurement issue is also addressed in this thesis.

There are multiple levels that can be used to explore employee behaviour, the individual level has found popularity in much organisational behaviour research. In the case of environmental transitions individual focused antecedents do not cover the breadth of change required, which led this thesis to take a social psychological theoretical stance. However, the individual influences will be briefly explored in the next section before moving onto the contextual theories.

1.2.1 The individual

There are some individual theoretical mechanisms for understanding green behaviour in the workplace (see section 2.2 for more detail). These theories will be briefly outlined, and all explain EGB to varying extents, but there is room for improvement in explanatory power in each of these theories. Green beliefs and concerns are a relevant construct and may moderate or mediate the outcome somewhat (Graves & Sarkis, 2018), but generally is a bad predictor overall (Chou, 2014). Similar to this attitudinal mechanism is the theory of planned behaviour which was also found to be underwhelming, with social norms and leadership being found to be the strongest factors (Wesselink et al., 2017). Last, self-determination theory was found to be useful, showing that autonomous motivation was a better predictor than external drivers of motivation to perform EGB (Graves et al., 2013), This is unsurprising, as the most internally motivated individuals are likely to proactively respond well to most positive behaviours promoted at their organisation (Deci et al., 2001). However, these studies using self-determination theory begin with a main driver, that being some kind

of green leadership qualities (Graves et al., 2013), showing that interaction with leaders is most important (Graves et al., 2019; Graves & Sarkis, 2018; Priyankara et al., 2018).

What seems to be a common factor throughout these individual theoretical mechanisms is that relational and normative mechanisms are either the main drivers, or more significant factors. This is substantiated in the findings of Raineri and Paillé (2016), that corporate policy was more important than individuals' green values and Blok *et al.* (2015) showing that leadership support and norms in the organisation were stronger predictors than theory of planned behaviour variables. It is therefore warranted that the focus, when referring to green behaviours in organisations, is on these relational and normative mechanisms. This deviates somewhat from pro-environmental behaviours more generally in society (that have identity, values, and other individual level antecedents – although social norms are established as a powerful predictor) (Bamberg & Möser, 2007; Steg & Vlek, 2009; Van der Werff et al., 2013; Whitmarsh & O'Neill, 2010). When researching pro-environmental behaviour within organisations, it is pertinent to focus on these relational and normative mechanisms, as the organisations provides a context with defined relationships between colleagues, supervisors, and organisational culture (Schein, 1990).

It is important to consider these interpersonal factors, at the least, as due to the large changes required and the increasingly ambiguous landscape for organisations, there will an interplay of multiple contextual factors. The following sections briefly discuss the social psychological theories that will be used in this thesis, with more depth and analysis in chapter 2. The scope of this thesis has stayed within the realms of social psychology; however, the final chapter outlines the overlap with other theories and potential avenues that this research can contribute to.

1.2.2 Social exchange theory – relationships matter

An interpersonal factor can be understood as the relationship between employee and the organisation, this relational way of understanding employee outcomes is derived from social exchange theory. One of the core tenets of social exchange theory is that individuals interact through exchange processes and behave more favourably towards another person or group of persons through reciprocity (Gouldner, 1960; Homans, 1958). In organisational psychology these manifest as a reciprocity between the organisation and the employee (Cropanzano & Mitchell, 2005). Thus, if an employee feels supported by the organisation, then they are more likely to behave in ways that reciprocate that feeling of support, through performing better at work or going beyond their job role to help the organisation or other employees (Eisenberger et al., 1986). This theory also applies in the same way for the supervisor-employee relationship, if the supervisor provides support for their subordinates, it not only benefits the relationship between the employee and supervisor, but also with the organisation too, as the supervisor is a representative of the organisation (Kottke & Sharafinski, 1988).

Social exchange theory has also been applied to EGB with interesting results. The social exchange mechanisms usually focus on supporting the individual's well-being, which leads to commitment to the organisation, and consequentially, positive behaviour (Cropanzano & Mitchell, 2005; Herscovitch & Meyer, 2002). This usually consistent predicting mechanism has very mixed results with EGB (Paillé et al., 2020), and has even been found to have a small negative relationship with EGB in some cases (Paillé et al., 2013). This is comparatively far worse a predictor than the more nuanced construct of supervisory support for pro-environmental behaviours of employees (i.e. EGB), which is much more consistent in predicting EGB than general support for the employee's well-being (Cantor et al., 2015; Raineri & Paillé, 2016; Ramus & Steger, 2000). The commitment construct usually

mediates support and positive behaviour, such-as OCB, has also shown mixed results in predicting EGB (Afsar et al., 2020; Lamm et al., 2013; Saifulina et al., 2021; Temminck et al., 2015). In contrast, specific commitment to the organisational environmental goals has shown to be a much stronger predictor of EGB since it was introduced into the literature (Afsar & Umrani, 2020; Paillé & Mejía Morelos, 2017; Perez et al., 2009; Raineri & Paillé, 2016; Safari et al., 2018).

It is unsurprising that employee's environmentally specific commitment to their organisations green goals will logically lead to green behaviours of the employee, but general commitment to the organisation is unlikely to spontaneously lead to green behaviour unless there are some other factors involved that indicate that the organisation wants the employee to perform EG, or the individual has some individual green factor. An example of this other green factor could be a green organisational climate or some other perceived pro-environmental norm at the organisation (Norton et al., 2014). Hitherto the relationship between these 'traditional' social exchange mechanisms (meaning those that support the employee's well-being specifically), have not been tested with these green normative factors. This thesis aims to fill this gap.

1.2.3 Normative theories –context matters

Pro-environmental (or 'green') norms at an organisational level can be conceptualised in a few ways. One conceptualisation of normative influence on behaviour in organisations is organisational culture. Schein (2010) defines organisational culture as having three levels that extended from observable tangible 'artefacts', espoused beliefs and values, and to underlying assumptions that 'are the way things are done', this latter idea being unconscious much of the time and a natural unnoticed process. Organisational culture is an expansive concept that had multiple layers and degrees of observability. In contrast, organisational climate is a

counterpart to organisation culture but is a more specified conceptualisation of the idea that more directly measures how contextual factors at work influence an individual (Schneider, 1975). This way of seeing norms may be oversimplified according to Schein (2010), but none-the-less captures the psychological influence of norms in an organisational context (Schneider et al., 2013).

Organisational climate has been linked to the psychological theory of normative conduct that considers norms as the types of behaviours that are 'the most approved of' or 'the most noticed' in a specific context, defined as injunctive norms and descriptive norms respectively (Cialdini et al., 1991). Green organisational climate then can be conceptualised as having a pro-environmental normative influence on employees, consequentially affecting their behaviour. A green organisational climate (Norton et al., 2014) has been shown to mediate the relationship between corporate environmental policy and EGB (Biswas et al., 2021; Dahiya, 2020; Das et al., 2019; Norton et al., 2014), between leadership and EGB (Khan et al., 2019; Priyankara et al., 2018; Robertson & Carleton, 2018; Saleem et al., 2020), and also mediates the effect of green human resource management (Chen et al., 2021; Naz et al., 2021; Saeed et al., 2019). These results are important as it shows that having a 'green' organisational norm can dampen or enhance the effort in these other areas: such-as the introduction of corporate environmental policy, green focused leadership or green human resource management that focuses on encouraging green behaviour.

A green organisational climate, as defined by Norton et al. (2014), is focused on the values that employees ascribe to their organisation; implying a green injunctive norm (what is approved of and desired). This is important to note, as a green organisational climate in this way is focused on the espoused values of the organisation and what employees believe their organisation to be oriented towards. As described by the theory of normative conduct, descriptive norms are separate from injunctive norms as they describe what is actually

observed and most noticed within an organisation (Cialdini et al., 1990). While the green organisation climate is an interpretation of the espoused values (injunctive norm), the green descriptive norm is "*the perception of what is considered the standard mode of behaviour in the unit with regard to environmental matters*" (Pinzone *et al.*, 2016, p.202). Hitherto, this latter construct (the green descriptive norm) has had little attention in the literature. This is likely due to organisational climates usually encompassing many facets that contribute to the climates characteristics (Schneider, 1975; Schneider & Reichers, 1983). However, the green organisational climate has generally been operationalised by the popular measurement scale from Norton et al. (2014), which is a values-based scale. A productive line of inquiry would be to test the effect of this descriptive normative influence on EGB.

This thesis will add to these three areas of the literature: the development and understanding of EGB, furthering our understanding of the relational mechanisms by including green contextual factors (green organisational climates), and testing the as yet unexplored normative mechanisms (green descriptive norm). Which may imply the old adage that 'actions speak louder than words'.

1.3 Objectives of this thesis

The objectives of this thesis are to contribute to the growing EGB literature by continuing the development of the concept itself, and to also elucidate the mechanisms that lead to these pro-environmental behaviours. This is important not just for academia but also for practitioners who wish to understand how to change their workforce to be more environmentally sustainable as they begin their change process towards net-zero and other environmental goals. The complexity of environmental sustainability requires organisational psychology to re-consider these contextual mechanisms, as it has been stated that,

"*social psychology's increasing emphasis on individual cognition on the one hand and personality on the other, with a de-emphasis on groups and social influence… has left a growing gulf between psychological research and organisation issues and problems*" (Pfeffer, 1998, p.735).

Considering that the organisational problems around environmental transitions to be addressed here are significant and ubiquitous, it seems an imperative that psychological research reorients itself towards the social level of psychological mechanisms to tackle this large-scale problem. Moreover, the evidence indicates that the contextual and social mechanisms are the most important for EGB. Thus, this thesis will contribute to the literature in multiple ways:

First, the research undertaken here will build on previous work (Francoeur et al., 2021; Ones & Dilchert, 2012a), by creating and validating a comprehensive measurement instrument for EGB. The reason for adding to the burgeoning literature, was in part a response to Francoeur et al. (2021) who stated that "*urgent progress therefore is needed by extending the concern to all the literature on the operationalization of green workplace behaviors*." (p.2). To add to our understanding of this area, the research in this thesis will delineate categories of EGB to determine if there is a multidimensionality and depth to this construct that goes beyond a simple grouping of these behaviours into one dimension. Previously much research has overlooked the potential multifaceted nature of EGB (Bissing-Olson et al., 2013; Boiral & Paillé, 2012; Graves et al., 2013; Kim et al., 2014; Robertson & Barling, 2013).

Research Question(s):

- **What are the characteristics of EGB?**
- **Is the green five taxonomy accurate representation of the EGB construct?**

- **Are there alternative approaches to understanding EGB that go beyond a unidimensional perspective or the green five taxonomy?**

Second, as social exchange theory has already received attention with regards to EGB, this research will combine these exchange mechanisms (support and commitment) with a moderating effect of a green norm; operationalised as a green organisational climate. This research avenue will explore a novel approach to the research by combining two theories, furthermore the model will be tested with multiple categories of EGB that are developed in the first part of the thesis. The aim is to reveal if organisational and supervisor supportive mechanisms (that is well-established at predicting OCB - see Cropanzano and Mitchell, 2005) can be extended to specific categories of EGB. The model will also determine whether the relationship between support and commitment with EGB can also be enhanced with the added effect of the green organisational climate.

Research Question(s):

- **How do the traditional supportive factors at work interact with a green organisational climate to effect EGB?**
- **How do these interactions effect distinct categories of EGB?**

Third, this thesis aims to contribute to the literature in a novel way through using green behavioural norms as a driver of individual green behaviour. In organisational psychology norms are generally conceptualised as organisational climates due to their measurability, as compared the more amorphous notion of culture (Schneider, 1975; Schneider et al., 2013). Thus, when norms are measured in a business context, the theory of normative conduct is operationalised as an organisational climate. Due to the environmental transitions occurring in organisations, the theory of normative conduct has been operationalised as a green organisational climate (Norton et al., 2014). However, the green

organisational climate measurement only uses the injunctive norm from this theory, essentially it is an organisational values based norm (Magill et al., 2020). The third objective is to test whether the other normative mechanism from the theory of normative conduct (i.e. descriptive norms) differs in its prediction of EGB. The descriptive norm is not the values that are perceived, but rather the behaviours of others that are perceived, in this case pro-environmental behaviours.

Research Question(s):

- **How do the perceived green descriptive norms (pro-environmental behaviour of others) effect individuals EGB?**
- **How does this green descriptive norm effect distinct categories of EGB?**

1.4 Contributions of this thesis

The research in this thesis contributes to the transition towards environmental sustainability and subsequent implications for organisational behaviour and employee-organisation relations (Hicklenton et al., 2019b; Unsworth et al., 2016, 2021) . The 'call to action' by Ones and Dilchert (2012b) for organisational psychology to contribute more to the growing problem of climate change and environmental degradation, demonstrates the contributions this thesis will make academically. This also implies the practical applications that the research will have, due to this urgency for transitions.

1.4.1 The contribution of this thesis to the EGB construct

The first contribution of this thesis is to continue the development of the EGB construct, building on the taxonomy (Ones & Dilchert, 2012a), and systematic review (Francoeur et al., 2021), of others by testing a comprehensive multidimensional EGB scale.

Through building on the work of others, the process of creating a relevant measurement scale contributes to the clean up the EGB construct and enables further nuanced research in the future is a needed development. Moreover, the main theoretical contribution is that the multidimensionality of pro-environmental behaviours at work may be best understood as two dimensions, rather than five i.e. green five taxonomy. The conclusion leads to a through a novel conceptualisation of EGB based on the outcome of the behaviour. This novel conceptualisation is then tested in the subsequent models.

Building upon the urgent need for an operationalisation of EGB (Francoeur et al., 2021; Katz et al., 2022), this thesis first scrutinises and tests the green five taxonomy, determining the validity of the categorisation. The result of the creation of scale along the green five taxonomy led to the green four EGB scale. One category – Avoiding Harm – was removed due to the problems it caused in modelling the five categories of the Green Five taxonomy. The categorisation also revealed a clear distinction between two groups of the EGB categories, which connected to the second contribution. Second, this thesis introduces a new conceptualisation of EGB that is built upon the green five taxonomy, that emphasises the goal proximity of the behaviour, rather than simply the direct / indirect categorisation that was previously described (Ones & Dilchert, 2012a), named the goal proximity EGB scale. Third, these multiple dimensions of EGB can be tested independently and – crucially – determine if the antecedents of recycling behaviours are unique when compared with other more 'distal' pro-environmental behaviours.

1.4.2 The contribution of this thesis EGB using social exchange theory

To further our understanding of the relational mechanisms that are related to EGB, this thesis adds to the growing understanding of social exchange relationships with EGB. The traditional organisational social exchange mechanisms described in Cropanzano and Mitchell

(2005) were employed, those being support from the organisation and supervisor towards the well-being of employees, as well as the employee's affective commitment to the organisations. These were combined with a normative pro-environmental factor (a green organisational climate – Norton et al., 2014). This is a novel extension to the literature on EGB, combining social exchange theory with normative theories. It is important that there is at least one green factor within this theoretical framing, as it seems unlikely EGB will occur without an individual or contextual factor that suggests a green orientation. The finding that there is a negative relationship between PSS and EGB supports this thinking (Paillé et al., 2013). Considering this, it is not to say that support for the individual is redundant, but it is acknowledge that it is a complex and dynamic relationship (Paillé, et al., 2020). However, when combined with green contextual factors it could create a strong predictive power for increasing employee EGB. For this reason, as well as the clear evidence that organisational support and supervisory support for specifically environmental behaviours leads to EGB (Cantor et al., 2015; Lamm et al., 2015; Paillé et al., 2019; Paillé & Raineri, 2016; Saifulina et al., 2021), it would be a novel approach to further clarify these relationships. In particular, it might be that certain support factors lead to specific types of EGB, which causes the unclear relationship in the literature. This thesis aims to test these ideas and contribute to our understanding of how different level factors affect EGB.

1.4.3 The contribution of this thesis to EGB using the theory of normative conduct

The contribution of this thesis using the theory of normative conduct (Cialdini, 2011) is done in multiple ways. First, the role of a green organisational climate was used to determine if it can enhance the relationship of organisational and supervisory supportive mechanisms and affective commitment with individuals EGB. Using the theory of normative conduct in this way is considering the injunctive norm described by Cialdini, Reno and

Kallgren (1990) which determines how strongly individuals perceive the (green) values of a group. This thesis went further and tested the descriptive norm effect, described by Cialdini, Kallgren and Reno (1991) as what is actually observed. More specifically, regarding organisations, this is the "*the perception of what is considered the standard mode of behaviour in the unit"* (Ehrhart, 2004, p.65). The extent to which individuals perform EGB is likely influenced by the behaviour of others. Research has shown the exemplary (green) behaviour of a supervisor has a positive relationship with employees EGB (Blok et al., 2015; Kim et al., 2014; Wesselink et al., 2017). In a similar way, this thesis uses this normative theoretical perspective to examine how the behaviour of colleagues may also have an effect on an EGB.

1.4.4 Practical contributions of this thesis

The practical contributions of this thesis lead to a better understanding of pro-environmental behaviour in the workplace not just academically, but also lead to real world implications that organisations can use to further the pro-environmental behaviours at work. This supports the desire for behaviour change toward environmental sustainability that is becoming a large part of the wider transition of organisations and society more generally (ECC, 2022; Unsworth et al., 2021). Thus, this research has practical implications as it can support organisations to make decisions about implementing green practices and policies.

Organisations can query and benchmark their employees on categories of EGB – ultimately allowing them to identify areas of good practice and areas that may require improvement. More importantly, organisations could potentially use this instrument to steer interventions towards achieving their sustainability transitioning goals. In section 7.2 this thesis takes the conclusions of the previous chapters, as well wider suggestions in the literature, to provide potential avenues for organisations to practically apply the conclusions

of this research. This includes benchmarking, interventions, job characteristics, and human resource management. This will help organisations with their focus on creating sustainable workforces.

Last, suggestions of these interventions in organisations with respect to their organisational culture are outlined, this uses both the findings of this thesis but also references wider literature to provide the practical recommendations. Notably that there needs to be a space created for the distal EGB behaviours, which would instil a more positive outcome expectancy among employees.

1.5 Overview of chapters

1.5.1 Chapter 2

Chapter 2 of the thesis delves into the concept of EGB and its antecedents, a topic that has gained significance in recent organisational behaviour literature due to the growing concern for environmental sustainability. This chapter first defines EGB and its characteristics, including the difficulty or 'intensity', collective EGB and counter EGB. Also, this chapter discusses the issue of conceptualising these as voluntary behaviours and the possibility of these being considered organisational citizenship behaviours for the environment (OCBE). The multiple instruments that are used for this concept is also discussed, and the potential issues arising from this is.

Next this thesis outlines the multiple theoretical mechanisms that could affect EGB. Giving a brief overview of multiple psychological mechanisms. Then a more detailed section introduces social exchange theory, which provides a framework for understanding the relationship between individuals and their organisations in terms of reciprocal exchanges of resources, support, and commitment (Cropanzano & Mitchell, 2005). The current knowledge of these factors' relationship with EGB is then explored.

Thirdly, this section examines the concept of green organisational norms, which encompass the values, beliefs, and behaviours within an organisation that prioritise environmental sustainability. This explores different ways of understanding norms, injunctive and descriptive (Cialdini et al., 1990), and how these norms influence individual behaviours towards environmental responsibility.

Overall, chapter 2 provides a comprehensive exploration of EGB, drawing predominantly on social exchange theory and the theory of normative conduct to enhance offer insights into the current knowledge and provide the basis for the next three chapters.

1.5.2 Chapter 3

In this chapter, we create the hypotheses based on the literature review and focused example of literature that justifies the hypothesis. This was split into three sections that represent the three models that were tested in this thesis.

First, a brief review of the existing literature and measurement scales on EGB to clarify ambiguities. Then this chapter discusses the conceptualisation of EGB as based on the green five taxonomy, as well as the newer conceptualisation introduced in this thesis – the goal proximity distinction. The hypotheses surrounding these scales are introduced.

Next this chapter briefly gives an overview of social exchange theory and theory of normative conduct mechanisms that could affect EGB, which lays the groundwork for the research hypothesis. The hypotheses for this next model are based on perceived organisational support, perceived supervisory support, affective organisational commitment, and a green organisational climate factors as predictors of the multiple categories of EGB that are discussed in the first section of chapter 3.

The hypotheses for the final model is also introduced. These examine the effect of a perceived green descriptive norm on the individual employee, and the employee's commitment to the organisation's environmental goals, on EGB. The formulation of hypotheses which are based on principles originated from the theory of normative conduct are introduced here, with a directed review of relevant literature. Contrary to the previous model, this last model takes a descriptive norm approach, rather than an injunctive norm approach (Cialdini et al., 1991).

1.5.3 Chapter 4

Chapter 4 describes the methodology of this thesis. The methodological approach comprises a two-step process to create a 25-item instrument aligning with the green five taxonomy. Initially, a four-phase reduction method distilled items from a 171-item catalogue into five measurement scales, ensuring representation across subcategories. Face validity and item representativeness were assessed through discussions researchers. This is a two-part methodology that firstly refines and distils a large dataset of questionnaire items that represent EGB and creates a potential measurement scale.

The second part of this methodology used statistical analysis to test scale development, and the specific models described in chapter 3. The scale development section uses confirmatory factor analysis to test the validity of the scales dimensions and multiple regression to test the nomological network. Further analysis tested hypotheses related to proximal-distal distinction which is a unique way to see EGB and integrates other characteristics, for example similar to the intensity of the behaviour (Ciocirlan, 2017). The last step was to test the nomological network by using three variables that have been previously found to have a relationship with EGB, giving the scales criterion-related validity.

The hypothesized models in chapter 3 are then tested using structural equation modelling. The methodological approach is presented: the measurement model, full structural model, mediation, and moderated mediation. The sample, procedure, measurement variables used, and the ethics approval are all within this chapter.

1.5.4 Chapter 5

Chapter 5 includes all the tables and matrices that were tested throughout the thesis. It is broken down into three sections which align the with 3 models that were tested. The first was scale development model resulting in two EGB scales. The second was the model using both social exchange theory and theory of normative conduct mechanisms. The third model was using the descriptive norm effect of the theory of normative conduct to determine a novel relationship with EGB.

1.5.5 Chapter 6

This chapter included the discussion for the results of this thesis. Again, this was broken down into three sections that aligned with the three models that were tested. The discussion section summarises the findings, addressing each hypothesis in turn and exploring implications for theory and practice.

The discussion focuses on the interesting relationships between the level of support and the different categories of EGB, and what this means for research and for the concept of EGB. Hitherto, research has not focused specifically on the descriptive norm effect on EGB (i.e. the behaviours of other employees' effect on individuals EGB). This chapter discusses the key insights from these novel research hypotheses and concludes with limitations and suggests avenues for further research.

Limitations and avenues for future research are considered before concluding the chapter with key insights form the chapter regarding EGB. The last part of the chapter brief discusses the EGB categories not used and gives reasoning for this.

1.5.6 Chapter 7

Chapter 7 serves as the additional consideration of the findings of this thesis, and what they mean for theory and practice. Including the concepts and theoretical approaches that were not sued and how these may be important for this research, even if not the focus of the thesis.

Further theoretical implications are then explored, including discussions on behavioural commitment as an underrepresented side to the commitment concept in research on EGB, which will become more important in organisational transitions towards environmental sustainability. Other further theoretical implications are discussion around commitment, collective behaviour at the group/unit level, descriptive norms and culture, and a critique of the goal proximity distinction that came out of this thesis.

Practical implications are also discussed, offering suggestions for benchmarking, things to consider when creating interventions targeting different categories of EGB, and strategies for creating a pro-environmental climate and culture within organisations.

The last part of this chapter, future directions for research are outlined, advocating for interdisciplinary approaches, multi-level inquiries, and a need for higher level factors to be more present in the literature. This is especially important for institutional and societal level influences that are generally lacking in the literature.

2. Literature review

The literature review in this thesis delves into various aspects of EGB. Starting with a deep dive into its definition this chapter then goes on to discuss the development of EGB and its conceptualisation such as the intensity, collective, and counter EGB within organisations. Additionally, it explores the characteristics associated with EGB via the previous research that tests EGB relationship to multiple theories emphasizing the importance of more social psychological mechanisms when thinking about EGB. Due to this, the review examines in more detail social exchange theory and the theory of normative conducts' relevance in understanding EGB.

Social exchange theory concepts that are highlighted are affective commitment, employee environmental commitment, and the relationship between commitment and EGB. The role of organisational and supervisor support in shaping EGB within workplaces is also explored. Furthermore, it discusses green organisational norms, distinguishing between the conceptualisation of norms as values and norms as actual behaviours. This is examined through the theory of normative conduct, after describing the organisational culture aspect.

It should be noted that while this thesis uses the EGB (employee green behaviour) terminology there are many other terms that could be substituted for EGB. Some of these include: organisational citizenship behaviour for the environment (OCBE) (Boiral, 2009), green workplace behaviour (GWB) (Francoeur et al., 2021; Jiang et al., 2022), employees' pro-environmental behaviour (ePEBs) (Graves et al., 2019), environmental workplace behaviour (EWB) (Ciocirlan, 2017). This chapter explains the reasoning behind EGB and more nuanced detail, however these terms (more or less) represent the same behavioural construct: employee behaviour that helps the organisations become more environmentally sustainable. EGB was ultimately used due to its seeming prevalence as the more dominant

term used (Katz et al., 2022; Norton et al., 2014; Norton, et al., 2015; Ones & Dilchert, 2012a; Renwick et al., 2024; Tang et al., 2023; Zacher et al., 2023).

2.1 Employee green behaviour

The impetus for organisational transformations towards environmentally sustainability is fast becoming institutionalised, with laws and national policies are pushing the agenda towards this new mode of operating for organisations (BEIS, 2021b; CCC, 2019; Skidmore, 2019). One component of this organisational change is how individuals within the organisation behave that is congruent with environmental sustainability. As Schneider (1987, p.438) states, organisations are a "*function of persons behaving in them*" and, more specifically reiterated in regards to organisational environmental sustainability: "*Sustainability at the macro level starts with individual action*" (Ciocirlan, 2017, p.63). If organisations are a 'function of persons behaving in them', then the accumulation of behaviours of individuals in an organisation will create the functioning of the organisation to a certain extent. As transitions towards environmentally sustainability occur, engaging workforces in pro-environmental behaviours is an area of interest for organisations as well as organisational behaviour research. It is therefore important to understand what is considered a 'green behaviour' in the workplace, what scale and scope has been attributed to the term so far, how they vary in prevalence, and what is known about their antecedents.

2.1.1 Defining employee green behaviour

Environmental sustainability in organisations has evolved out of larger institutional framings of wider notions of sustainability (Bothello & Salles-Djelic, 2018), yet it is distinct from social sustainability and economic sustainability. These areas of sustainability will have separate goals and objectives and will require discrete initiatives to promote them; distinguishing both social and environmental sustainability allows to more accurately target

and promote the desired behaviours in the organisation (Ones & Dilchert, 2012b). Therefore, environmental sustainability behaviours (or 'green' behaviours) are defined as "*actions and behaviors that employees engage in that are linked with and contribute to or detract from environmental sustainability*" (Ones and Dilchert, 2012a, p. 87). This definition allows researchers to understand what exactly they are measuring, rather than the more generic sustainability term. Understanding the frequency and proficiency with which employees engage in green behaviours can support a more nuanced understanding of the actions that are occurring. This will lead to constructs that can be measured more precisely and determine how much these behaviours contribute to the goal of making an organisation environmentally sustainable (Ones & Dilchert, 2012a).

The general definition in the previous paragraph captures all green behaviours that an individual could perform. This includes both 'in-role' behaviours and 'extra-role' behaviours, the former being job-related tasks that contribute to the environmental sustainability of their organisation and the latter being voluntary behaviours that go beyond the remit of one's contractual obligations. This separation is summarised as *"in-role behaviours are required, formally rewarded tasks for a given job, whereas extra-role behaviours are discretionary behaviours*" (Ramus and Killmer, 2007, p. 557). It is important to conceptually separate these two ideas, as the individual and contextual mechanisms that affect these categories of behaviours will likely be different. It should be noted that all the terminologies present at the beginning of this chapter almost always measure extra-role behaviours (regardless of terminology used) as Francoeur et al. (2021) found.

There are exceptions, such-as environmental sustainability managers, whose role would be to perform behaviours that improve the environmental management of the organisation. This is will arguably change as pro-environmental behaviours could have workplace benefits for employees such-as consideration in promotion (Ciocirlan, 2017). If

employees are not performing green behaviours that are ‘in-role’, then other psychological mechanisms not being explored here, such-as workplace deviance could be responsible (Robinson & Bennett, 1997). This is a separate line of inquiry and not the focus of this thesis which looks at the mechanisms to promote more green behaviour.

However currently most roles do not require green actions, which is also reflected in the literature as in a recent systematic review only 4.5% of studies explicitly mention in-role behaviours, where-as 41% look specifically at extra-role behaviours, presumably because of this reason (Francoeur et al., 2021). The rest of the behaviours in Francoeur et al.’s review, while not explicitly extra-role, have connotations that imply extra-role. This is support by others who found EGB is focused on discretionary behaviours at work, this is likely due to environmental sustainability being previously a voluntary endeavour aligned with corporate responsibility (Glavas, 2016). This is an important observation. The review by Francoeur et al. (2021) found only one study to measure in-role and these behavour asked participants if they performed their work responsibilities and tasks in environmentally friendly ways (Bissing-Olson et al., 2013). This can be argued to actually be extra-role. As the employees are going *beyond* their defined work tasks to perform them in environmentally friendly ways. This meets the definition of extra-role, rather than in-role, as these will almost certainly be discretionary and not explicitly rewarded by the organisation. Further reseach must clarify if these employees are required to perform their role more sustainably or not. As the only measurment scale (ibid) that looks at this could be quite easily interpretted as extra-role. Not viewing EGB as ‘in-role’ vs ‘extra-role’ has been suggested by others (Ciocirlan, 2017).

An ‘extra-role’ employee green behaviour has been conceptualised as an organisational citizenship behaviour for the environment (OCBE). OCBE has been defined as ‘‘*individual and discretionary social behaviours that are not explicitly recognized by the formal reward system and that contribute to a more effective environmental management by*

organizations'' (Boiral, 2009, p. 223). 'Social' in this definition mean 'pro-social', in that these behaviours are beneficial behaviours for society, rather than meaning they have a social (multiple person) characteristic. This definition is built directly on the concept of organisational citizenship behaviour (OCB), which are "*individual behaviour that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization*" (Organ, 1988, p.4). This is understandable as OCBE represents a somewhat similar construct to OCB, but with a focus on environmental sustainability. Studies indicate that OCBE were related to, yet distinct from, general OCB (Lamm et al., 2013; Paillé & Boiral, 2013). The concept of OCB describes the behaviours of individuals that go beyond the remit of their role at work and support the effective functioning of the organisation (Organ, 1988). It is important to understand not only the similarities between OCB and OCBE, but also the differences.

In the literature there are some distinct categories of OCBs: helping, sportsmanship, organisational loyalty, organisational compliance, individual initiative, and self-development (Organ et al., 2006). These categories include many behaviours which are focused on the individuals' behaviours that contribute to the effective functioning of the organisation: helping (unprompted helping and collaborative behaviours), sportsmanship (tolerance and accepting organisational and colleague difficulties), organisational loyalty (supporting organisational objectives and defending the corporate image to stakeholders), organisational compliance (respect and adherence to rules policies and values), individual initiative (constructive sharing of ideas and knowledge), and self-development (voluntary acquisition of skills to improve their ability to improve the functioning of the organisation) (Boiral, 2009). Therefore, the construct of OCB is focused solely on the betterment of the organisation through the voluntary behaviours of the individual employees. OCBE differs to OCB in a more fundamental way (rather than being a subcategory of OCB), in that foci of the

positive outcome of OCBE are external to the organisation, that being the environment and ecological issues.

The focus of the behaviour on a specific outcome that is not specifically the organisation would render OCBE potentially in conflict with OCB. For example, if an organisation is not interested in becoming environmentally sustainable (due to cost and change required), then an OCBE could have a negative consequence for the organisation (albeit positive for the environment). For example, whistleblowing or vocally questioning the practices of the organisation that damages the environment. However, due to the shifting institutional and legal landscape (BEIS, 2021b; CCC, 2019), there is an assumption that organisations do – and increasingly will – value EGB and support in shifting the organisational practices. This would mean a congruence between organisational goals and OCBE (i.e. increasing environmental management and performance), which would render OCBE as a harmonious extension of the OCB construct and surrounding theories. One conclusion from this is that it does mean that OCBE is perhaps better conceptualised as EGB, as these behaviours are inherently part of wider organisational change that will be required.

OCB are not formally rewarded, like high performance and productivity might be, yet they accrue rewards over time and can contribute to, inter alia, the promotion for the employee engaging in OCB (Organ, 1997). This would be the same for an organisation that values OCBE, individuals would likely see rewards over time if they acted in green ways and thus, while the behaviours are discretionary and 'extra-role', there are benefits that can be observed for the employee. This could be particularly pertinent for organisations looking to transition to environmental sustainability, as they would likely reward innovative ideas that contribute to these goals. Given the lack of standards of best practice around net-zero carbon targets, individuals may innovate and develop better practices, which would be defined as going beyond the remit of their role and therefore could be considered an OCBE. This

potential agency of employees to innovate has been noted as "*employees might develop more creative ways to execute the EIRBs [environmental in-role behaviours] and might have pro-active suggestions regarding environmental practices or policies required by their organization*"(Ciocirlan, 2017, p.57). Although OCBE is an expansion of the OCB construct in some ways, we can see that it also goes beyond the narrow concept of 'extra-role', perhaps even more than OCB has been suggested to (Organ, 1988).

EGB aligned with extra-role are known as OCBE as they are individual, discretionary, not formally rewarded, and contribute to the environmental management of the organisation (Boiral, 2009). Although OCBE are discretionary and argued to be separate from in-role behaviour (Ramus & Killmer, 2007), their influence extends beyond being peripheral at work and can be, to varying extents, part of job tasks and appraisals (Ones & Dilchert, 2012b). This is similar to Organ's (1997) admission that as organisational citizenship behaviours (OCB) should not be considered 'extra-role' or 'unrewarded by the formal system'. Thus, while OCBE are not a specified part of a job role by definition, they are nevertheless an important part of organisational life, as OCB are too. As discussed in this section, it is argued that if employees are going beyond their defined work tasks to perform them in environmentally friendly ways, these should be at least partly considered 'extra-role'. As this overlaps with the definition of being discretionary and not explicitly rewarded by the organisation, EGB can be seen as a unique construct that doesn't easily map onto 'extra-role' and 'in-role' (Ciocirlan, 2017). While considering these points, this thesis will use the term EGB (rather than OCBE) to maintain consistency and coherence. But also, with the acknowledgement that EGB sit somewhere between in-role and extra-role, and it is best to use the term EGB due to this.

2.1.2 Employee Green Behaviour instrument

Research on EGB has focused on what psycho-sociological mechanism lead to EGB without critically reflecting in enough detail on what the content of the construct considers (Katz et al., 2022), it hasn't been developed to the extent that was first proposed over a decade ago (Ones & Dilchert, 2012a). Many studies measuring EGB are dominated by recycling behaviours (Francoeur et al., 2021), showing an infancy of understanding of pro-environmental behaviour. Therefore, these studies only a partial representation of EGB and the research is only informative to the extent that it helps understand factors that are generally related to behaving pro-environmentally. This is important as the literature on pro-environmental behaviours more widely in society note the antecedents for one type of green behaviour is different to that for another type e.g. recycling vs. energy conservation (Steg & Vlek, 2009) or between general green behaviours and specific green behaviours (e.g. flying) (Whitmarsh & O'Neill, 2010). This lack of specificity of EGB is a detriment to the understanding and development of this construct.

There have been many employee green behaviour scales used attempting to capture the EGB construct (Bissing-Olson et al., 2013; Boiral & Paillé, 2012; Graves et al., 2013; Kim et al., 2014; Robertson & Barling, 2013), generally they are extra-role focused and are representative of EGB, although this isn't always explicitly acknowledged (Francoeur et al., 2021). These scales all purport to measure the same construct yet very rarely use the same items. This lack of taxonomic coherence is surprising considering the origination of the term 'employee green behaviours' in the literature described a taxonomy that included five categories: Conserving, Avoiding Harm, Transforming, Influencing Others and Taking Initiative (Ones & Dilchert, 2012a). This was also intended to "*be foundational in bringing coherence to the variability currently encountered in our field's understanding of environmental sustainability behaviours*" (Ones & Dilchert, 2012a, p.111). These categories

are defined in table 2.1 and represent different categories of behaviours that could all be thought of as EGB.

However, since then measurement scales have abounded all measuring similar behaviours yet coming from different perspectives. This observation, which has directed the research in this thesis to some extent, has also recently been acknowledged by other researchers in reviews of the EGB literature (Zacher et al., 2023). Recent critiques of the EGB literature also noted that scales operationalise employee pro-environmental behaviours as a single dimensional construct, yet all use completely unique items (Katz et al., 2022). Thus, it can be seen that the EGB literature is afflicted from what is known as the so-called jingle and jangle fallacies (Kelley, 1927). These fallacies involve mistaken assumptions: the jingle fallacy assumes that two constructs are identical solely because they share the same label, while the jangle fallacy presumes that two very closely related constructs are different simply because they possess different labels. This can be seen throughout the literature when it comes to measuring EGB (Francoeur et al., 2021; Katz et al., 2022). An illustration of the jingle fallacy in EGB is exemplified by Boiral and Paillé (2012) and Lamm, Tosti-Kharas and Williams (2013), both these papers state they are specifically measuring 'OCBE' – yet use different frameworks for this measurement. The former focusing on civic engagement and initiatives the latter on conserving and energy saving behaviour. The jangle fallacy is epitomised in EGB from the studies done by Alt and Spitzeck (2016) and by Graves, Sarkis and Zhu (2013), who both are measuring the same sub category of the green five taxonomy with their items (as Francoeur *et al.*, (2021) show in their review), yet naming their constructs OCBE and PEBs (pro-environmental behaviours), respectively. This shows that while they seemingly state simialr, yet distinct, constructs, they are actually using items that correspond the same types of behaviour as shown by Francoeur *et al.*, (2021).

The issues around definition and labelling different behaviours with similar descriptors leads this thesis to contribute to a construct clean-up. Which is precisely the aim of Francoeur *et al.*, (2021) who re-established the green five taxonomy as a taxonomic framework to bring coherence to this literature. Their systematic review found that in the more prevalent scales used in the literature, the detail of the construct varies with some simply asking individuals if they behave in a pro-environmental way at work, without any specification of what that means (Bissing-Olson et al., 2013). This study is the only one that measures 'in-role' behaviours and asks whether employees perform their task at work in environmentally friendly ways. As discussed in the last section, this is ambiguous and could easily be interpreted as extra-role, meaning that the employee is doing this out of their own volition and unlikely rewarded for doing so. This alignment with definitions of OCBE (extra-role), means that more clarity needs to be included when measuring in-role behaviour. Does the organisation *require* employees to act in an environmentally friendly way. This would be truly be 'in-role' as it is determined by the obligations of the employee to the organisation.

Another paper took a route of simply adapting the OCB to OCBE by using the previous OCB typology (helping behaviour, sportsmanship, organizational loyalty, organizational compliance, individual initiative, and self-development) and adding 'natural environment', 'environmental performance', or some other type of 'green' element to the items used (Alt & Spitzeck, 2016). Some are dominated by conserving behaviours (Kim et al., 2014; Robertson & Barling, 2013), although 'influencing others' was measured in one paper but under the conceptualisation work group green advocacy (Kim et al., 2014); others have attempted to be more inclusive in their item content attempting to capture the construct (Graves et al., 2013). This paper (*ibid*) arguably covers the five taxonomic categories although they use a single dimensional instrument and don't distinguish between the quite different sub-categories of EGB. Another popular scale explicitly mentions categories,

although they framed in a slightly different way with one of the categories they use (eco-initiatives) arguably using concepts covering ‘transforming’, ‘taking initiatives’ and ‘influencing other’ green behaviours (Boiral & Paillé, 2012). The other two categories could also filter into multiple parts of the green five taxonomy (eco-helping and eco-civic engagement).

The conceptual issues discussed in the previous paragraphs have not gone unnoticed, with a systematic review attempting to ‘clean-up’ the construct and used the taxonomy to categorise 171 green behaviour items from the literature (Francoeur et al., 2021). The literature has grown much since the taxonomy was created and verified in meta-analyses (Ones & Dilchert, 2012a; Wiernik et al., 2016), and as such should be re-established as coherent sub-categories of EGB.

Table 2.1 - Green five taxonomy of employee green behaviour (EGB) adapted from Wiernik, Dilchert and Ones (2016, p. 5)

Category and definition	Behavioral subclusters	Behavioral examples
Conserving "behaviors aimed at avoiding wastefulness and preserving resources"	Recycle and reuse	Recycling cans, bottles, and paper; Reusing disposable plastic products; relying on single-use products
	Reduce use and repurpose	Turning off lights when not needed; leaving machinery running when idle; discarding surplus material that could be reused
Avoiding Harm "Behaviors involving avoidance and inhibition of negative environmental behaviors"	Pollution	Treating hazardous waste properly; contaminating soil by dumping toxins
	Monitor environmental impact	Tracking emissions from operations; failing to clean up after an accident
	Strengthen ecosystem	Planting trees around work facilities; clearcutting unnecessarily
Transforming "behaviors aimed at enhancing the environmental sustainability of work products and processes"	Choosing responsible alternatives	Purchasing durable equipment or supplies; using materials from unsustainable sources
	Changing how work is done	Optimizing shipping program to reduce high carbon shipments; knowingly relying on a work process that is energy inefficient
	Create sustainable products and processes	Designing a new environmentally friendly product; ignoring environmental impact when designing a new process
	Embracing innovation for sustainability	Choosing virtual meetings instead of travel; insisting on computer printouts when paperless options are available
	Performing sustainable work (added by Francoeur et al., 2021)	Considering the environmental consequences of workplace behaviours
Influencing others "Behaviors aimed at spreading sustainability behaviors to other individuals"	Educating and training for sustainability	Training employees on recycling procedures; removing environmental content from employee socialisation programs
	Encouraging and supporting others	Encouraging carpooling and helping to coordinate it; asking coworkers to dress warmly instead of using space heaters
	Environmental voice behaviour (added by Francoeur et al., 2021)	Bringing about positive environmental change through use of verbal behaviours
Taking initiative "Behaviors which involve pro-actively initiating new behaviors or making personal sacrifices for sustainability"	Initiating programs and policies	Instituting an energy reduction policy; ending an environmental program for business reasons
	Lobbying and activism	Arguing for environmental issues on board; lobbying for environmentally harmful policies
	Put environmental interest first	Turning down an environmentally unfriendly project; not being willing to compromise comfort to reduce energy use
	Environmental civic mindedness (added by Francoeur et al., 2021)	Actively participating in environmental focused events and initiatives arranged in or by the organisation

2.1.3 Intensity of EGB

The difficulty of a EGB is worth considering, as it may seem like individuals perform a high amount of EGB, yet they only perform behaviours that are easier to do e.g. recycling paper. This was first discussed by some, differentiating EGB as either: cognitively simple and easy, or complex and arduous (Graves & Sarkis, 2011). This was grouped into three categories with different levels of difficulty: to decrease the environmental impact of the company (e.g. recycling), solve an environmental problem for the company (e.g. reducing the need for hazardous waste disposal), and finally those that develop more eco-efficient products of services (e.g. redesign or create new products/systems that eliminate harmful effects) (Pelletier & Aitken, 2014). These three categories were refined into two categories which distinguished between basic EGB that are short-term and less arduous (e.g. recycling, reducing energy use) and advanced EGB that require being proactive, long-term and more arduous (e.g. finding new environmentally sound ways of working; building environmental design knowledge) (Graves & Sarkis, 2018). They define these two categories as simple EGB that "*require little initiative, creativity and innovation*", in comparison to more advanced EGB that "*require initiative, superior cognitive functioning (e.g., creativity, problem solving), and ongoing employee commitment*" (p.579), highlighting that not all EGB are equal, especially those that are more complex and - more importantly - are needed to solve the substantial challenges in transitioning to net-zero.

The idea of difficulty has been conceptualised by others as the 'intensity' of an EGB (Ciocirlan, 2017). This isn't just about the effort (cognitive and/or physical) needed to enact a behaviour but also the individual and organisational costs of doing so. In this definition, high-intensity EGB are conceptually similar to the 'good soldier costs' that refer to the negative impacts of employees enacting OCB (Organ, 1988). They are characterised in the same way as OCB, in that high-intensity EGB are behaviours that have "*uncertainty regarding*

outcomes, high visibility, high organizational or individual costs, such as loss of reputation, demotion, or firing" and conversely low-intensity EGB characterised by "*low uncertainty, low organizational or individual costs, and low visibility."* (Ciocirlan, 2017, p.53). In this definition, the intensity of EGB is a combination of the difficulty of the behaviours and the potential uncertainty surrounding that behaviour.

It is important to understand the differences in perceived intensity of an EGB as an organisation that promotes low-intensity EGB (e.g. recycling) will have less impact and progress on the environmental change that is required, than those organisations that promote high-intensity EGB (e.g. redesign of product or system to be eco-efficient). This can be seen in some behavioural categories of EGB such as the 'influencing others' category, this is synonymous with behaviours in organisations that require speaking up and attempting to influence other employees (employee voice behaviour), which are known to be a socially risky type of behaviour where employees weigh up the pros and cons of performing that behaviour (Morrison, 2011). Another category of EGB (taking initiatives) also requires individual rejection of the status quo as well as risk taking (Ones & Dilchert, 2012a). There is a gap in the literature on the understanding of the differences between these levels of difficulty, which behaviours are perceived to be high or low intensity and no specific measurement of the intensity of EGB. This gap was recognised in a recent systematic review, which notes that "*no measurement scale was found in our sample to explicitly measure the level of intensity, it is impossible to know which behaviour requires more effort/intensity"* (Francoeur *et al.*, 2021, p.18), the authors suggest this is an important avenue for future research especially in line with utilising a taxonomy of behaviours that can help illuminate the more clearly the types of EGB and the difficulty of performing them, ultimately leading to clear categorisation of EGB. This also is another argument for the prevalence of the jingle

and jangle fallacies (Kelley, 1927), that scales may be measuring the same behaviours (EGB) but are actually measuring behaviours that are qualitatively different.

The extent to which behaviours involve other employees also is likely the affect the intensity of the behaviour and therefore how often the behaviour is performed. This can be seen in Table 2.1 where three categories are considered 'direct' meaning the employee can do the behaviour themselves rather than needing to collaborate and rely on others for the behaviour. Conserving, avoiding harm, and transforming EGB categories would be considered direct, where-as influencing others and taking initiative are indirect (Ones & Dilchert, 2012a). The direct influence involves individuals engaging with environmental matters, in contrast to indirect behaviours that involves an intermediate stage of encouraging others to do EGB through various pathways (Francoeur et al., 2021; Homburg & Stolberg, 2006). This is presumed to change the intensity of an EGB due to the uncertainty with engaging with other colleagues in the organisation, which means social elements will be important in the antecedents of these high-intensity EGB (Francoeur et al., 2021). These psychosocial factors are important for EGB as tackling large transformations of organisations require collective effort between employees to shift the organisational practices and processes.

2.1.4 Counter EGB

A final area of EGB that has received very little attention is that of counterproductive EGB, with the research and study of these behaviours needing to be "*entirely constructed*" (Francoeur *et al.*, 2021, p.17). This will be challenging construct to measure depending on the definition of counterproductive EGB. This is due to the difficulty of answering the question: counterproductive for who? And will require other variables about the organisation more widely.

Some have describe counterproductive EGB as bad for the organisation and good for the environment (e.g. environmental whistleblowing or using resources at work to prevent the organisation progressing in areas that would be detrimental to the environment) (Ciocirlan, 2017). This is on the assumption that the organisation does not care about its environmental impact and these counterproductive EGB could be likened to the more well know definition of counterproductive work behaviours or workplace deviance (Francoeur et al., 2021; Robinson & Bennett, 1997). These are "*voluntary behaviour of organizational members that violates significant organizational norms and, in so doing, threatens the well-being of the organization and/or its members"* (Robinson and Bennett, 1997, p. 7). This mean that counterproductive EGB are negative for the organisation yet should be considered positive as they are productive for the environment. Others have operationalised counterproductive EGB as being potentially good for the organisation while being bad for the environment (e.g. environmental protection taking second place behind other work obligations) (Homburg & Stolberg, 2006), which would maximise profit over environmental behaviours. However, as the institutional landscape is shifting towards environmental sustainability (BEIS, 2021b, 2021a; CCC, 2019; Skidmore, 2019), this thesis is working from the assumption that organisations are attempting to embed environmental sustainability into their processes and practices, albeit not homogenously. If this is the case, then the definition of counterproductive EGB could be defined as bad for both the environment and the organisation (e.g. leaving the lights on, not choosing sustainable procurement options) (Ones & Dilchert, 2012a). This would cost the organisation money and take them further from their environmental goals, while also having a negative impact on the environment.

The lack of a coherent definition of what exactly a counterproductive EGB is and where the negative outcome lies, highlights the issue: are they counterproductive for the environment or counterproductive for the organisation? If the organisation values and

encourages green behaviours, then a counter EGB would be negative for both the environment and the organisation. It seems logical to follow the OCB literature here as Francoeur *et al.* (2021) did, using Bennett and Robinson (2000) model of deviant behaviour that describes deviant behaviours as violating organisational norms and threatening the well-being of the organisation. Thus, if organisations are transitioning to be environmentally sustainable then a counterproductive EGB is bad for both the organisation and the environment, which coherently follows on from Bennett and Robinson (2000). However, the competing values in the organisation (Demers & Gond, 2020) may create the case for promoting counterproductive EGB in some situations but not others. For example, switching to a more expensive but eco-friendly process may be seen as productive by the sustainability department but counterproductive by the finance department. The discrepancy between the perception of these departments would also then affect the 'intensity' of the behaviour, as there would also be competition between individuals or departments resulting in the inhibition or promotion of employee's likelihood of performing these EGB. This complexity of competing organisational values makes it difficult to define a counterproductive EGB that would be constant temporally and across departments. As change around sustainability decisions and behaviours occurs, there will be a tension around what is the 'right way' to think about and solve these issues (Hengst et al., 2020; Kok et al., 2019). Thus, data around counterproductive EGB needs to be rich and contextualised and would be difficult to achieve through survey based studies, unless research specifically factors in the extent to which a department or organisation is transitioning to environmental sustainability. This would need case study organisations to achieve such a study.

The next section will give an overview of the psychological mechanisms that have been tested as antecedents to EGB to give a fuller understanding of this construct. Leading to a conclusion about the more important psychosocial mechanisms.

2.2 What we know about the antecedents of EGB

The growing interest in EGB has led to researchers undertaking reviews of the literature that create unique frameworks that encapsulate the variety of factors that could be related to these behaviours. First, a review by Norton *et al.* (2015) summarised three broad theoretical approaches to understand green behaviours of employees, those being within person (affect, motivational, intentions), between person (attitudinal, personality), and contextual factors (institutional, organisational, leader and team levels). Within person theories can change overtime within a person, where-as attitudes and personality are seen as traits that are stable within a person overtime, hence the 'between person' category. The former two are factors that are focused on the individual's disposition towards certain objects or behaviours, where-as the contextual factors are those influenced by relational and normative mechanisms. This review, similarly to the review by others (Young et al., 2015), call for multi-level perspectives, that both these individual and contextual factors influence employees to behave in pro-environmental ways. Building upon this previous work a recent review used an ecosystem model to highlight a way to integrate these multiple levels (Tang et al., 2023). This review used a goal setting perspective (e.g. hedonic goal - De Groot et al. (2008), gain goal - Ajzen (1991) and normative goal – Schwartz (1977)) derived from wider pro-environmental psychology literature and focused on values at multiple levels and how to harmonize them. They similarly conclude that multilayered influences affect EGB, and that "*group-level behaviour, beliefs and climate are vital contextual enablers of employee green behaviour."* (Tang et al., 2023, p.9). Finally, a meta-analysis on EGB carried out by Katz et al. (2022) focused on individual factors (e.g. moral reflexiveness, self-efficacy and big 5 personality) with varying results. However, they also tested specifically green contextual factors and found EGB to have a particularly strong correlate with the perception of CSR and green organisational climates. General wider contextual factors, such-as Hofstede's cultural

dimensions (Hofstede & Bond, 1984), showed no moderating influence, implying that the relationship of EGB with contextual factors is dependent on the amount of 'green' that is perceived, irrelevant of other traditional cultural factors.

As these reviews show, there has been a growing number of studies exploring the EGB construct that have used multiple theoretical perspectives including within person, between person and contextual factors. There is a universal acknowledgment of the multilayered influences that affect EGB, yet the most important factor seems to be the contextual factors. A recent critique was levelled at reviews that focus on individual level factors (Renwick et al., 2024).

This thesis will outline some of the psychological mechanisms that have been hypothesised and tested in predicting EGB. To understand the antecedents of EGB, these theoretical areas of psychosocial literature will be briefly outlined, and their explanatory power explained, however some theories are more powerful predictors regarding EGB. Strating with within-person research, then between person, and finally moving to contextual understanding. This section concludes with the tendency for contextual and social factors to be more important than the individual level.

2.2.1 Affective theories

Research looking at within-person factors and EGB are not common (with-in person meaning the factor fluctuates from day-to-day or week-to-week within the person). The effect of daily affect (the emotional state that individuals find themselves in on a given day), has been shown to effect job satisfaction and has become commonly used in organisational psychology research (Weiss & Cropanzano, 1996). The only research found looking at daily effect and employees found a positive effect on EGB, however it is conditional on attitudes that the employee has regarding being pro environmental (Bissing-Olson et al., 2013). As The

next sections outline it dependent the outcome seems that EGB is consistently more dependent on higher level factors

2.2.2 Attitudinal and intentional theories

A mechanism that is also partially within person (intention) but is generally considered a more attitudinal theory (between person), looks at why employees may or may not perform green behaviours at work, based on an attitudinal and intentional mechanism, is the theory of planned behaviour. This theory was popularised by Ajzen (1991) and proposes that perceived behavioural control, attitudes towards the behavioural and social norms determine the intention to act, which leads to the behavioural outcome. This popular theoretical model has reasonably good evidence that it affects pro-environmental behaviour, which was evidenced through a meta-analysis (Bamberg & Möser, 2007). However, the evidence for this behavioural theory is lacking in organisations as Wesselink, Blok and Ringersma (2017) found that intention was not related to behaving pro-environmentally at work unless other factors, such-as the behaviour of their leader and organisational support, were high.

One of the conclusions from this research is that the between person variables are less important than the context factors, in this case the relational mechanisms. Although others found the theory to have some predictive power in EGBs (Blok et al., 2015), their study showed a small effect and they also conclude that other factors such-as leadership support and norms within the organisation are more important factors. Another study found that green behavioural intention by the employee and next-day EGB was only significant when the employee also perceive a green organisational climate (Norton et al., 2017).

A scoping review utilising this the theory of a planned behaviour as a framework also discusses the importance of contextual barriers and norms in the workplace when considering EGB above the individual attitudinal factors (Yuriev et al., 2020). Finally another recent

meta-analysis found that while pro-environmental attitudes were related to EGB, the strongest relationship was with the perception the organisation is engaging in corporate social responsibility, and also that there is a green organisational climate (Katz et al., 2022)

2.2.3 Values and attitudinal theories

Environmental beliefs, values and concern about environmental degradation is unsurprisingly used in the environmental psychology literature to try to explain the prevalence of pro-environmental behaviours. However, it is generally accepted that there is a weak relationship of environmental concern with pro-environmental behaviours (Bamberg, 2003). This is likely due to the ambiguous definition of environmental concern, with some theorising it as a morally appropriate concern from universal values (Stern et al., 1993), others understanding it as an outcome of income, education and age (Dunlap et al., 2000), and some see it through the risks individuals attribute to the danger of environmental damage (Kahan et al., 2007). The distal nature of concern about global environmental crises means that it could be considered more of a worldview that is more symbolic, explaining its weak predictive power (Bamberg, 2003). This has been confirmed as those with more knowledge of the influence of human actions on climate change tend to fly more than those who know less, implying that other contextual factors are more important than beliefs and values (Whitmarsh & O'Neill, 2010).

While this literature has been extended to explain the nuances of the concept, through the value-belief-norm theory (Stern et al., 1999), or a typology of understanding environmental belief orientations (De Groot et al., 2008), it still is somewhat underwhelming. This research literature is related to individuals' personal lives and would likely have a differentiated effect on individuals' behaviours at work. In fact, the results are similar in organisations, with research finding environmental beliefs of the individual are not very good at predicting EGB. Chou (2014) found that employees environmental beliefs were

insignificant when related to EGB. This was supported by another study that found that environmental beliefs of the individual did not strengthen the environmental commitment of the individual, rather corporate environmental policy is more likely to influence the employee to act in a green way at work (Raineri & Paillé, 2016). Finally, a review of the literature also found that attitude change is not a pre-requisite for pro-environmental behaviour change in the workplace (Young et al., 2015).

2.2.1 Motivational theories

Researchers have used self-determination theory (considered a macro motivational theory, most likely to be considered interpersonal) to determine their effect on EGB. This theory developed by Deci and Ryan (2000) believes that when three needs are met (relatedness, competence and autonomy), individuals will tend to be more motivated in attaining goals and behave in a positive way towards the tasks to reach those goals. This results in intrinsic needs satisfaction which moves individuals towards an autonomous internal state of motivation where they do not need external factors to motivate them, such-as rewards and punishments (Deci et al., 2001).

Regarding EGB, Graves, Sarkis and Zhu (2013) found that autonomous motivation was related to EGB while external motivation only led to these behaviours if there were higher levels of environmental leadership present. Their other studies also confirmed this finding, that internal motivation is a better predictor of EGB than external motivation (Graves et al., 2019; Graves & Sarkis, 2018). Another study similarly found that autonomous motivation partially mediates the relationship between leadership support and EGB (Priyankara et al., 2018). These are important findings; however, all these studies start with green leadership qualities that then are mediated to varying extents by these types of motivation. These motivational factors are essentially showing us that when leaders promote behaving in a pro-environmental way, the most motivated employees perform EGB to the

greatest extent. Therefore, an important take away from these studies is that relational mechanisms are the driving factor behind EGB, and the motivational mindset of the individual can enhance this relationship.

2.2.4 Pro-social theories

Pro-environmental behaviour is also sometimes seen as an extension or a subset of pro-social behaviours (Ramus & Killmer, 2007), as they are sometimes conceptualised as a part of corporate social responsibility and have inherent 'moral' characteristics (Lülfs & Hahn, 2014). This follows the norm activation model, introduced by Schwartz (1977), that focuses on how personal moral norms are crucial antecedents to pro-social behaviour. This is another theory that has been applied to pro-environmental behaviours, although not specifically using the norm activation model. Rather more modern and focused reconceptualization of this line of thinking e.g. value-belief-norm theory (Stern et al., 1999) are used to describe how personal moral norms become established and influence pro-social behaviour. This moral aspect has been researched as an auxiliary to the theory of planned behaviour to predict pro-environmental behaviours, finding it was better at predicting these behaviours than attitudinal section of the theoretical model (Godin et al., 2005). Others supporting this finding this moral norm as a precursor to environmental attitudes (L. Chan & Bishop, 2013). Some evidence show this personal moral norm to have a moderate effect on EGB, although group norms (green organisational climates) are seen as more important due to its moderation effects (Chou, 2014).

2.2.5 Moving to contextual theories

There are many individual theoretical mechanisms for understanding green behaviour in the workplace. These theories all explain the behaviours to varying extents, but there is room for improvement in explanatory power in each of these theories. Green beliefs and concerns are a relevant construct and may moderate or mediate the outcome somewhat (Graves & Sarkis, 2018), but generally is a bad predictor overall (Chou, 2014). Similar to this

attitudinal mechanism is the theory of planned behaviour which was also found to be underwhelming, with social norms and leadership being found to be the strongest factors (Wesselink et al., 2017). Finally, self-determination theory was found to be a good predictor of motivation to perform EGB, However, all these studies in self-determination theory begin with a main driver, that being some kind of green leadership qualities (Graves et al., 2019; Graves & Sarkis, 2018; Priyankara et al., 2018), showing that interaction with leaders is more important.

What seems to be a common factor throughout these individual theoretical mechanisms is that relational and normative mechanisms are either the main drivers or more significant factors. The findings of Raineri and Paillé (2016), that corporate policy was more important than individuals green values, and Blok *et al.* (2015) showing that leadership support and norms in the organisation were stronger predictors than theory of planned behaviour variables both substantiate this idea. It is therefore warranted that the focus, when referring to green behaviours in organisations, is on these relational and normative mechanisms. This is especially pertinent for EGB, as organisations provides a unit of analysis that has defined relationships between colleagues and supervisors, as well as organisational norms.

2.2.6 Relational theories

One of the most prominent relational theories is social exchange theory. One of the core tenets of this theory is that individuals interact through exchange processes and behave more favourably towards another person or group of persons through reciprocity (Gouldner, 1960; Homans, 1958). In organisational psychology this manifests as a reciprocity between the organisation and the employee (Cropanzano & Mitchell, 2005). Thus, if an employee feels supported by the organisation then they are more likely to behave in ways that reciprocate that feeling of support, through performing better at work or going beyond their

job role to help the organisation or other employees (Eisenberger et al., 1986). social exchange theory also applies in the same way for the supervisor-employee relationship, if the supervisor provides support for their subordinates it also benefits not only the relationship between the employee and supervisor, but also with the organisation too, as the supervisor is a representation of the organisation (Kottke & Sharafinski, 1988).

Social exchange theory has also been applied to EGB with interesting results. The social exchange mechanisms usually focus on supporting the individual's well-being, which leads to commitment to the organisation and thus positive behaviour. The usually consistent factor of supervisory support has very mixed results with EGB (Paillé, Mejía-Morelos, et al., 2020), and has even been found to have a small negative relationship with EGB in some cases (Paillé et al., 2013). This is comparatively far worse a predictor than the construct of supervisory support for specifically EGB, which has a more consistent predictive power than general support for the employees well-being (Cantor et al., 2015; Raineri & Paillé, 2016; Ramus & Steger, 2000). The commitment construct that usually mediates this support to OCB behaviour has also shown mixed results in predicting EGB (Afsar et al., 2020; Lamm et al., 2013; Saifulina et al., 2021; Temminck et al., 2015). In contrast, specific commitment to the organisational environmental goals has shown to be a much stronger predictor of EGB since it was introduced into the literature (Afsar & Umrani, 2020; Paillé & Mejía Morelos, 2017; Perez et al., 2009; Raineri & Paillé, 2016; Safari et al., 2018). This is unsurprising as employee's commitment to their organisations green goals will logically lead to green behaviours of the employee, but general commitment to the organisation is unlikely to spontaneously lead to green behaviour unless there are some other factors involved that indicate that the organisation wants the employee to perform green behaviours. An example of this other green factor could be a green organisational climate or some other perceived pro-environmental norm at the organisation (Norton et al., 2014).

2.2.7 Normative theories

Pro-environmental (or 'green') norms at an organisation can be conceptualised in a few ways. One conceptualisation of normative influence on behaviour in organisations is organisational culture. Schein (2010) defines organisational culture as having three levels that extended from observable tangible 'artefacts', espoused beliefs and values, and finally to underlying assumptions that 'are the way things are done', this latter idea being unconscious much of the time and a natural unnoticed process. Organisational culture is an expansive concept that had multiple layers and degrees of observability. In contrast, organisational climate is a counterpart to organisation culture but is a more specified conceptualisation of the idea that more directly measures how contextual factors at work influence an individual (Schneider, 1975). This way of seeing norms may be oversimplified according to Schein (2010), but none-the-less captures the psychological influence of norms in an organisational context (Schneider et al., 2013). Organisational climate has been linked to the psychological theory of normative conduct that considers norms as the types of behaviours that are 'the most approved of' or 'the most noticed' in a specific context, defined as injunctive norms and descriptive norms respectively (Cialdini et al., 1991). Green organisational climate then can be conceptualised as a pro-environmental normative influence on employees that can affect their behaviour. A green organisational climate (Norton et al., 2014) has been shown to mediate the relationship between corporate environmental policy and EGB (Biswas et al., 2021; Dahiya, 2020; Das et al., 2019; Norton et al., 2014), between leadership and EGB (Khan et al., 2019; Priyankara et al., 2018; Robertson & Carleton, 2018; Saleem et al., 2020), and also mediates the effect of green human resource management (Chen et al., 2021; Naz et al., 2021; Saeed et al., 2019). These results are important as it shows that having a 'green' organisational norm can dampen or enhance the effort in these other areas: such-as the introduction of corporate environmental policy, green focused leadership or green human resource management that focuses on encouraging green behaviour.

A green organisational climate, as defined by Norton et al. (2014), is focused on the values that employees ascribe to their organisation; implying a green injunctive norm (what is approved of and desired). This is important to note, as a green organisational climate in this way is focused on the espoused values of the organisation and what employees believe their organisation to be oriented towards. As described by the theory of normative conduct, descriptive norms are separate from injunctive norms as they describe what is actually observed and most noticed within an organisation (Cialdini et al., 1990). While the green organisation climate is an interpretation of the espoused values, the green descriptive norm is "*the perception of what is considered the standard mode of behaviour in the unit with regard to environmental matters*" (Pinzone *et al.*, 2016, p.202). Therefore, a productive line of inquiry would be to test the interactions of these separate types of normative influences on EGB. This will determine if the descriptive norm (the green behaviours of colleagues) or the injunctive norm (green values in the organisation) has a more pronounced effect on individual's EGB, implying the old adage that 'actions speak louder than words'.

2.2.8 Conclusion of what we know about green employee behaviour

Individual mechanisms do have some explanatory power with regards to promoting green workplace behaviours. However, the research using these individual theoretical framings emphasis that the contextual elements of their research are the more efficacious factors at predicting the prevalence of EGB. This means that using theoretical framings like social exchange theory (relational) and theory of normative conduct (normative) gives us a more effective pathway to understanding EGB. The nature of organisational transformations towards environmental sustainability requires the whole organisation to change, and therefore requires behaviours from all employees to be oriented towards this goal. That means that acting in a 'green' way will require a sense of collective effort and that others are also

engaged in behaving in this way, therefore these interpersonal contextual factors are logically more important in EGB.

This chapter will now outline in more detail the relational and normative theories that are relevant to EGB. Focusing on social exchange theory and the theory of normative conduct. These have been used in the EGB literature, operationalised in various ways, but rarely are used together.

2.3 Social Exchange Theory

To understand the behaviours of individuals in organisations, social exchange theory has proven to be a valuable conceptualisation of why individuals may act in certain ways, it has been particularly useful in predicting behaviour in relation to organisations (Cropanzano & Mitchell, 2005). social exchange theory has a history of at least a century dating back to the early 1920s in anthropological studies (Malinowski, 1922), and has also been a major influencing theory in sociology (Blau, 1964), social psychology (Gouldner, 1960; Homans, 1958), and more recently organisational psychology (Cropanzano & Mitchell, 2005). The operationalisation of social exchange theory in this thesis is methodological and theoretically aligned with the latter two conceptualisations (social and organisational psychology).

SET was further developed and clarified by Homans (1958) who described exchange as more than a purely material exchange, meaning that exchange can include symbolic value that occurs between two or more different parties. While this idea is that exchange is not purely monetary, they all are predicated upon an exchange of economic and psychological needs. Many thinkers in social exchange theory therefore believe that relationships and social exchange occurs when there is a series of interactions that generate mutual obligations to some degree (Emerson, 1976). In this way Blau (1964) describes that the development of high-quality relationships between two parties can develop when there is a continual

interdependence of transactions which is contingent upon the behaviour of the other party involved, resulting in an exchange of actions and interactions.

The most commonly used aspect of social exchange theory in management studies is that stronger interpersonal or employee-organisational relationships created mutual benefits and are referred to as social exchange relationships (Wayne et al., 1997). Simply put *"social exchange relationships evolve when employers 'take care of employees,' which thereby engenders beneficial consequences."* (Cropanzano and Mitchell, 2005, p.882). This popular usage of social exchange theory derives mainly from Blau's (1964) framework of social exchange, where he delineated between economic and social exchange. He argues that social exchanges, in contrast to economic exchanges, are "*unspecified obligations*" and subsequently "*create diffuse future obligations"* (p.93). The important separation from economic exchange is that the returning of these obligations (reciprocity) is not something explicitly bargained for and thus it "*engenders feelings of personal obligations, gratitude, and trust*" (p.94) through the continually reinforcing exchange created from feelings of obligations. This is true for relationships more broadly but has been applied consistently and successfully to organisational settings as this concept of social exchange can engender employees to be committed and motivated at work, leading to a plethora of positive outcomes for the organisation (Cropanzano & Mitchell, 2005; Eisenberger et al., 1986, 2002; Kottke & Sharafinski, 1988; Meyer et al., 2002; Rhoades & Eisenberger, 2002; Shore & Wayne, 1993; Wayne et al., 1997).

This interdependent social exchange is based on a sense of reciprocity, which are mutual complementary arrangements (Gouldner, 1960), and that the relationship is a continual exchange of 'bidirectional transactions' and is arguably the defining characteristic of social exchange theory (Cropanzano & Mitchell, 2005). Meaning that what is perceived as a desired behaviour in a certain context can act as a mechanism of exchange for employee to

organisation. This perceived desired behaviour will be an important mechanism described later in the normative section. Two other conceptualisations of reciprocity are outlined in the literature, one relating to exchange as a 'folk belief' and the other as a 'universal norm'. The first encapsulates the idea that people get what they deserve (Gouldner, 1960) and the sense that good/bad karma will balance out everything in the end and a fair equilibrium will be established. This conceptualisation of reciprocity seems somewhat incompatible with employee-organisation relationships as while organisations could treat employees badly, generally they could continually recruit more employees due to material (economic) exchange that is a main factor in organisations.

In social exchange theory, the last conceptualisation of reciprocity is the 'universal norm' principle, which is that reciprocity can be found across all cultures and is a universal human value (Gouldner, 1960). The extent to which individuals and cultures value reciprocity is not constant however, and the amount of 'exchange ideology' that an individual embodies can differ, this is "*the relationship between what the individual receives and gives in an exchange relationship*." (Witt, 1991, p.1493). Research has found that the amount of exchange ideology that an individual has can moderate the amount of OCB the employee performs, and the number of sick days recorded. Such that if an organisation doesn't support an individual, and that individual has a high exchange ideology, the employee will be more likely to notice the low level of support which can lead to negative outcomes (Eisenberger et al., 1986; Witt, 1991). Cultural values can also affect individuals propensity for exchange ideology (Thomas et al., 2016), and it is well known that individuals have varying levels of wariness around exchange, essentially not wanting to be taken advantage of (Eisenberger et al., 1987). The idea that cultural values (or organisational values) can affect the amount of exchange and positive employee behaviour will be important to consider in this thesis. If the

organisation appears not to value environmental sustainability, then it is unlikely that any exchange will occur with EGB.

The exchange resources in social exchange theory can be seen as symbolic or concrete, in the sense that an organisation may provide a concrete resource (e.g. monetary bonus) in return for a symbolic resource (e.g. the commitment of the employee to the organisation). This is one dimension of the two-dimensional matrix of social exchange suggested by Foa and Foa (1980), with the other being particularistic vs universal; monetary value is universal (and concrete) where-as commitment to a specific organisation is particularistic (and symbolic). Therefore, while these exchanges are sometimes intangible and can have complicated on-going dynamic relationships (e.g. commitment), they are ultimately representative of reciprocal exchange between an organisation and employee. This means that while the specifics of exchange can vary, they come down to the strengthening of the relationships in the workplace that ultimately lead to outcomes that both parties want. For example, an OCB could be considered a concrete particularistic action from the employee (or perhaps symbolic depending on the type of OCB) as they always should benefit the organisation but also are specific to that organisation. In return this can lead to promotions at work which is generally considered a concrete universal benefit (Organ, 1997). Thus, while these behaviours are promoting non-negotiated and potentially symbolic actions, they ultimately lead to the organisation providing benefits to the individual at a later unspecified time.

As organisations transition towards environmental sustainability this exchange relationship will become important for EGB, as organisations will support the behaviours that contribute to the green organisational goals. According to social exchange theory and the norm of reciprocity, this would then lead employees to perform EGB more prominently as

they believe these behaviours would ingratiate themselves with the organisation and they will incur some type of benefit with the organisation at a later point.

2.3.1 Typologies of commitment

In social exchange theory a common psychological mechanism that is used to explain why employees show positive behaviours at work is commitment to the organisation (Cropanzano & Mitchell, 2005). Commitment gives people a direction in their behaviours and this sense of commitment facilitates the realisation of goals that transcend the self-interest of the individual (Meyer & Herscovitch, 2001), leading to its usefulness as a concept to solving collective problems (Raineri & Paillé, 2016). It is also generally considered a 'mindset' which is a psychological state that can be expressed intuitively (Herscovitch & Meyer, 2002) and is sometimes referred to as 'attitudinal commitment'. This is in contrast to 'behavioural commitment' (Brown, 1996).

Behavioural commitment is an implicit commitment to the organisation through the process of behaving in a certain way, meaning that it is not a mindset but a process of doing some action continuously that eventually leads to commitment. The phrase "*To act is to commit oneself*" (Salancik, 1977, p.4) encapsulates the concept neatly. This has generally received a lot less attention in the literature (Shiu et al., 2014), it represents the idea that by making someone act in a certain way results in them being committed to the thing that behaviour represents. This behavioural commitment conceptualisation could be explained through a cognitive dissonance mechanism (Festinger, 1957) (this is explored in section 6.2.1). A recent research paper has highlighted a correlation between EGB and affective commitment. However, it's worth noting that the study in question was cross-sectional, which raises concerns about the direction of causality. The researchers themselves acknowledge in their conclusion that their claims regarding causality could be disputed, as it's plausible that affective commitment might lead to EGB, rather than the other way around (Ren et al., 2023).

Generally the literature EGB are conceptualised as extra-role (Francoeur et al., 2021), therefore this behavioural commitment way of interrogating the EGB construct might be somewhat redundant at this time. As if the employees are performing EGB on their own volition, they surely would be affectively committed to these behaviours as there is no external factor 'making' them perform EGB. In the near future the increasing prevalence of certain factors could all 'make' the employee perform EGB without the affective condition of commitment. Some of these factors include: green human resource management (Dumont et al., 2017), green leadership (Robertson & Barling, 2015), green norms (Norton et al., 2014), green organisational policies , or simply green job role description. These then could lead to EGB (that are less discretionary), and only then could researchers introduce the idea of commitment as predicted by the continual performing of EGB, i.e. behavioural commitment. Thus, it would be hard to draw a causal direction unless a longitudinal study is undertaken with the explicit intention of measuring how 'making' employees to behave in a green way (i.e. EGB) would lead to commitment to the organisation and its environmental sustainability goals overtime. This would be a fruitful avenue for novel research with practical implications for organisations wanting to increase employee retention, commitment etc. Unfortunately, the scope of this research was not capable of undertaking this type of study due to unforeseen issues in collecting longitudinal data (discussed in chapter 7).

Attitudinal commitment to the organisation can come in different forms, most notably categorised as affective, continuance and normative (Allen & Meyer, 1996). Affective commitment is the most common approach to conceptualising commitment, first described by Kanter (1968) relating it to the attachment of an individual to the '*affectivity and emotion of the group*' (p.507). This framing has a long history in organisation commitment research, for example 40 years ago Mowday et al. (1979) discuss affective commitment as peoples identification and involvement with an organisation. This has been defined more recently as

"*an affective or emotional attachment to the organization such that the strongly committed individual identifies with, is involved in, and enjoys membership in, the organization"* (Allen & Meyer, 1990, p.2). It was later clarified that this commitment concept is a mindset that binds individuals to a certain course of action that pursues one (or more) the organisational targets (Herscovitch & Meyer, 2002). Thus, this way of understanding commitment goes beyond one's role in relation to the organisation in instrumental terms, instead it encompasses symbolic elements that induces a 'partisan attachment' to the organisation and an alignment with the goals and values of the organisation (Buchanan, 1974).

The second, continuance commitment, diverges from the affective aspects of commitment and describes it as simply a way that individuals consistently engage in a certain activity as they recognise the costs associated with ceasing to continue with the specific activity (Becker, 1960). In this case, it may be that individuals simply see the cost associated with leaving the organisation and weigh this up against the benefits associated with continuing on (Kanter, 1968); others define the cost in psychological terms, as a struggle that would be caused by leaving an organisation would incur a heavy toll on one's social identity (Stebbins, 1970).

The last commitment typology – normative commitment – is understood as the responsibility that one has to the organisation that they work for (Allen & Meyer, 1990). This conceptualisation describes the normative pressure on an individual to act a certain way which is completely internalised by the employee so that *'they believe it is the "right" and moral thing to do'* (Wiener, 1982, p. 421). This has received the least amount of attention likely due to the fact it describes commitment through the process that individuals feel they *ought* to stay at an organisation, rather than because they *want to* (affective) or *need to* (continuance) – both of which make more theoretical sense. Due to normative commitment seeming like an obligation for employees to fulfil their role at the organisation, it is unlikely

that this psychological mechanism will lead to EGB and other positive outcomes (Herscovitch & Meyer, 2002). Continuance commitment is also less associated with discretionary behaviours (OCB) than affective commitment (Shore & Wayne, 1993), and therefore unlikely to be as influential in EGB prediction.

While the concept of commitment can describe why an individual stays at an organisation and is more likely to perform OCB (Cropanzano & Mitchell, 2005) and potentially EGB, these are under relatively stable organisational conditions. However, organisations are starting to go through a major change process to become environmentally sustainable, including net-zero targets among many other changes will be entangled in this larger change. Therefore, having employees that are happy with or committed to the change that is occurring is a crucial component of the transition to environmental sustainability and in understanding the factors around EGB. This has been defined as the "*commitment to change as a force (mind-set) that binds an individual to a course of action deemed necessary for the successful implementation of a change initiative.*" (Herscovitch & Meyer, 2002, p.475). This commitment to change is the employees emotional buy-in into the specific change, rather than a general commitment to the organisation itself (Pinzone et al., 2016). This was introduced as a development to the commitment literature, due to the recognition that employees can become "*committed to many different work-related foci*" and that the "*best predictor [of behaviour] tends to be the target-relevant commitment"* (Herscovitch & Meyer, 2002, p.476). Their findings suggest foci-relevant commitment is a warranted avenue to pursue. They also found that while commitment to change was important, a level of affective commitment was needed to promote extra effort or to go further and be a champion of the change; these are elements that are required for EGB to some extent. Therefore, if the outcome is EGB, then both commitment to the organisation and the change process is needed.

Arguably the foci of the change should be central as it is a fundamental shift at all levels of the organisation, that is towards the environmental sustainability goals of the organisation.

2.3.2 Employee environmental commitment

In the previous section it was discussed how commitment to specific goals can be more predictive of behaviours that relate to those goals. The role of commitment to organisations green goals would combine both affective commitment, commitment to change, and be target-relevant commitment (Raineri & Paillé, 2016). This employee environmental commitment has been described similarly to affective commitment as an *''emotional attachment, identification, and involvement with environmental behaviors*'' (Cantor et al., 2012, p.36). As mentioned, normative commitment is more related to in-role behaviours and isn't as strong a predictor of OCB (Meyer et al., 2002). However with regards to EGB, normative commitment could be a factor in the employee environmental commitment construct, as it is ''*an internal, obligation-based motivation''* (Perez, 2009, p. 599), meaning that individuals feel they *ought* to act in a certain way as it is the right thing to do (Wiener, 1982). The pro-social aspect of environmental sustainability has led some to argue that employee environmental commitment would include feelings of social responsibility to be a good citizen, resulting in this environmental typology of commitment having a 'normative commitment' element (Paillé & Raineri, 2016; Perez et al., 2009).

Employee environmental commitment could therefore be argued to have strong predictive power on EGB as the concept includes not only commitment to change at the organisation (Herscovitch & Meyer, 2002), affective commitment to the organisation's new goals (Allen & Meyer, 1990) but also these normative commitment elements regarding pro-social nature of environmental responsibility. Research has operationalised employee environmental commitment and they did indeed find a strong relationships between employee

environmental commitment and EGB (Paillé & Mejía Morelos, 2017; Pellegrini et al., 2018; Raineri & Paillé, 2016).

2.3.3 Commitment and EGB relationship

Organisational commitment has been shown to be related to a plethora of desirable outcomes including: increased motivation for employees, higher job involvement and job satisfaction, lower stress and turnover intentions, increased performance and OCB (Allen & Meyer, 1990; Bishop et al., 2000; Cropanzano & Mitchell, 2005; Mathieu & Zajac, 1990; Mowday et al., 1979; Shore & Wayne, 1993). Considering these established relationships, especially with OCB, there is only a handful of studies looking at affective commitment as an antecedent to EGB. These studies all reported a small but significant relationship between affective commitment and EGB (Afsar et al., 2020; Lamm et al., 2013; Saifulina et al., 2021; Temminck et al., 2015), with the strength of this effect differing depending on the amount of pro-environmental behaviours they report in their private life (Paillé, Raineri, et al., 2019). Interestingly there was a much stronger relationship between EGB and the employees belief in the importance that the organisation becomes sustainable (Lamm et al., 2013). This might be explained that although individuals are committed to the organisation, they are unlikely to perform EGB unless they perceive the organisation to be making concerted effort in this area. This makes sense as OCB that benefit the organisation is an exchange, and if the employee doesn't think the organisation cares about environmental sustainability, then the employee won't perform EGB as they do not think it is valued and they wouldn't be fulfilling their role of reciprocity theorised by social exchange theory (Gouldner, 1960). Thus, affective commitment would only likely lead to EGB if there are other moderating factors, such-as a green organisational climate (next section).

Employee commitment to the organisations environmental goals is a relatively new construct but has shown capacity as a predictor of EGB. The study that created the measurement instrument found a strong relationship between this construct and EGB (Raineri & Paillé, 2016). Since then there has been consistent evidence that this is an important predictor of EGB (Afsar & Umrani, 2020; Paillé & Mejía Morelos, 2017; Perez et al., 2009; Safari et al., 2018). Strong correlation was also found between employee environmental commitment and EGB by others, although not directionally hypothesised (Abbas et al., 2022; Pham et al., 2020) and leads to other outcomes, such-as environmental performance (Pham et al., 2020; Sharma et al., 2021). Commitment to the organisation's sustainability goals have been found to be strong predictor extra-role behaviours around corporate social responsibility (Collier & Esteban, 2007). Therefore, employee environmental commitment is a prominent factor in the antecedents of EGB. Likely due to the focused characteristics of the commitment (to the environmental goals of the organisation) logically leading to discretionary behaviours that reflect this type of commitment i.e. EGB. Alternatively, to this commitment foci, what has not been studied is whether the relationship between EGB and affective commitment to the organisation may be strengthened by moderating factors, such-as a green organisational climate. Signalling a value orientation toward pro-environmental behaviours in the organisation.

2.3.4 Organisational support

Commitment to the organisation can act as a 'mindset' that leads to employees behaving in desirable ways. To understand how organisations can engender this commitment, social exchange theory provides many ways that this reciprocal relationship is theorised to work. Perceived organisational support (POS) is one way this exchange can occur, which postulates that the employees who feel supported by their organisation, are more likely to

return this support through positive outcomes for the organisation e.g. OCB (Eisenberger et al., 1986). This support is usually conceptualised through the belief of the individual that the organisation cares about their wellbeing and values their contribution in the workplace (Eisenberger et al., 2001). This is a similar construct to commitment although it has been shown to be statistically distinguishable (Shore & Wayne, 1993). The relationship between these constructs follows that as the organisation is perceived by the individual to provide support for them, then that individual would reciprocate through commitment to the organisation which then leads to positive outcomes such as OCB (among others). Indeed, much research has shown that perceived organisational support (POS) is consistently a strong predictor of affective commitment (Eisenberger et al., 2001; Masterson et al., 2000; Settoon et al., 1996; Wayne et al., 1997).

There is some evidence showing that POS leads to EGB, with two studies showing the similar findings, that there is a small indirect effect that is mediated by affective commitment (Lamm et al., 2013; Paillé & Boiral, 2013). Others found that POS did not have a significant effect on EGB, and the small effect was completely mediated by affective commitment (Saifulina, Carballo-Penela & Ruzo-Sanmartin, 2021). This is likely due to POS being specifically about the individual well-being, rather than anything environmentally related, therefore models should be concerned with introducing a green element into their models that will more effectively predict EGB as compared to the 'traditional' social exchange models leading to OCB.

One way this lack of a 'green' element has been explored is in the literature is through the adapted supportive mechanism that extends the POS construct; perceived organisational support for the environmental behaviours of employees (POS-E). This had a strong predicting effect on EGB, and it also strengthened the relationship between affective commitment and EGB (Saifulina et al., 2021). POS-E is "*the specific beliefs held by employees concerning*

how much the organization values their contributions toward sustainability" (Lamm, Tosti-Kharas and King, 2015, p.209) and therefore it is a more nuanced construct that indicates the organisation would value their environmental sustainability contribution at work. Their study also confirmed their hypothesis that POS-E is related to EGB, showing a stronger relationship than general POS (Lamm et al., 2015). This supports the idea that environmental specific support for individuals is a more powerful predictor of EGB, much like employee environmental commitment is a more powerful predictor than affective commitment. One paper has looked at POS-E and employee environmental commitment find a medium to strong relationship (Cantor et al., 2012), supporting the idea that organisations focusing employees to be more pro-environmental leads the employee to commit to that environmental course of action.

In general this is a logical hypothesis, that the specific organisational support for employees to behave sustainability leads to EGB, and the research evidences this strong relationship (Cantor et al., 2012; Lamm et al., 2015; Saifulina et al., 2021; Zientara & Zamojska, 2018). This thesis will not use this construct due to the strong evidence of this relationship and using this would not add novelty to the literature.

In the same way that affective commitment to the organisation is less likely to lead to EGB than specific environmental commitment, it is shown that POS is unlikely to lead to EGB than POS-E. Therefore, adding a 'green' element is needed within these constructs to increase the predictive strength, or alternatively, a green exogenous factor is needed. An example of this latter point would be using a moderator (e.g. green organisational climate) in the relationship between the POS, affective commitment and EGB.

2.3.5 Supervisor support

In social exchange theory a more proximal factor can also affect the relationship between an organisation and an employee. This perceived supervisory support (PSS) is defined in the same way as POS, in that employees perceive their supervisor (instead of the organisation more generally) to care about their wellbeing and values their contribution in their team and the workplace (Kottke & Sharafinski, 1988). These two constructs (POS and PSS) are conceptually similar as the supervisor can be perceived as a representation of the organisation in some cases, and this was confirmed in a meta-analysis that found them to be closely associated (Rhoades & Eisenberger, 2002), however they are still conceptually distinct constructs (Kottke & Sharafinski, 1988). A longitudinal study found that PSS can lead to POS, meaning that overtime employees feel supported by their organisation if their supervisor supports them (Eisenberger et al., 2002).

While PSS is similar to organisational support, it can still then impact employees in differing ways resulting in different outcomes. For example, Masterson *et al.* (2000) subdivided the OCB construct into OCB beneficial for the organisation and OCB beneficial for the supervisor. They found that OCB for the organisation was predicted more by POS rather than PSS, where-as the converse was true for OCB for the supervisor. Therefore, while PSS is similar to POS it may affect the outcomes of EGB in employees differently, such that POS support may lead to individuals thinking about new work practices as it supports the organisation ('transforming' category of EGB). In contrast, PSS may be more likely to predict the 'influencing others' category EGB in the green five taxonomy. As the direct support from a supervisor may encourage the employee to speak out directly to other employees in their team, this more immediate support will possibly interact with categories of green five taxonomy in unique ways.

To understand whether the construct of PSS is also adequate in predicting pro-environmental behaviours at work, as it is for OCB, researcher has also explored the relationship between PSS and EGB. One of the foundational studies found a negative relationship between PSS and EGB and stated this could be due to a "*low level of environmental concern exhibited by managers*." (Paillé, Boiral and Chen, 2013, p. 3569). Therefore, like the other generalised exchange constructs it is unlikely that EGB will manifest without other factors that suggest this is a suitable action to take for the organisation. This has been found to be the case that when supervisors were rated highly and there was a 'green' factor present (in this case a clear environmental policy), the supervisory behaviours were positively related to EGB (Ramus & Steger, 2000). However, in further research Ramus (2001) found that even if there was an environmental policy known to the employee, a lack of managerial support for environmental actions was an impediment to EGB. This study also found a significant difference between general support behaviours (PSS) and specific supervisor support for environmental behaviours (PSS-E).

The introduction of PSS-E is therefore likely to be more important than PSS in predicting EGB. This construct of direct support for environmental behaviour from the supervisor has been defined by Cantor, Morrow and Blackhurst (2015) as *"the extent to which an employee believes that his or her supervisor cares about environmental issues and provides the resources needed to engage in workplace environmental activities*'' (p. 703). By this definition the supervisor does not necessarily need to be perceived to care about the well-being of their employee but is focused on supporting their subordinates being environmentally conscious at work. PSS-E has been shown to be significantly related to EGB (Paillé, et al., 2019; Raineri & Paillé, 2016) and reduces the amount of behaviours that would

be detrimental for the environment and organisation (Paillé, et al., 2019)[1]. When PSS and PSS-E are combined, it was found that both supervisory support for employees wellbeing and support for environmental issues can be complementary in their effect of EGB, although the authors acknowledge that this is only under certain conditions (Paillé, Mejía-Morelos, et al., 2020). PSS-E has also been found to be strongly related to employee environmental commitment (Cantor et al., 2015; Raineri & Paillé, 2016).

Green leadership is a common factor used in models looking at EGB, and while many of these studies have not used social exchange theory (and therefore not used the PSS-E construct), they consistently have found that immediate manager environmental leadership qualities lead to EGB in employees (Graves et al., 2013, 2019; Robertson & Barling, 2013; Robertson & Carleton, 2018). It is therefore well-known that green leadership is related to increasing the green behaviours of employees. What is hitherto unknown, is how the well-known traditional leadership supportive constructs in social exchange theory (i.e. PSS) interact with other green organisational factors and how these relate to EGB.

Thus, we can see PSS-E leads to higher levels of EGB, and it is likely that EGB would be more prevalent if both PSS and PSS-E were high (Paillé, Mejía-Morelos, et al., 2020), could it be possible that high PSS leads to EGB even without high PSS-E? As mentioned in the previous section regarding POS, it may be possible if there were other exogenous green factors present (e.g. a green organisational climate).

[1] This paper circumvents the problem that was discussed in the counterproductive EGB section, as they assume the organisation is pro-environmental and therefore counterproductive behaviours are attributed to deviant or sloppy work (Robinson & Bennett, 1997).

2.4 Green organisational norms

As explored in the previous section the relational factors regarding EGB has received a lot of attention in the literature as individuals in organisations do not exist in isolation, and it is clear that social mechanisms can affect individuals EGB. The other main social mechanism that can exert influence on EGB are the normative theories (Young et al., 2015). In their theoretical framework Norton et al. (2015) found that normative factors one of four main antecedents to EGB. These psychosocial factors are important not only in predicting these behaviours, but also due to the widely transformation needed in organisations more widely (Unsworth et al., 2021). This will help create interventions across organisations, with human resource management and leaders making informed decisions to shift norms.

A prominent theory in this field is the theory of normative conduct, that has been widely used to explain pro-environmental behaviour outside of organisations (Cialdini & Jacobson, 2021), with the emphasis placed on the normative influence that a social context can evidence (Cialdini & Jacobson, 2021; Cialdini et al., 1990). This normative factor is well known in psychological literature, so much so that it also is a core part of the theory of planned behaviour, that includes social norms as an important factor in predicting behaviour (Ajzen, 1991). This idea of normative influence is defined through "*an individual determining appropriate behaviour for themselves in a situation [by examining] the behaviour of others there, especially similar others*" (Prentice & Paluck, 2020, p.138). This has been extended into organisational research through the study of perceived social norms of the organisation or, more specifically, the norms of teams and units that employees work in at an organisation (Norton et al., 2014). The idea is that people are influenced by others, not necessarily in a direct relational way, but through observation of what is socially acceptable in this setting i.e. the behaviours that are most approved of, and most noticed.

The theory of normative conduct specifically differentiates between injunctive and descriptive norms. Injunctive norms represent what is approved of, what 'ought' to be the way to best behave, where-as descriptive norms represent what is typically observed, this is the 'is' of a certain context (Cialdini et al., 1990). In the case of this thesis, the injunctive norms would be represented by the espoused green values of the organisation. In contrast, the descriptive norms would be actual behaviours that are performed by individuals. For example, the organisation, leaders, or colleagues may talk about being environmentally sustainable, but their actions could reflect a different reality. This is especially important due to the amount of greenwashing occurring in organisations (Delmas & Burbano, 2011), with some studies finding greenwashing has a negative effect on EGB (Tahir et al., 2020). This perception of greenwashing could occur if there is espoused concern about the climate and ecological crises, yet the organisational behaviour is not consistent with this attitude (a phenomenon known as the value-action gap - see Blake, 1999). Thus, there is a need to explore the dynamics of green injunctive norms (values) or green descriptive norms (behaviours) in relation to EGB.

2.4.1 Green norms (injunctive) as an organisational value

Organisational culture and organisational climate are sometimes confounded, this is because they both attempt to understand how employees perceive the way things are done and what is valued at their organisation (Schneider et al., 2013). These encompass large bodies of literature, but in essence these are the meanings that individuals derive from this shared perception that, when measured together, give a sense of the organisational meaning (Schneider & Barbera, 2014).

Organisational culture had its roots in anthropology and is commonly referenced as an all-encompassing conceptualisation that spans multiple levels. A notable theoretical framing

comes from Schein (2010), who described 3 levels of organisational culture: tangible artefacts (level 1), to espoused beliefs and values (level 2), and finally a more intangible concept he describes as basic underlying assumptions (level 3). This conceptualisation makes it a difficult concept to measure as, according to Schein (1985), organisational culture includes: interaction behaviours, rituals, values, formal philosophy, group norms, rules of the game, identity and self-image, skills, habits, mental modes, shared meaning and root metaphors. This approach to the sense of the organisational norms lends itself more to ethnographic or case study research that has a more qualitative framing due to the abstract nature of the field.

In contrast, organisational climate has its origins in industrial psychology, with the research beginning in the 1960s there was little conceptual understanding of the term and the measures to assess it (Schneider & Reichers, 1983). This was partly due to the lack of specific focus of organisational climate which did not predict specific outcomes (Schneider et al., 2013). This led to the development of more focused climates. This was recognised early on by Schneider (1975), who sought to overcome these conceptual problems by making sure the "*the bandwidth and focus of climate measures should match the bandwidth and focus of the outcome to be predicted*" (Schneider, Ehrhart and Macey, 2013, p.365). This meant a moving from all-encompassing conceptualisation and measurement, towards more focused climates. This produced focused research into safety climates (Guldenmund, 2000), ethical climates (Cullen et al., 1993) and most recently green climates (Norton et al., 2014). Schein (1985) does also acknowledge organisational climates in his work, although he categorises it as an artefact of culture (level 1).

This contrasts to others who see culture and climate being somewhat comparable, albeit deriving from a separate disciplinary background (Schneider et al., 2013). This is a noteworthy difference between culture and climate, as organisational culture starts by

observing the whole organisation as a unit of analysis, compared to organisational climate which focuses on the perception of individuals in a unit of the organisation (Schneider & Barbera, 2014). This latter conceptualisation of norms (organisational climate) is the focus of this research. It follows the theory of normative conduct (a psychological theory), that allows more exact measurements and analysis to be carried out. This meaning that is attached to the policies, practices, and procedures can vary between the departments of an organisation but provides a measurable construct that can be useful at a group/team level or aggregated to the whole organisation to determine the 'climate' of each unit of analysis. The more localised climate measure is known as 'psychological climates' and represents perception of the organisation within that work unit (James et al., 2008). This delineation between levels of climate is important, however many people use this interchangeably, with some simply sticking to the term 'green work climate' (Norton et al., 2014). This thesis will continue to use green organisational climate for sake of consistency.

A green organisational climate is increasingly becoming an area of interest in research as a shift towards green norms in the organisation is an important element in sustainability, with the increasing evidence that it affects EGB (Chou, 2014; Norton, Zacher and Ashkanasy, 2014; Dumont, Shen and Deng, 2017; Norton *et al.*, 2017). A definition of a green organisational climate comes from Norton *et al.* (2017) who define it as an extension to the organisational climate concept, describing it as "*employees' perceptions and interpretations of organisational policies, procedures, and practices regarding environmental sustainability*"(p.997). A green organisational climate has two popular instruments. The first developed by Chou (2014) covered many identifiable artefacts that symbolised the organisation's green climate ranging from green strategy, training, practices, local environmental responsibility, and supportive managers. This means that it is hard to delineate what is the most important factor in a green climate. For example, supervisory support for

environmental behaviours may be the most important factor, but it gets incorporated into the overall green climate measure. And as we have seen it is a strong predictive factor on its own (Paillé, Raineri, et al., 2019).

In contrast the scale developed by Norton et al. (2014) is focused on the perception of green values in the organisation rather than specific identifiable policies and practices that could be used as an inference of the green climate e.g. “Our is concerned with becoming more environmentally friendly”. This has led some to describe it as a “meaning-focused measure” (Magill et al., 2020, p. 202), and as such, is a useful instrument for determining perceived green values of the organisation. This values measure is also differentiated by its separation from other factors such-as environmental policy, that has been used as an antecedent to organisational green climate (rather than a part of it) (Norton et al., 2014).

The theory of normative conduct argues that injunctive norms dictate the way that others act through observation of the tacit guidelines on what is normal behaviour (Cialdini & Goldstein, 2004), therefore this green organisational climate conceptualised as a green values based measure, can then be hypothesised to influence the extent to which individuals performing EGB. This can be seen by the growing evidence showing the direct and mediating power of Norton, Zacher and Ashkanasy's (2014) values-based measure. Research has shown that the effect of green corporate strategy on EGB is mediated by a green organisational climate (Biswas et al., 2021; Dahiya, 2020; Das et al., 2019; Naz et al., 2023; Norton et al., 2014). A green organisational climate also mediates the relationship between EGB and: ethical leadership (Khan et al., 2019; Saleem et al., 2020), supervisory support for the environment (Priyankara et al., 2018), environmental transformational leadership (Robertson & Carleton, 2018) and green human resource management (Chen et al., 2021; Naz et al., 2021; Saeed et al., 2019). It also has been found that green attitudes in controlled and

autonomous motivation was moderated by a green organisational climate (Tian et al., 2020). These research papers all show the extensive use of this values-based construct.

Lastly, evidence shows this green organisational climate (as a green values measure) can lead to more satisfied and committed employees if the employees green attitudes match the green values that are perceived in the organisation, extending the green organisational climate into 'organisational-fit theory' (Hicklenton et al., 2019b). Recent studies also confirm this, showing person-environment fit factors mediated positive organisational outcomes, as well as concluding that organisations should maximise these concordant environmental values to increase motivation and retention, especially among pro0evnrionemtnal employees (Kühner et al., 2024). It also has a direct effect on EGB, and this relationship can be negatively affected by perceptions of greenwashing (Tahir et al., 2020). This is important to note as the values of the organisation can be mediated by a sense that the organisation is greenwashing and not genuinely holding green values.

Interestingly the global impetus for green organisational change is apparent as many of the studies using the meaning focused green organisational climate measure as an antecedent to EGB have been done in Asia (Bhutto et al., 2020; Biswas et al., 2021; Bresciani et al., 2023; Chen et al., 2021; Das et al., 2019; Khan et al., 2019; Liu & Yu, 2023; Naz et al., 2021; Priyankara et al., 2018; Saleem et al., 2020; Tahir et al., 2020; Tian et al., 2020; Younis & Hussain, 2023; Zhou et al., 2018), with only 2 being outside Asia (Australia and USA) (Norton et al., 2017; Robertson & Carleton, 2018). This also could be due to eastern nations being more collectivistic societies and therefore the normative influence is likely greater than in western individualistic societies – this does not detract from the need to further study this concept in western societies, in fact it promotes the need for more research to the undertaken.

This green values-based approach overlaps with other literatures emphasizing its importance in promoting sustainable workplaces. The internal environmental orientation scale developed to measure internal organisation alignment to environmental sustainability e.g. “Preserving the environment is a central corporate value in our organisation” (Banerjee et al., 2003). The internal environmental orientation scale has also been used as a variable in recent research on EGB, research in Pakistan found significant relationship between internal environmental orientation scale and EGB (Tahir et al., 2020) and the findings of Salvador and Burciaga (2020) also point to a positive relationship. Another recent study also found this to be positively related to a higher commitment to EGB and an internalising of green values in a large retail organisation, when combined with supervisory support (Pellegrini et al., 2018). Therefore, it is clear that through these multiple approaches, that the perception that the organisation values being environmentally sustainable will influence employees to be perform EGB.

2.4.2 Green norms (descriptive) as organisational behaviour

The literature is burgeoning on green organisational climates, yet there is a lack of acknowledgement that many studies are using injunctive norms when using a values-based measure and losing some of the nuance of what a norm most studies are actually measuring. Conversely the descriptive norm effect is understudied. The concept of green descriptive norms (i.e. specifically the green behaviours of others) as an influencing factor on employees EGB has not been studied. This is not necessarily surprising as most of the research on normative influences on individuals EGB use injunctive organisational climate perspectives (Norton et al., 2014, 2017). However, as described above due to the inherent moral scope of environmental sustainability (Demers & Gond, 2020) and potential for values-action gaps (Blake, 1999), it is right to separate espoused values around environmental sustainability and

the actual behaviours that contribute to the goals of environmental sustainability. Therefore, while some individuals may say that they are concerned about climate change or ecological crises, they may actually do very little to act towards supporting any type of change.

This descriptive norm is sometimes referred to as collective green workplace behaviours or 'collective EGB', which is defined as "*the perception of what is considered the standard mode of behaviour in the unit with regard to environmental matters.*" (Pinzone *et al.*, 2016, p.202), referring to how employees perceive others to be behaving with regards to environmental sustainability. This is a development of the idea of collective OCB (Ehrhart, 2004). The focus is then not on the individual but on how the '*unit as a whole is perceived'* (Pinzone *et al.*, 2016, p.202). Thus, while their paper discusses the term collective behaviour, they are in essence discussing a descriptive norm – how the 'unit as a whole is perceived'. This is the what 'is' of the theory of normative conduct, so what is actually seen by employees to be occurring in terms of pro-environmental behaviours, and therefore the descriptive norm (Cialdini et al., 1991). Pinzone *et al.*, (2016) used sustainability managers in the NHS to give their perspective of the collective EGBs of the employees under their jurisdiction – saying whether many individuals in their unit behaves in a certain (pro-environmental) way. Only one other study was found in the literature that looked at collective behaviour (Luu, 2019), they used the EGB scale (Boiral & Paillé, 2012) and altered the language to 'Our team…' rather than 'I…', finding both individual and collective EGB were influenced by green human resource management. This study did not test the impact of collective EGB on individual EGB, however they allude that this is the case in post hoc analysis. Discussing that team-level behaviour typically reinforces the norms of the group and resulting in an enhancement of the individuals EGB further (Luu, 2019). Therefore, as describe in section 2.1.4, collective behaviour is akin to descriptive norms and thus can be used as a predicative variable in individual EGB.

As these studies show, there is a novel area of research here to be explored, it is an imperative to study these descriptive norms (or collective behaviour) as an antecedent to EGB. As according to the theory of normative conduct, descriptive norms (what people observe to actually occur on a day-to-day basis) is a stronger predictor of pro-environmental behaviours than injunctive norms (Cialdini & Goldstein, 2004; Mortensen et al., 2017). A parallel study supports this as they found the exemplary behaviour of the leader regarding the environment (descriptive normative influence) was more important than the support they gave for the subordinates to perform EGB (relational influence) (Wesselink et al., 2017).

The descriptive norm effect is surprisingly understudied as the importance of collective behaviour is outlined numerous times in chapter 5 of the most recent climate change IPCC report (IPCC, 2022) as they acknowledge the need for collective action at multiple levels to combat climate change. The perception that others are also acting towards environmental sustainability has also been noted in relation to pro-environmental behaviour (Steg & de Groot, 2010), and that it is "*particularly important in case of large-scale problems that can only be solved when many people cooperate, such as reducing harmful emissions*" (p.727). This idea that individual pro environmental behaviours are influenced by others in a social structure (e.g. an organisation) has been found to influence pro environmental behaviours through a network effect (Geiger et al., 2019). As organisations as a whole need to transition to environmental sustainability, then a collective effort would be needed. It is important then that these behaviours "*performed by colleagues can be easily observed day-by-day, with the consequent creation of shared norms for environmental protection and stronger endorsement of EGBs at the collective level.*" (Pinzone *et al.*, 2016, p.203). Therefore, it is important to measure not just the espoused values of people in the organisation (injunctive norms) but also the importance of measuring their behaviours

(descriptive norm), as it is theorised that the more that other employees are perceived to perform EGB, the more they themselves will be influenced to act in a similar way.

2.5 Summary of chapter and integration

In this thesis, the integration of two prominent theories is explored – social exchange theory and the theory of normative conduct – to develop a comprehensive model for predicting employee engagement in environmentally friendly practices within the workplace (EGB).

Social exchange theory and the theory of normative conduct are both rooted in social psychology. Social exchange theory, posits that individuals engage in social interactions based on the principles of reciprocity and the exchange of resources (Homans, 1958). Central to this theory is the notion that individuals seek to maximize rewards and minimize costs in their interactions with others (Blau, 1964). When applied to the context of employee behaviour, social exchange theory suggests that individuals will engage in green practices if they perceive tangible benefits or rewards associated with such behaviours. Conversely, employees may be disinclined to engage in EGB if they perceive the costs as outweighing the benefits, such-as the findings that supportive managers may actually lead to lower EGB if the manager is not pro-environmental (Paillé et al., 2013). Therefore, for this theory to be effective it must be imbued with a green element or integrated with other theories with regard to EGB.

Complementing social exchange theory, the theory of normative conduct focuses on the influence of social norms on individual behaviour (Cialdini et al., 1991). Norms, whether injunctive (reflecting the perceived values - what is approved or disapproved of) or descriptive (reflecting what is actually done), shape individuals' perceptions of appropriate

behaviour within a social context. In the workplace, employees are influenced by the prevailing norms regarding environmental sustainability with the large amount. If green practices are perceived as the norm within the organisational culture—endorsed and practiced by colleagues and supervisors—employees are more likely to conform to these expectations. Conversely, if sustainability initiatives are not embraced or actively discouraged within the organisation, employees may be less inclined to engage in EGB.

To develop a comprehensive social psychological predictive model for EGB, it is essential to integrate both social exchange theory and the theory of normative conduct. By integrating these theories, the predictive model offers a nuanced understanding of the multifaceted social psychological drivers of EGB. This will also help our understanding by testing the multiple categories of EGB derived from the green five taxonomy and will lead to a more effective comprehension of the EGB construct. Organisations can leverage this understanding to develop targeted strategies for promoting green behaviour in the workplace and cultivate a more sustainable workforce and contribute to their broader environmental goals.

3. Development of hypotheses

Chapter 3 develops the hypotheses to be tested in this thesis. In chapter 2, the issues of measuring EGB were discussed, especially how multiple scales in the literature may misrepresent this construct by conflating possible unique sub-categories of EGB. The focus of this chapter is on the development of an EGB scale that encapsulates both the multidimensionality and represents the depth of the construct. Moreover, a novel conceptualisation of EGB is expounded in this chapter that broadly fits EGB into two underlying categories.

Chapter 3 also will build on the literature review of chapter 2 presenting the hypotheses of social psychological mechanisms affecting EGB and explaining the rationale behind them. Namely it will use both social exchange theory and the theory of normative conduct to better understand the relationship of social psychological mechanisms and EGB. These are operationalised through the interaction of traditional supportive mechanisms and both the green injunctive norms (green organisational climates), and green descriptive norms (colleagues' green behaviours) at work. This will result in some overlap with the previous chapter but will be more focused on the literature that leads to the development of the hypotheses.

3.1 Multidimensional employee green behaviour scales

The focus of this section is on the development of an EGB scale that encapsulates the multidimensionality of the construct by using previous taxonomies that have been somewhat neglected in the burgeoning state of the literature on this construct. Research into EGB is becoming comprehensive yet has often overlooked a critical examination of its conceptual content (Katz et al., 2022; Zacher et al., 2023). Since more comprehensive taxonomies were

introduced over a decade ago (Ones and Dilchert, 2012a), the development of EGB has not followed a linear progression in its development. Many studies assessing EGB predominantly focus on recycling behaviours (Francoeur et al., 2021), indicating a limited understanding of EGB.

Recent critiques of the EGB literature have noted that there are a heterogeneity of scales that operationalise employee pro-environmental behaviours as a single dimensional construct, yet all use completely unique items (Katz et al., 2022). While EGB are many, and conceptually related, there is suggestion that they are discrete constructs (Paillé et al., 2013; Wiernik et al., 2016). Similarly to the construct clean-up of organisational citizenship behaviours done by Organ (1997), this work will build on the construct clean-up of EGB that was recently undertaken by Francoeur *et al.*, (2021). The concept needs to have more accuracy at delineating the separate types of EGB (e.g., recycling as compared to initiating environmental activism projects at work) to support organisations in their environmental transitions.

To address the issue of one-dimensionality, this study will consolidate developments in this area through creating and validating a new multidimensional EGB scale that aligns with the five categories of pro-environmental behaviours at work formulated by Ones & Dilchert (2012a): conserving, avoiding harm, transforming, influencing others, taking initiatives. Moreover, to this effect we will use the recent systematic review that collated 171 items referring to environmental behaviours in the workplace and classified each item into one of the five categories aforementioned (Francoeur et al., 2021). By using this systematic review, two scales were developed and are presented in this chapter. Building on the previous work of others, this study advocates for a two-dimensional construct of EGB, that delineates between the proximal ‘low hanging fruit’ of green behaviours at work and the more distal and complex behaviours that are also considered EGB.

Developing this multidimensional EGB scale has three aims. First, building on taxonomic categorisation EGB into five categories (Ones & Dilchert, 2012a), this chapter adds conceptual depth to EGB as a multidimensional construct. The first finding is that the five categories of EGB are not evident, and that four factors are more likely. Further, due to the high correlations between three of the four of these factors, it was deemed more appropriate to consider EGB as a two-factor construct. This two-factor separation is delineated by the (un)certainty around achieving the environmental outcomes of the behaviours, this outcome focused approach has not been addressed in the literature (Ones et al., 2018) and appears to be a novel way of conceptualising EGB. This is along the lines of Bandura's (1982) notion of outcome expectancy, this is distinct from self-efficacy ('can I do this') but rather the consequences of performing the behaviour ('what will happen if I try'). Collaboration, temporality, and complexity all play a role in creating this uncertainty.

Second, two alternative measurement scales of EGB are presented that can be used to further the intricacy of research on this subject. The first model is the four-dimensional scale that is similarly aligned with the five category taxonomy (Ones & Dilchert, 2012a), the alternative is a two-dimensional proximal-distal scale of EGB aforementioned. This contribution is important to move the literature beyond a unidimensional conceptualisation of EGB, preventing further unique and incomparable conceptualisations of EGB. We are unlikely to develop useful results or consistent theories around constructs of employee behaviour in environmental transitions if these are merged into a single dimension. While this chapter does not completely solve this issue, it moves our understanding beyond the limitations of a one factor conceptualisation (Katz et al., 2022), towards the multi-faceted nature of green behaviours at work.

Third, this research has practical implications as it can enable organisations to query and benchmark their employees on categories of EGB - ultimately allowing them to identify

areas of good practice and areas that may require improvement. More importantly, organisations could potentially use this instrument to steer interventions towards achieving their sustainability transitioning goals. Some suggestions are made in the conclusion around possible job design, notably that there needs to be a space created for the distal EGB behaviours, which would instil a more positive outcome expectancy among employees.

3.1.1 Current framework of EGB

The studies in this literature also lack a cohesion in the measurement scales used to capture EGB. As a results there is a large number of behavioural scales measuring the same concept 'EGB' (Francoeur et al., 2021; Katz et al., 2022), but with different questions, which have different meanings, and thus the results of different studies in this field can't be completely analogous. The lack of a coherently classified validated scale that acknowledges the multidimensionality of EGB is needed. To overcome this, using a taxonomy, such-as Ones & Dilchert's (2012a) green five taxonomy can lead to some cohesion around EGB, these included: conserving, avoiding harm, transforming, influencing others and taking initiative. The first three categories (conserving, avoid harm and transforming) are considered direct behaviours that employees enact themselves to reduce environmental impact or further environmental sustainability goals of the organisation. The latter two (influencing others and taking initiative) are considered indirect, meaning that the positive action towards environmental sustainability comes at a later point rather than a direct outcome of the behaviour itself. Table 3.1 displays the five categories of green behaviours at work or EGB, with a definition of each category of behaviour and sub-categories identified (Ones & Dilchert, 2012a; Wiernik et al., 2016).

Table 3.1 – Green five taxonomy of EGB (Wiernik, Dilchert and Ones, 2016) with number of items in each subcategory in parentheses from Francoeur et al. (2021). Included is the hypothesised new distinction between the EGB categories (far left column)

New distinction		EGB Categories	Sub-categories (number of items)
Proximal	Direct	**Conserving** "behaviors aimed at avoiding wastefulness and preserving resources"	Recycle and reuse (33)
			Reduce use and repurpose (48)
		Avoiding Harm "Behaviors involving avoidance and inhibition of negative environmental behaviors"	Pollution (3)
			Monitor environmental impact (4)
			Strengthen ecosystem (0)
Distal		**Transforming** "behaviors aimed at enhancing the environmental sustainability of work products and processes"	Choosing responsible alternatives (2)
			Changing how work is done (0)
			Create sustainable products and processes (1)
			Embracing innovation for sustainability (4)
			Performing sustainable work (7)
	Indirect	**Influencing others** "Behaviors aimed at spreading sustainability behaviors to other individuals"	Educating and training for sustainability (7)
			Encouraging and supporting others (11)
			Environmental voice behaviour (9)
		Taking initiative "Behaviors which involve pro-actively initiating new behaviors or making personal sacrifices for sustainability"	Initiating programs and policies (17)
			Lobbying and activism (4)
			Put environmental interest first (7)
			Environmental civic mindedness (13)

The categorisation of EGB into five categories was not immediately picked up on, and since this taxonomy was published, many studies have used their own items to attempt to capture EGB –22 separate scales were identified by Francoeur et al. (2021), and others have found as many as 30 different scales (Katz et al., 2022). Some scales have been used somewhat more than others, and generally are extra-role focused (Francoeur et al., 2021). These five scales all purport to measure the EGB construct yet use a variety of items. One scale only uses 3-items to capture EGB (Bissing-Olson et al., 2013), yet these items were filtered into separate categories (avoiding harm and taking initiative) in Francoeur et al.'s (2021) systematic review. Showing how even a small number of items on an instrument can represent multiple concepts within EGB. Other notable scale (Robertson & Barling, 2013) measurement items arguably cover conserving, taking initative and avoiding harm, although the latter two are represented by only one item from their scale. Another scale by Graves et al. (2013) has a relatively broad range of questions with items that cover conserving, transforming, influencing others and taking initiative. These studies do not theoretically consider the potential categorisation of the items as EGB is usually considered a one-factor construct. In summary, there are a multiplicity of EGB scales which have unintentially used items that fit into separate categories in the Ones & Dilchert (2012a) framework. The literature on employee green behaviour is at a point of maturity where we need to start analysing the nuances and differences within this construct.

There is a lack of understanding around whether pro-environmental behaviours at work have a more complex and heterogenous meaning than a single dimension. This common practice of aggregating into a single construct prevents a nuanced understanding of the charaactersitcs of EGB. To determine if these categories have separate antecedents and effects, seperating types of EGB into categoires us an important step as there are, for example, multiple categories of organisational citizenship behaviours (Cropanzano &

Mitchell, 2005; Masterson et al., 2000). The lack of categorisation has led to a dominance of conserving type behaviours to populate EGB measurment scales (81 items) (Francoeur et al., 2021). In contrast, other categories have very few questions, for example the avoiding harm category has only 7 items. It is unknown if this small number of items used to represent this category is a due to a lack of theoretical understanding of the 'avoiding harm' EGB category or that perhaps this category does not make sense as unique from the others. This is explored in the discussion.

Therefore, it could be that there is not actually five categories of the green five taxonomy as conceptualised by Ones & Dilchert (2012a), perhaps four (or less). However, to bring more clarity to this construct, utilsiing this framework will help elucidate whether there is – empirically – five categories of EGB or that these categories are better distinguished in other ways.

Hypothesis 1: The five categories of EGB theorised are discrete yet related constructs.

3.1.2 The goal proximity of EGB completion

The literature has posed other ways to distinguish types of EGB. One such distinction is the idea of direct vs indirect behaviours as seen in Table 3.1 (Ones & Dilchert, 2012a), or the more recently conceived of idea that the difficulty of the behaviour could be an important distinction of EGB (Graves et al., 2019). This concept is expanded by others who described the 'intensity' of the behaviour, refering to the individual costs of performing high-intensity EGB (Ciocirlan, 2017) (conceptually similar to the 'good soldier costs' that are understood in relation to organisational citizenship behaviours (Organ, 1988)).

The first suggestion is that categories of EGB could be split into direct and indirect behaviours (Ones & Dilchert, 2012a). This means that behaviours would have either a direct

benefit for the environment, like recycling or creating a process that has less resource use, in contrast to indirect behaviours that would recruit other people into behaving in an environmentally sustainable way. As table 3.1 shows, the first three categories (conserving, avoiding harm and transforming) are labelled 'direct' and the latter two (influencing others and taking initiative) are 'indirect' (Francoeur et al., 2021; Smith & O'Sullivan, 2012). It is unlikely that the behaviours would align along these dimensions as behaviours in the conserving category (e.g., recycling), are individual, simple, and temporally short to complete which all result in low uncertainty. In comparison, behaviours in the transforming category require individuals to contribute to large (uncertain) changes in their organisation and would necessitate far more time and collaboration with other employees. The behavioural categories of conserving and transforming (i.e. 'direct' behaviours) could be better differentiated, for example, by the self-efficacy beliefs that individuals have about their ability to complete the behaviour (Bandura, 1997). Due to the collaborative nature of the transforming behavioural category it would be better to conceptualise these along beliefs in collective efficacy, which "fosters groups' motivational commitment to their missions and accomplishments" (Bandura, 2000, p.75) and is key to understanding how to motivate people to act on climate change (Heald, 2017).

The framing of EGB as differentiated by the goal proximity of the behaviour would mean more individual focused theories (e.g. self-determination theory (Deci & Ryan, 2000)) would likely be explanatory for proximal EGB (conserving), where-as psychosocial focused theories e.g. social exchange theory (Cropanzano & Mitchell, 2005) or theory of normative conduct (Cialdini et al., 1991) would be more appropriate for distal EGB (transforming). In this way, conserving and transforming categories have clearly different characteristics. These characteristics of transforming EGB would mean they differ not by the direct or indirect nature of the behaviour as previously hypothesised, but rather by 'proximity' of the intended

environmental outcomes of behaviour. This 'goal proximity' distinction is explained by the proximity of achieving the goal of the behaviour, described here as proximal and distal EGB.

The proximal-distal distinction is related to, yet distinct from, the difficulty of performing the task itself. The difficulty of performing EGB is seperated by 'basic EGB' (short-term and requires little innovation), compared to 'advanced EGB' (complex and require ongoing employee commitment) (Graves et al., 2013; Graves & Sarkis, 2018; Pelletier & Aitken, 2014). This has been conceptualised by others as the 'intensity' of an EGB (Ciocirlan, 2017), crucially low-intensity EGB are characterised by "*low uncertainty*", and conversely high-intensity EGB are considered having "*high uncertainty regarding outcomes"* (Ciocirlan, 2017, p.53). This uncertainty regarding the outcome is an important factor in EGB as it is often noted that individuals attempting to behave in green ways burnout due to lack of progress of transitioning towards environmental sustainability (Wright et al., 2012). This is likely due to the lack of control in implementing these pro-environmental changes that are beyond the individual.

Evidence has confirmed that self-efficacy is an important factor in relation to EGB (Guo et al., 2019; Huang, 2016), and the low self-efficacy was a barrier to EGB (Lo et al., 2012). It might be that self-efficacy would predict just the proximal EGB, rather than the distal EGB as the goals of these latter behaviours are much harder to successfully complete and outside the individuals control. These distal EGB would require a belief in collective efficacy of groups (or even organisations) to achieve their environmental goals (Bandura, 2000). The original authors of the green five taxonomy have also recently raised this issue, noting the limitation of "*focusing on what employees actually do, [EGB] exclude environmental outcomes that are outside individual control*" (Ones et al., 2018, p.87). This refers to the outcome expectancy that employees would have regarding a behaviour and

following this line on inquiry, the complex nature of distal EGB would be better explained by this proximal-distal distinction.

Outcome-expectancy refers to the level of belief in the likelihood of a specific outcome, while self-efficacy pertains to the level of confidence in successfully performing the necessary actions to achieve that outcome (Bandura, 1986). This focus on the outcome expectancy has been revived in recent times, as the idea has been put forward that outcome expectacy could cause self-efficacy and ultimately behaviour (Williams, 2010). This supports the idea that there is a proximal-distal separation of EGB, and that the outcome expectancy is a key compenent of this distinction.

The previous conceptual distinction of difficulty of the behaviour (Graves & Sarkis, 2018) should primarily be considered difficult due to the 'uncertainty' of the behaviour (Ciocirlan, 2017), where the environmental outcome of the behaviour is large in its scope and out of the control of the individual (Ones et al., 2018). Furthermore this proximal (conserving and avoiding harm) and distal (transforming, influencing others and taking initiative) dinstinction would be a better conceptualisation of the green five taxonomy due to the complexity of the transforming behvaioural category which would be more closely aligned with distal EGB.

Hypothesis 2: EGB can be measured as two dimensions of proximal and distal EGB

3.1.3 Nomological network of EGB

The rapidly expanding interest in transition towards net-zero organisations has led to the increase in research focusing on pro-environmental behaviours at work. As a result of this interest, many studies have explored the relationship of EGB with other constructs likely to affect these behaviours. Some of the most strongly related constructs to EGB are green

human resource management (Chaudhary, 2020; Dumont et al., 2017; Fawehinmi et al., 2020; Hameed et al., 2020; Islam et al., 2020), employee commitment to organisations green goals (Afsar & Umrani, 2020; Paillé & Mejía Morelos, 2017; Pellegrini et al., 2018; Raineri & Paillé, 2016), and some evidence for a weaker relationship with affective commitment to the organisation (Paillé & Boiral, 2013; Saifulina et al., 2021; Temminck et al., 2015).

3.1.3.1 Green human resource management. Green human resource management emerged recently in contemporary organisational management, reflecting a growing emphasis on environmental sustainability and corporate social responsibility. It connects traditional human resource management practices with an environmental management, aiming to align organisational green goals with behaviour and practices of employees (Renwick et al., 2013). Green human resource management integrates environmental concerns into various HR functions, including: recruitment, training, performance appraisal, and rewards systems (Saeed et al., 2019). By embedding sustainability principles into these processes, organisations signal their commitment to environmental values and cultivate a workforce that shares these beliefs.

Additionally, green human resource management can promote environmental awareness among employees. This awareness can come from training programs on sustainability, eco-friendly initiatives, and/or the importance of tackling environmental problems; all of which can enhance employees' understanding of green issues and motivate them to adopt EGB, especially if they have higher levels of identification with the organisation (Chaudhary, 2020). Moreover, by encouraging employees with these human resource mechanisms, green human resource management could foster a sense of efficacy. Which are crucial drivers of behaviour change (Bandura, 1997), and has also been found to be moderate the relationship between management and EGB (Guo *et al.*, 2019). These pscyholgoical mechanisms can also be tranlted in various incentive mechanisms to encourage

and reward EGB. This could include recognition programs for performance of EGB, bonuses tied to sustainability targets, or opportunities for career advancement linked to environmental performance. By aligning rewards with green outcomes, green human resource management can create additional pathways to EGB via gain goal-oriented employees (Tang et al., 2023). This gain goal-oriented approach has found evidence outside of organisations previously in relation to pro-environmental behaviours (Lindenberg & Steg, 2007; Steg et al., 2015).

Lastly, green human resource management would help foster an organisational culture that values sustainability and encourages collective action towards environmental goals which includes would lead to green norms in the organisation, which influence EGB (Chou, 2014; Norton et al., 2012). Green organisational culture can be created by green human resource management through communication channels, message credibility, leadership messaging, and employee empowerment (Roscoe et al., 2019).

In summary green human resource management has the potential for improving the motivation of employees to engage with environmental policies and increase EGB (Chaudhary, 2020; Dumont et al., 2017; Fawehinmi et al., 2020; Hameed et al., 2020; Islam et al., 2020).

3.1.3.2 Commitment to green organisational goals. As discussed in chapter 2, there is conceptually a strong relationship between an employee's commitment the organisations green goals. The concept of commitment to an organisation's green goals encompasses affective commitment, commitment to change, and target-relevant commitment (Raineri and Paillé, 2016). This form of employee environmental commitment shares similarities with affective commitment as it involves an emotional attachment, identification with, and an involvement with target behaviours (environmental in this case) (Cantor et al., 2012).

Not only does this construct encapsulate multiple typologies of commitment, it also can even be considered to cover the normative commitment concept. That is that employee's commitment the organisations green goals represents an internal, obligation-based motivation, where individuals feel compelled to act in a certain manner because it aligns with their sense of moral obligation (Perez, 2009, p. 599; Wiener, 1982). While normative commitment is typically associated with in-role behaviours and is not as strong a predictor of OCB (Meyer et al., 2002), it could still play a role in the construct of employee environmental commitment within the context of EGB. The societal emphasis on environmental sustainability has prompted arguments that employee environmental commitment encompasses feelings of responsibility towards being good citizens, leading to normative commitment to their organization's goals of enhancing social responsibility (Perez, Amichai-Hamburger and Shterental, 2009; Paillé and Raineri, 2016).

Employee environmental commitment could therefore be argued to have strong predictive power on EGB as the concept includes not only commitment to change (Herscovitch & Meyer, 2002) and affective commitment to the organisation (Allen & Meyer, 1990), but also these normative commitment elements. Commitment to the organisation's green goals, conceptualised similarly to affective commitment but focused on specifically the environmental sustainability goals of the organisation (Cantor et al., 2012; Raineri & Paillé, 2016). Considering the meaning underpinning this construct, it is unsurprising that is has consistently been found to have a strong relationship with EGB (Perez, Amichai-Hamburger and Shterental, 2009; Paillé and Mejía Morelos, 2017; Safari *et al.*, 2018; Afsar and Umrani, 2020; Raineri and Paillé, 2016).

3.1.3.2 Affective commitment to the organisation. Affective commitment to the organisation should have a relationship with EGB through social exchange mechanisms (Cropanzano & Mitchell, 2005). This is due to the EGB construct being mainly extra-role and somewhat synonymous with OCBE. Therefore, the social exchange mechanism that leads to affective commitment of the employee towards the organisation would likely have a strong relationship with EGB. This is an extension of the social exchange literature that has consistent and well documented evidence that these social exchange mechanisms lead to OCB (Bentein et al., 2002; Bishop et al., 2000; Cropanzano & Mitchell, 2005; Mathieu & Zajac, 1990; Shore & Wayne, 1993).

However, while there could be some overlap between affective commitment leading to OCB and it also leading to EGB (as similar to OCBE – see chapter 2), it would likely be that these green behaviours require some other specifically green factor. Some suggest that the organisation should specifically support individuals to behave in pro-environmental ways, which would indicate the organisation goals and values align with environmental sustainability (Temminck et al., 2015). Even considering this, a handful of studies have all used affective commitment in their models attempting to predict EGB, most of these studies reported a small but significant relationship between affective commitment and EGB (Afsar et al., 2020; Lamm et al., 2013; Saifulina et al., 2021; Temminck et al., 2015),

In summary, there is an already established nomological network for EGB. To test the nomological validity of the measurement scales in this chapter, this study will utilise these three factors that have been evidenced to be related to EGB the nomological network. These are green human resource management, employee commitment to organisations green goals, and affective commitment to the organisation. This will determine the criterion related validity of the measurement scales used in this chapter. Considering that the items in the EGB

scales in this chapter have been selected through a rigorous distilling process from previous research. Due to the findings of previous research, the scales presented here in this chapter are hypothesised to have a strong relationship with green human resource management (Chaudhary, 2020; Dumont et al., 2017; Fawehinmi et al., 2020; Hameed et al., 2020; Islam et al., 2020), employee commitment to organisations green goals (Afsar & Umrani, 2020; Paillé & Mejía Morelos, 2017; Pellegrini et al., 2018; Raineri & Paillé, 2016), and a small to moderate strength relationship with affective commitment to the organisation (Afsar et al., 2020; Lamm et al., 2013; Saifulina et al., 2021; Temminck et al., 2015).

Hypothesis 3: The EGB scales and each of the subscales are related to

(a) green human resource management,

(b) employee commitment to organisations green goals, and

(c) employee affective commitment to the organisation.

3.2 Supportive mechanisms and a green organisational climate

The 'traditional' social exchange theory mechanisms of supervisory support, organisational support, and affective commitment to the organisation have received less attention than their 'green' counterparts. As discussed in chapter 2, adding a 'green' factor (green organisational climate) to these social exchange mechanisms could enhance their predictive capability. This combination of relational and normative psychological theories is sparse in the literature on EGB, and therefore adds a novel contribution to our understanding of EGB.

To address the issues this study will explore how these two theories interact to result in EGB. First, this will help elucidate the relationship between these well-being supportive constructs and EGB through including a green factor. This would contribute to the

uncertainty around the well-being constructs as there have been mixed results of support and commitment with EGB so far (Paillé et al., 2013; Paillé et al., 2019). Through including the green organisational climate, it adds to the evidence that a 'green' factor is needed when attempting to predict EGB.

Second, it will help our understanding of the characteristics of the categories of EGB. Perhaps the previous issues with the social exchange mechanisms could be explained by the type of EGB that they relate to. For example, does supervisory support lead to proximal EGB, and conversely does organisational support lead to distal EGB?

Third, this will help our understanding of the importance (or not) for creating green organisational climates and cultures in the amount of EGB reported by employees. This will inform researchers and organisations of the focus of interventions, whether they should be across the organisation or more nuanced and at a closer level to the employee (i.e. supervisor relationship). Rather than burdening supervisors with extra responsibilities for supporting their employees to behave environmentally sustainably (Cantor et al., 2015).

3.2.1 Social Exchange Theory and EGB

One of the many positive outcomes of support for employees that is found through social exchange theory is organisational citizenship behaviour (OCB) (Meyer et al., 2002; Shore & Wayne, 1993). OCB are "*individual behaviour that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization*" (Organ, 1988, p.4). This well understood relationship would likely be similar for environmental behaviours at work that are discretionary. Indeed, this similarity has been found in empirical studies that indicated that OCBs for the environment (OCBE) were related to, yet distinct from, OCBs in general (Lamm et al., 2013; Paillé & Boiral, 2013). Similarly these are individual, discretionary and not recognised by the formal reward system, however are different in that they ''*contribute to*

a more effective environmental management by organizations'' (Boiral, 2009, p. 223), rather than general effective functioning. As these pro-environmental behaviours are similarly defined to OCB, in that they are extra-role and generally individual (Francoeur et al., 2021), OCBE seems appropriately included as an extension of the organisational citizenship behaviour field (Boiral & Paillé, 2012; Lülfs & Hahn, 2014; Norton, Parker, et al., 2015; Raineri & Paillé, 2016; Ramus & Killmer, 2007). As discussed in chapter 2, for sake of consistency, this chapter will continue to use the term EGB although this is somewhat synonymous with OCBE consider the largely overlapping meaning. Therefore, these social exchange mechanisms that have previously been applied to OCB, show a promising theoretical basis for explaining EGB and their contribution to organisations environmental sustainability goals (Ones & Dilchert, 2012b).

There is a growing interest in EGB among practitioners and in research (Norton et al., 2015; Ones & Dilchert, 2012b; Unsworth et al., 2013), with a large number of studies measuring the antecedents of these behaviours (Katz et al., 2022; Yuriev et al., 2018). The scales being developed in this thesis provide multiple subscales of EGB that allow a more nuanced understanding of separate types of EGB and their possible distinct antecedents. These scales were built upon the taxonomy of pro-environmental behaviours at work (Ones & Dilchert, 2012a) and the subsequent collation of scales and items measuring EGB into this taxonomy (Francoeur et al., 2021). The green four scale includes the four categories of conserving, transforming, influencing others, and taking initiative. This will be used in the first model; an illustration of this first model is displayed in figure 3.1.

The hypothesis in section 3.1 aims to test the alternative goal proximity EGB Scale, splitting the behaviours into proximal and distal categories. In this scale the proximal behaviours are characterised by the certainty around the outcome expectancy (Bandura, 1997). This is due to the outcome for the proximal EGB category being more certain to

complete as they are immediate, simple, and individual. This contrasts with distal behaviours which outcome are uncertain due to their characteristics being long-term, complex and require collaboration between multiple actors throughout the organisation. The conserving category from the green four scale essentially makes up the proximal behaviours, where-as the other three categories (transforming, influencing others and taking initiative) constitute the distal EGB behaviours. The goal proximity EGB scales will be tested in this chapter, producing results from two slightly different models. An illustration of this second model is displayed in figure 3.2.

The creation of these scales with multiple dimensions allows researchers to investigate whether there are unique mechanisms that affect the categories of EGB differently. These novel conceptualisation has similarities to the 'intensity' of the behaviours, first described by Ciocirlan (2017) as relating to the difficulty of performing the behaviour. This is not just the physical and cognitive difficulty, but more specifically the underlying mechanism is the uncertainty regarding the outcome. In a similar way others have defined 'basic' and 'advanced' EGB, pointing to the fact that not all pro-environmental behaviours at work are equal (Graves et al., 2013; Graves & Sarkis, 2018). The uncertainty surrounding the outcomes are highlighted by others, noting the potential importance of the outcomes that are outside the individuals control (Ones et al., 2018). Hitherto, this has been overlooked in the literature and can give more insight into the nature of the EGB construct.

Figure 3.1 – Illustration of the model with the green five EGB scale and the hypothesised antecedents. The solid lines represent direct relationships, and the dotted line represents a moderating effect.

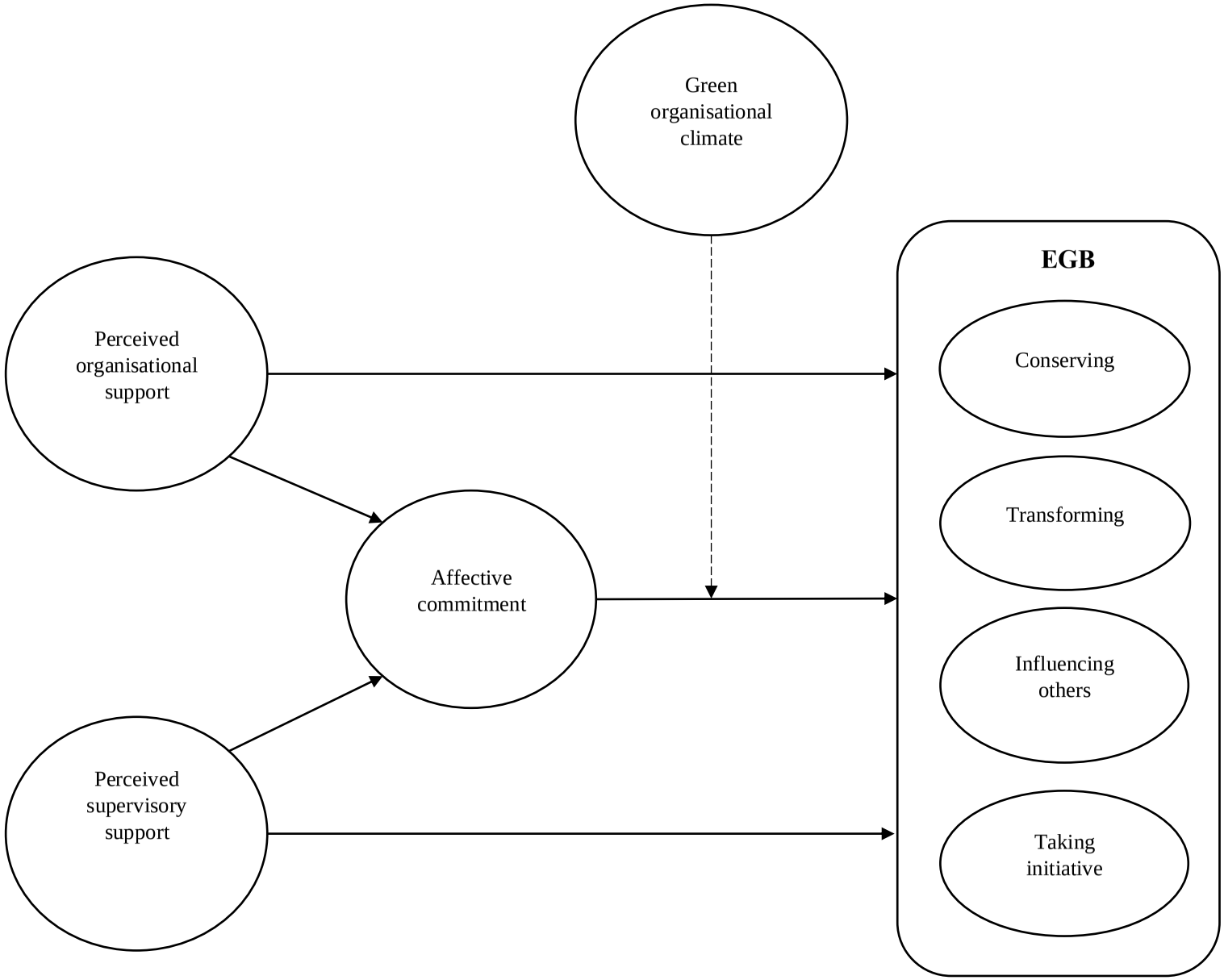
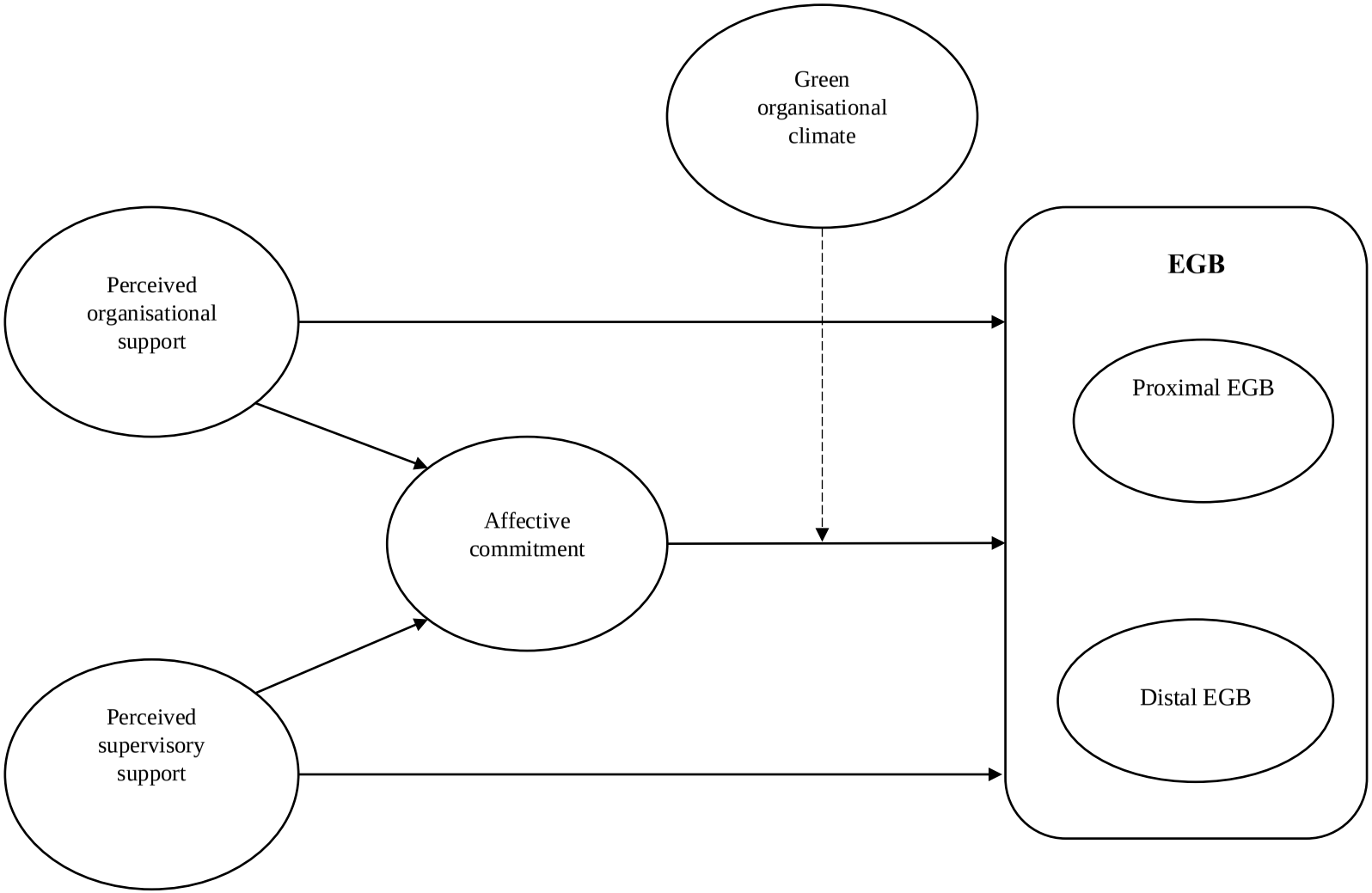


Figure 3.2 – Illustration of the model with the goal Proximity EGB scale and the hypothesised antecedents. The solid lines represent direct relationships, and the dotted line represents a moderating effect.



3.2.2 Perceived organisational support influencing EGB

Perceived organisational support (POS) is one of the common concepts used in social exchange theory to explain employee-employer relationships. It proposes that employees who feel supported by their organisation are more likely to return this support through positive outcomes for the organisation leading to better organisational performance. The main outcome that is relevant here, is the evidence showing that POS leads to OCB (Eisenberger et al., 1986; Meyer et al., 2002; Rhoades & Eisenberger, 2002; Wayne et al., 1997). Additionally, prior research suggests that POS serves as a significant factor in enhancing employee retention (Allen et al., 2003), it has been associated with lower levels of absenteeism (Eisenberger et al., 1986) and also increased performance effort among employees (Eder & Eisenberger, 2008). POS is conceptualised as the belief of the individual that the organisation cares about their wellbeing and values their contribution in the workplace (Eisenberger et al., 2001). This support activates a reciprocity mechanism that has been shown to explain the relationships between POS to OCB (Cropanzano & Mitchell, 2005; Eisenberger et al., 1986; Meyer et al., 2002; Rhoades & Eisenberger, 2002). This suggests that employees are inclined to exert discretionary efforts that serve the interests of their colleagues, supervisor, or organisation more generally, if they perceive themselves to be provided with fair treatment in return. This aligns with the principle of reciprocity, as proposed by Gouldner (1960), wherein employees reciprocate favourable treatment with positive actions.

OCB has many of the same characteristics of EGB (and shown to be distinct yet related – Lamm et al., 2013), as they both are workplace behaviours that is: individual, discretionary, not explicitly rewarded, could lead to positive outcomes at a later point for the individual. Considering this, we could expect that a reciprocity mechanism present with the POS to OCB relationship, could also explain the POS to EGB relationship. This would mean

that individuals who perceive their organisation to support them would reciprocate by performing EGB. There is one caveat here, however, that this reciprocating of EGB by the employee is contingent on the employee believing that environmental sustainability is something the organisation values, and thus satisfies the reciprocity mechanism (Gouldner, 1960). This chapter addresses this issue by including green values of the organisation as a moderating variable, as seen in the hypotheses in section 3.2.5.

While POS has a strong relationship to OCB with much documented evidence (Cropanzano & Mitchell, 2005; Eisenberger et al., 1986; Meyer et al., 2002; Rhoades & Eisenberger, 2002; Wayne et al., 1997), the is still sparse evidence for the relationship between POS and EGB. There has been limited research on this topic, although some evidence shows that POS is also related to EGB, with two studies finding a direct effects as well as indirect effects mediated by affective commitment (Lamm et al., 2013; Paillé & Boiral, 2013). The relationships in both studies were borderline insignificant and were small (Lamm et al., 2013) and small to moderate (Paillé & Boiral, 2013). Leaving the relationship still somewhat unestablished. Others found that POS did not have a significant direct effect on EGB, although a small effect was found when mediated by affective commitment (Saifulina et al., 2021). This furthers the uncertainty around the nature of this relationship, and as mentioned in this thesis, it is likely due to the unknown amount of an 'pro-environmental' factor that would moderate this relationship.

Regarding the issue of topic specific support, the concept of POS had been extended to include perceived organisational support for the environment (POS-E), which is the organisational support for specifically environmental behaviours and sustainability focus of their employees (Lamm et al., 2015). This more narrow construct focuses on pro-environmental support and has found to have a strong relationship with EGB (Lamm et al., 2015), and also strengthened the relationship between affective commitment and EGB

(Saifulina et al., 2021). This latter study also found that POS-E had a very strong relationship with EGB, far exceeding POS and affective commitment. Therefore, we can see that traditional exchange mechanisms may be inadequate by themselves in predicating EGB but are very strong when a 'pro-environmental' element is introduced to the model.

To extend this research, understanding how POS affects proximal EGB compared to distal EGB may provide a new insight into this uncertain, or at least modest, relationship between POS and EGB found so far. It may be that POS is more related to distal EGB, as employees believe that their attempts to push for changes in work processes and procedures would be more accepted if POS is high. This research explores the traditional conceptualisation of POS, which focuses on the well-being and care that the employee perceives, and its relationship to these separate and unique categories of EGB.

Hypothesis 4: POS has a positive relationship with the

(a) green four EGB scale.
(b) goal proximity EGB scale.

3.2.3 Perceived supervisory support influencing EGB

Perceived supervisory support (PSS) is a more proximal factor than POS that can also affect the relationship between an organisation and an employee. This is defined in the same way as POS, in that employees perceive their supervisor to care about their wellbeing and that the supervisor values their contribution to the team and the workplace (Kottke & Sharafinski, 1988). These two constructs (POS and PSS) are conceptually similar as the supervisor can be perceived as a representation of the organisation in some cases (Rhoades & Eisenberger, 2002), however they are still conceptually distinct constructs (Kottke & Sharafinski, 1988). While these are conceptually similar, PSS can impact employees differently to POS and result in different outcomes. For example, Masterson *et al.* (2000) subdivided OCB into two categories: OCB that were beneficial for the organisation and OCB

that were beneficial for the supervisor. They found that OCB for the organisation, was predicted more effectively by POS where-as OCB for the supervisor was more effectively predicted by PSS. Thus, PSS and POS relationship with EGB may differ depending on the type of EGB. Considering this distinction found with OCB, it may be that proximal EGB are more related to PSS due to these two constructs sharing the same quality of being more immediate and in close proximity to the individual (similar to how OCB for the supervisor was more effectively predicted by PSS). The distal EGB categories may be better predicted by POS as the outcomes of distal EGB are organisational-level goals (similar to how OCB for the organisation was more effectively predicted by POS). Thus, justifying the use of both PSS and POS to determine differences in supportive mechanisms.

PSS also has a well understood positive relationship with OCB (Chen & Chiu, 2008; Eisenberger et al., 2002; VanYperen et al., 1999), but is not well understood regarding EGB. Research has focused on specifically supervisory support for environmental behaviours, which is the perceived pro-environmental attitude of the supervisor combined with resources they provide for the employee to engage in EGB (Cantor et al., 2015). This has been found to be strongly related to EGB (Blok et al., 2015; Cantor et al., 2012; Paillé, Raineri, et al., 2019; Raineri & Paillé, 2016) and reduces the amount of behaviours that would be detrimental for the environment and organisation (Paillé et al., 2019). This strong direct relationship is unsurprising and has been acknowledged by others who found a lack of managerial support for environmental actions was an impediment to EGB (Ramus, 2001; Ramus & Steger, 2000). It seems the support for employees to behave in pro-environmental ways is important when it comes to EGB. This is consistent with previous research that looked into the behavioural integrity of supervisor and the effect on subordinates, finding that the behavioural norms are influenced by the supervisor's principles (Dineen et al., 2006). This is especially strong if their actions also support this espoused values and they 'walk the talk'

(Simons, 2002). This has been also been found as the exemplary pro-environmental behaviour of a supervisor also can affect their subordinates, as it indicates a desired way of behaving which is prized by the supervisor (Wesselink et al., 2017).

In contrast to this environmentally specific supervisory support, there are mixed results when looking at the original conceptualisation of PSS that focuses on the care and well-being of the employee rather than supervisory support for environmental behaviours. Research has found a negative relationship between PSS and EGB with the authors stating that this could be due to a "*low level of environmental concern exhibited by managers*." (Paillé, Boiral and Chen, 2013, p. 3569). However, these support mechanisms are not necessarily antagonistic but rather can complement each other if combined. It was found that both support for employees wellbeing and support for environmental issues can be complementary in their effect of EGB, although the authors acknowledge that this is only under certain conditions (Paillé, Mejía-Morelos, et al., 2020). This shows us that PSS and EGB have a more complex relationship than direct positive effects. This could be due to the lack of distinction between types of EGB, where the failure to differentiate proximal and distal EGB has led to in unclear results. It may be that supervisory support has little effect on employees distal EGB, as these are beyond the supervisor's scope and may detract from the focus on immediate goals within their work unit. Although there are mixed results, this study hypotheses that there will be a small positive relationship between PSS and EGB, which follows the traditional social exchange literature that acknowledges the relationship between PSS and OCB (Cropanzano & Mitchell, 2005). This relationship may be more important for proximal, rather than distal EGB, and will be influenced by an additional 'pro-environmental' factor (see section 3.2.5).

Hypothesis 5: PSS has a positive relationship with the

(a) green five EGB scale.
(b) goal proximity EGB scale.

3.2.4 Commitment influencing EGB

So far, we have discussed the social exchange mechanism that can lead to OCB and potentially EGB. However, this isn't always a simple relationship, and other factors are needed to be included in the prediction of EGB. A commonly used construct in social exchange theory is affective commitment. This type of commitment is "*an emotional attachment to the organization such that the strongly committed individual identifies with, is involved in, and enjoys membership in, the organization"* (Allen & Meyer, 1990, p.2). It was later clarified that this commitment concept is a mindset that binds individuals to a certain course of action that pursues one or more targets of the organisation (Herscovitch & Meyer, 2002; Meyer & Herscovitch, 2001). This commitment it much more proximal factor to the outcome of OCB or EGB.

Considering the established connections, particularly with OCB, there are only a few studies exploring affective commitment as a precursor to EGB. These studies consistently found a modest relationship between affective commitment and EGB (Afsar et al., 2020; Lamm et al., 2013; Saifulina et al., 2021; Temminck et al., 2015). The size of this relationship was found by some to depend on the extent of pro-environmental behaviours individuals exhibit in their personal lives (Paillé, Raineri, et al., 2019). Essentially the already established pro-environmental attitudes and behaviours of the employee interacted with their commitment to the organisation and EGB. In the same way there was a notably stronger relationship between EGB and employees' belief in the organisation's commitment to sustainability (Lamm et al., 2013). This could be attributed to the fact that while individuals may be committed to the organisation, they are more likely to engage in EGB if they perceive the organisation to be actively prioritising sustainability efforts. If the employees don't believe the organisation values environmental sustainability, they may not engage in EGB, as

this wouldn't fulfil the norm of reciprocity as posited by social exchange theory (Gouldner, 1960). Employees do favourable behaviours for the organisation when they feel this affective commitment (Cropanzano & Mitchell, 2005), but EGB may not be a favourable behaviour in this context. Therefore, affective commitment alone may not have as strong an effect on EGB unless there are other moderating factors, such as a green organisational climate (as discussed in the next section).

A pro-environmental element appears to be an important part of the antecedents of EGB. However, affective commitment it a strong predictive mechanism of positive behaviours at wok by the employees, such- as OCB (Cropanzano & Mitchell, 2005; Eisenberger et al., 1986, 2002; Kottke & Sharafinski, 1988; Meyer et al., 2002; Rhoades & Eisenberger, 2002; Shore & Wayne, 1993; Wayne et al., 1997). This strong relationship through an exchange mechanism could also influence the amount of EGB performed by employees. This reason is possibly due to the general fact that 'recycling' and other pro-environmental behaviours are seen as pro-social (Aguilera et al., 2007; Capstick et al., 2022; Ramus & Killmer, 2007). As other pro-social behaviours (e.g. OCB - Organ 1997) are performed by employees to reciprocate the social exchange mechanism, then employees who are strongly committed will also engage EGB due to their perception of being pro-social behaviours. Thus, commitment is likely to have a small relationship with EGB but hypothesised to be enhanced by a green organisational climate.

Affective commitment is also known to an important mediating factor with the support mechanisms in social exchange theory (Cropanzano & Mitchell, 2005). The relatioship of POS and PSS with EGB may be mediated by this affective commitment. As employees feel supported this creates the emotional attachment to the supervisor or organisation, which results in the reciprocity mechanism being activated more significantly and results in positive behaviour (e.g. OCB, EGB). This felt obligation is argued to be the

important psychological mechanism that leads to the reciprocating of positive behaviours of employees towards the organisation and/or supervisor (Foa & Foa, 1980; Rhoades & Eisenberger, 2002). POS has been shown to be highly related to affective commitment, although they are statistically distinguishable and acknowledge as separate constructs (Shore & Wayne, 1993). This line of research has been explored to a great extent and it has been shown that POS is an antecedent of affective commitment and is consistently a strong predictor (Eisenberger et al., 2001; Masterson et al., 2000; Settoon et al., 1996; Wayne et al., 1997), also evidence shows the same relationship between PSS and affective commitment (Casper et al., 2011; Stinglhamber & Vandenberghe, 2003).

In the studies that have used this social exchange mechanism to explore the relationship between POS and EGB, they all have included affective commitment as a mediating variable (Lamm et al., 2013; Paillé & Boiral, 2013; Saifulina et al., 2021). This follows the same hypothesis as previous studies. That the support from the organisation leads to a felt obligation and affective commitment which manifests as positive behaviour from the employee, namely EGB here. Indeed, it seems that affective commitment is the more important factor in relation to EGB, rather than the supportive well-being factors of POS and PSS.

Therefore, it is hypothesised that affective commitment will have a strong relationship with EGB. And due to the relationship with support factors in social exchange theory, the effect of POS and PSS will be mediated by affective commitment to the organisation, showing a similar mechanism explaining EGB as with previous research on OCB.

Hypothesis 6: Affective commitment has a positive relationship to all categories in the:

(a) green five EGB scale.
(b) goal proximity EGB scale.

Hypothesis 7: Affective commitment mediates the positive relationship between supportive mechanisms (POS & PSS) and all categories in the:

(a) green five EGB scale.
(b) goal proximity EGB scale.

3.2.5 Green organisational climate

The social psychological influence on individuals is not constrained to social exchange theory. Researchers have used the effects of the perceived norms of a group to explain behaviours, notably an organisational climate can also have a significant effect on the behaviour of employees (Schneider & Barbera, 2014). This is a normative mechanism that can influence an employee through their perception of policies and practices at work (Schneider et al., 2013), as well as the belief about the behavioural expectations of the work unit (James et al., 2008). This normative influence has been recognized as a mechanism to influence pro-environmental behaviours in many social contexts (Cialdini et al., 1991; Cialdini & Jacobson, 2021; Cialdini et al., 1990; Cialdini & Goldstein, 2004). The green organisational climate argues that individuals perceive what is the valued way to behave in a certain context, how 'ought' they behave (Cialdini et al., 1991; Norton et al., 2014). Thus, we would expect that within the workplace this pro-environmental normative influence would equally act as a predicting mechanism to EGB. By utilising the concept of an organisational climate at work in combination with the literature on pro-environmental normative mechanisms, the influence of pro-environmental norms at work on EGB can be elucidated.

The increasing interest in environmental sustainability has led to the development of green organisational climates. Norton *et al.* (2017) define this as a "*employees' perceptions and interpretations of organisational policies, procedures, and practices regarding environmental sustainability*" (p.997). There is already a much evidence showing that this green organisational climate has a strong positive effect on EGB (Chou, 2014; Norton et al.,

2014, 2017; Tahir et al., 2020), predominantly as a mediator to environmental strategies, policies and procedures (Biswas et al., 2021; Dahiya, 2020; Das et al., 2019; Naz et al., 2023; Norton et al., 2014, 2017), but also mediates green human resource management (Dumont et al., 2017) and green transformational leadership (Robertson & Carleton, 2018). It also leads to more satisfied and committed employees through organisation-fit mechanisms if the employees green attitudes match the green organisational climate (Hicklenton et al., 2019b).

The interaction between this green organisational climate and the conventional (well-being) exchange mechanisms have received little attention in the literature. This is mainly due to the overwhelming evidence for environmental specific support mechanisms for both perceived organisational support (POS-E) (Lamm et al., 2015; Saifulina et al., 2021) and perceived supervisory support (PSS-E) (Blok et al., 2015; Cantor et al., 2012; Paillé, Raineri, et al., 2019; Raineri & Paillé, 2016). These specific environmental supportive constructs don't include well-being and therefore could actually be at a detriment to the employees' welfare in some cases. This research has taken the approach of supporting employees through the more common conceptualisation of support but has found the evidence unconvincing (or even negative – e.g. Paillé et al., 2013) with regards to EGB.

As has been described, in lieu of a green element in the support construct, it seems an imperative for there to be some kind of pro-environmental factor in predicting EGB. This chapter proposes that a factor that could moderate this relationship between social exchange mechanisms (POS, PSS and affective commitment with EGB) would be a green organisational climate. This would occur through in the same way, in that there is a felt obligation to return positive behaviours through the reciprocity mechanism described in social exchange theory, however with the addition of a green organisational climate. This addition could result in EGB, rather than other types of OCB, as the employee perceives their organisation to care about being environmentally sustainable and therefore behaving in a pro-

environmental way would fulfil the reciprocity mechanism. In this case the positive reciprocity behaviour of the employee that is usually observed in social exchange theory (e.g. OCB) would be equally fulfilled by EGB instead, as the employee interprets that this behaviour would be valued in their organisation.

There is evidence that a green organisational climate can affect EGB through this contextual normative effect, by signalling to employees that their organisation cares about environmental sustainability. It can moderate many relationships, with evidence it has been shown to enhance the relationship between leaders pro-environmental behaviour and employee EGB (Wu et al., 2021) and also moderates the intention to perform EGB and next day EGB (Norton et al., 2017). This pro-environmental contextual factor can act as a powerful factor that can moderate various pathways to EGB and, as explained, we would expect it to enhance the relationship between PSS, POS, and affective commitment with EGB.

Hypothesis 8: A perceived green organisational climate will moderate the relationship between affective commitment and EGB so that with stronger organisational climate there is a stronger relationship with the

(a) green five EGB scale
(b) goal proximity EGB scale

3.2.6 Strength of a green organisational climate

Chapter 3 has so far hypothesised the model and the relationships between the constructs, also the potential mediation and moderation that will be observed from affective commitment and green organisational climate respectively. Additionally, to these hypotheses described, the model presented can also test for moderated mediation, meaning that not only does the green organisational climate moderate the relationship with affective commitment and EGB but it could also moderate the mediation pathway described in the previous section.

This would mean that the hypothesised pathway that leads to EGB proposed in section 3.2.5 would be found to be a stronger predictor under the condition of a stronger green organisational climate. This would be through the same mechanism, that affective commitment is predicted in employees through perceived organisational and supervisory support due to the reciprocity mechanisms (Gouldner, 1960) and felt obligation to return favourable behaviour towards the organisation for this support (Cropanzano & Mitchell, 2005; Foa & Foa, 1980). The handful of studies looking at the relationship between support mechanisms and EGB also use affective commitment as a mediator, showing some mediation effect (Lamm et al., 2013; Paillé & Boiral, 2013; Saifulina et al., 2021). What has not been explored it whether this mediation effect is particularly strong under certain conditions. It may be that when there is also the perception of a strong green organisational climate and employees believe their organisation to care about environmental issues, then the mediating effect of affective commitment is particularly strong. This would be combining the traditional social exchange mechanisms found in organisational studies with the normative effect of a green organisational climate, exploring the importance of specifically 'strong' versus 'weak' green organisational climate conditions.

The evidence for this contextual factor is burgeoning (Biswas et al., 2021; Hicklenton et al., 2019a; Norton et al., 2014, 2017; Robertson & Barling, 2013) however it seems that it has not been applied as a moderating factor on this type of social exchange relationship as described in this thesis. As argued in the previous sections, the effect of the traditional social exchange mechanisms may not be as effective at prediction of EGB as other outcomes (e.g. OCB), as there would need to be a sense from the employee that their organisation cares about their environmental contribution. While there will be some effect of the mediation pathway regardless of the green organisational climate, it would be expected that the stronger this factor is – the more EGB would be observed. In this way the green organisational climate

measure is hypothesised to influence the mediation of both perceived organisational and supervisory support, specially between the second part of the mediation pathway – that between affective commitment and EGB.

Hypothesis 9: The affective commitment mediation pathway between supportive mechanisms (POS & PSS) and EGB will be stronger under the condition of a strong green organisational climate versus a weak green organisational climate for the

(a) green five EGB scale

(b) goal proximity EGB scale

3.3 Green descriptive norms

There is a lack of emphasis in the literature on EGB how the behaviours of others influence individuals EGB. The literature is burgeoning on green organisational climates, yet there is a lack of acknowledgement that what many of these studies are doing, is measuring the green injunctive norms as they often use the values-based measure from Norton et al. (2014). This misses the descriptive norm element described by Cialdini et al. (1991), and loses some of the nuance of what kind of 'norm' most studies are actually measuring. The concept of green descriptive norms (i.e. specifically the green behaviours of others) as an influencing factor on employees EGB has not been studied as research tends to gravitate to the established constructs, such as injunctive organisational climate perspectives (Norton et al., 2014, 2017). However, as described in the literature review, there is the potential for values-action gaps (Blake, 1999), meaning that the espoused values around environmental sustainability and the actual behaviours at the organisation are different. Therefore, while some individuals may say that they are concerned about climate change or ecological crises, they may actually do very little to act towards supporting any type of change.

This area of the literature is understudied and it is important to fill this lacuna of understanding around descriptive norms as an antecedent to EGB. As according to the theory of normative conduct, descriptive norms (what people observe to actually occur on a day-to-day basis) is a stronger predictor of pro-environmental behaviours than injunctive norms (Cialdini & Goldstein, 2004; Mortensen et al., 2017). The perception that others are also acting towards environmental sustainability has also been noted by others in relation to pro-environmental behaviour (Steg & de Groot, 2010), and that it is "particularly important in case of large-scale problems that can only be solved when many people cooperate, such as reducing harmful emissions" (p.727). A parallel study in organisations supports this type of hypothesis, as it was found that exemplary behaviour of the leader regarding the environment (descriptive normative influence) was more important than the support they gave for the subordinates to perform EGB (relational influence) (Wesselink et al., 2017) – this is a 'walk the walk' rather than just 'talk the talk'.

The green descriptive norm in this chapter is specifically in contrast to the injunctive norms that will be test (see section 3.2). This injunctive norm was operationalised as the green organisational climate, where-as in this chapter the descriptive norm is operationalised as a set of EGB that the participants perceive their colleagues to engage in. Both the green four EGB scale and goal proximity EGB scale created in chapter 3 will be used, to test if there are similar outcomes for both models. This chapter also tests how unique categories of EGB can also be affected by these mechanisms.

The hypotheses from this section will contribute in multiple ways. First, it will explore the currently understudied mechanisms of how green descriptive norms in the workplace can affect EGB. This seems to be a novel area to explore that has been overshadowed by the research in this area focusing on the green injunctive norm.

Second, this will test whether this green descriptive norm can also contribute to the environmental commitment of employees as they would perceive that it is possible to reach these environmental goals rather than becoming burnt out, as has been found with 'green' employees in previous research (Wright et al., 2012; Wright & Nyberg, 2012).

Third, in the same way as chapter 4, this will test whether the antecedents of this model will affect different categories of EGB in unique ways. Fourth, this has practical implications for organisations as if they focus on mission and value statements and create a culture where there is a disconnect between what is said to be valued (injunctive) and what actually is observed (descriptive), there could be consequences for the employee-organisations relationships. An example may be that the trust employees have in their organisation diminishes and perceptions of greenwashing occur.

3.3.1 Green descriptive norms and EGB

This chapter uses two models which tests both the green four scale (with four categories: conserving, transforming, influencing others, and taking initiative) and the goal proximity EGB scale (two categories: proximal and distal). Proximal behaviours have certainty regarding the outcome as they are immediate, straightforward, and individual in nature. In contrast distal behaviours are characterised as having uncertainty regarding the outcome as they are long-term, complex, and require collaboration among multiple actors within the organisation. These multidimensional scales enable this chapter to investigate whether there are unique mechanisms that influence the various categories of EGB differently. It may be that the hypothesis affects one category more substantially than the other categories. Analogous to the previous section (3.2), the difference between these two models were the outcome variables. In model 1 the green four scale was used, whereas model

2 was tested through the goal proximity Scale. Figure 3.3 and 3.4 shows the both the models and the how the outcome variable is conceptualised.

This thesis tests these relationships by utilising a green descriptive norm and also the employee's commitment to the organisation's environmental goals. Descriptive norm is in contrast to the injunctive norm described in previous section (i.e. green organisational climate); the commitment construct is focused on environmental goals specifically not general affective commitment to the organisation. These hypotheses are described in the next three sections.

Figure 3.3 – Illustration of the model of green behavioural norms relationship with green five EGB scale, mediated by employee environmental commitment

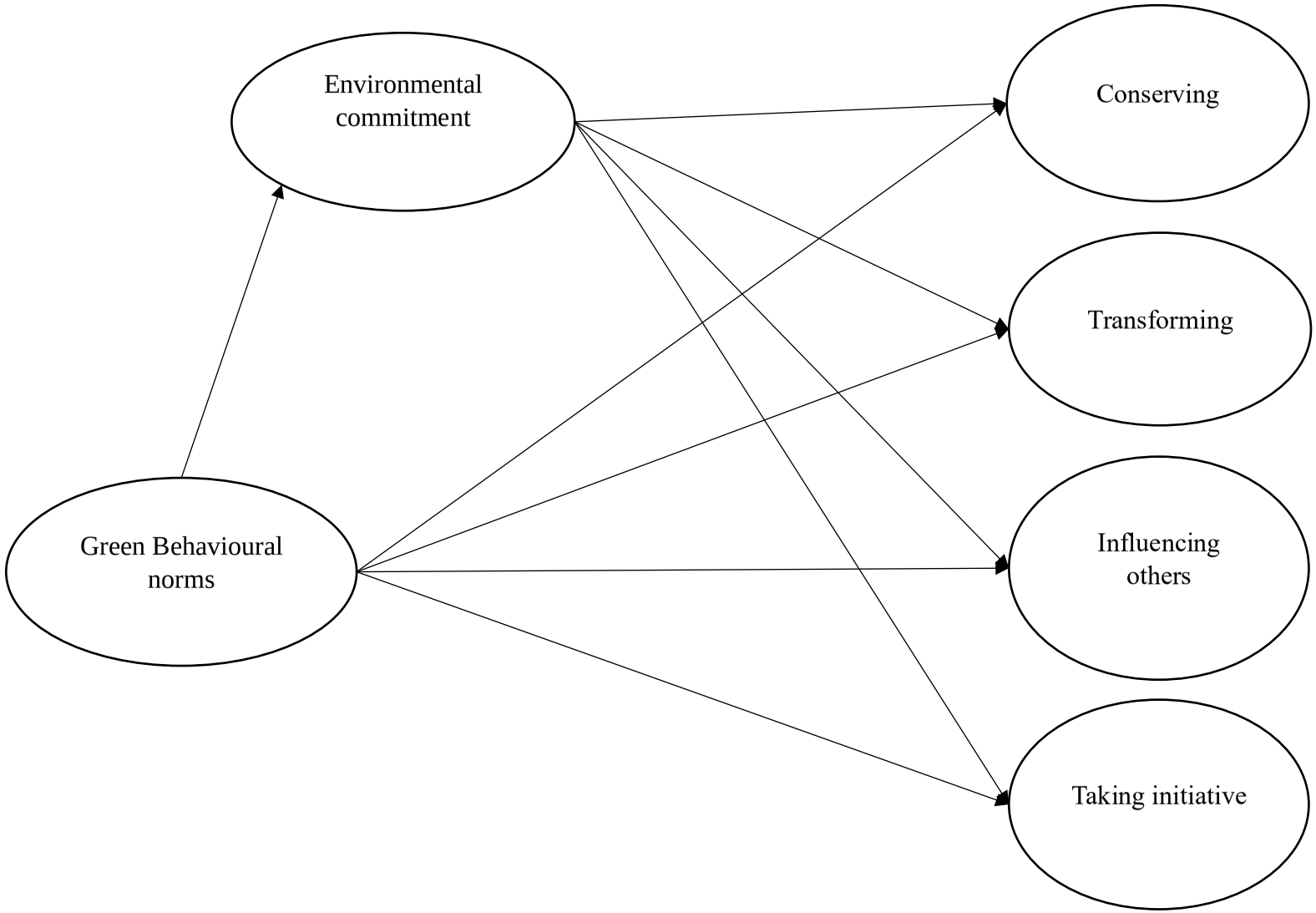
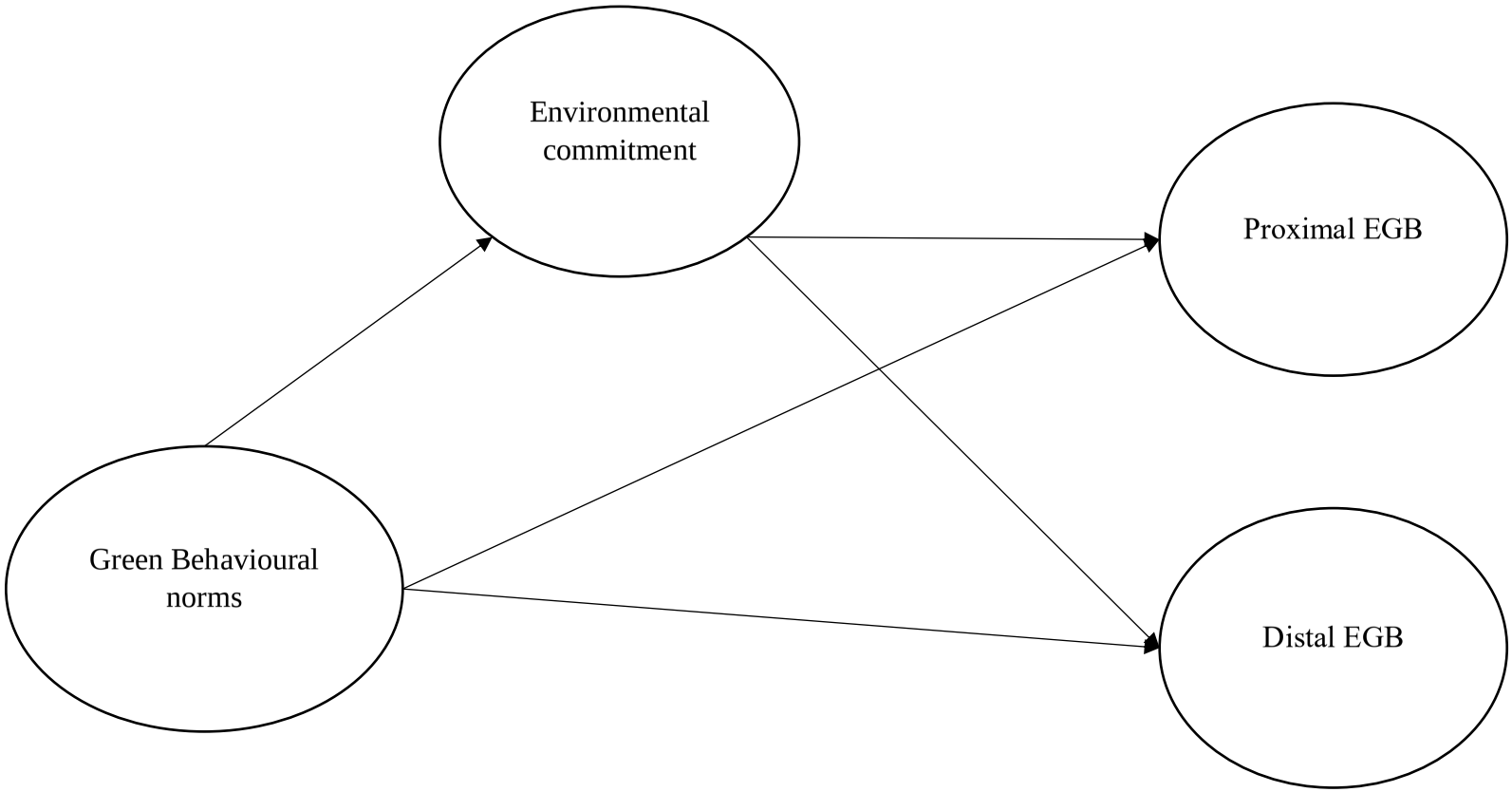


Figure 3.4 – Illustration of the model of green behavioural norms relationship with goal Proximity EGB scale, mediated by employee environmental commitment



3.3.2 Theory of normative conduct

In their theoretical framework Norton et al. (2015) found that normative factors are one of four main antecedents to EGB. The prominent theory of normative conduct has been used to explain why individuals in various contexts will behave in more pro-environmentally friendly ways (Cialdini et al., 1990). This theory attributes the perception of social contexts as a mechanism for influencing behaviours of individuals who conform to what they perceive as the acceptable behaviour in the context they find themselves in (Cialdini et al., 1991; Cialdini & Jacobson, 2021). This is also an essential part of the theory of planned behaviour which believes that social norms are an important factor in predicting behaviour (Ajzen, 1991). This idea of normative influence is defined as "*an individual determining appropriate behaviour for themselves in a situation [by examining] the behaviour of others there, especially similar others*" (Prentice & Paluck, 2020, p.138). This has been extended into organisational research through the study of organisational climates (James et al., 2008), and particularly in relation to pro-environmental agendas through green organisational climates (Chou, 2014; Norton et al., 2014). The idea is somewhat commensurate with organisational culture (Schneider et al., 2013), but is more psychological in its application that looks at the individuals perceptions of "*the behaviours they observe being rewarded, supported, and expected*" (ibid, p. 381).

In an organisational context, injunctive norms would be characterised by the organisation's (and the employees) values. A green organisational climate, for example, would be a perception that the organisations impact on the environment is of concern (e.g. Norton et al., 2014). In contrast, descriptive norms would reflect the actual behaviours exhibited by individuals throughout the organisation. For instance, despite the organisation or its leaders espousing environmental sustainability and expressing concerns, their actions may not align with these values, thereby creating a discrepancy between rhetoric and behaviour.

Few studies have look at this important area, however their findings show the importance of exemplary (pro-environmental) behaviour by leadership as an antecedent to employees EGB (Wesselink et al., 2017). The leadership behaviours can influence others through the signalling that these are valued behaviours in this context. It is important that leaders behave pro-environmentally and 'walk the talk' due to the amount of greenwashing being engaged with by firms (Delmas & Burbano, 2011), and with some studies finding greenwashing having a negative effect on EGB (Tahir et al., 2020). This research also points to the behavioural influence of others as important drivers of EGB.

Descriptive norms have been found to effect peoples pro-environmental behaviour, especially in individuals who have low internal personal norms that are related to being pro-environmental (de Groot et al., 2021). An intervention study also found that reduction in household water use (a pro-environmental behaviour) was most strongly predicted by a combination of social norms and a commitment by the participants (Jaeger & Schultz, 2017). This descriptive norm can also be conceptualised as a 'dynamic' or 'trending' norm, which acts upon people by eliciting a pre-conformity to an emerging norm that is not yet mainstream (Loschelder et al., 2019). This leads individuals to conform to currently minority norms that are growing in social acceptance due to the perception that more individuals engaging in a certain behaviour (Mortensen et al., 2017). This concept has been applied to pro-environmental behaviours, finding that the dynamic descriptive norm is the most powerful predictor when compared to other normative mechanisms (Sparkman & Walton, 2017). This descriptive norm has also been found to improve sustainable consumption and reduce waste (Loschelder et al., 2019).

Considering this evidence for descriptive norms in pro-environmental behaviour in society more widely, it would be expected to be a factor that would have predictive power with regards to EGB. This influence can be more effective in contextually closer scenarios

known as the ‘unit-level’, which is the “*the perception of what is considered the standard mode of behaviour in the unit”* (Ehrhart, 2004, p.65). This shifts the focus of the behaviour to the colleagues around employees and takes into account the normative elements emerging from social interactions and observations among individuals in the workplace. This ability of the group or work unit to influence an individual’s own behaviour has been shown in adjacent areas to EGB. The more traditional conceptualisation of OCB has been found to be influenced directly and indirectly by both the leader and colleagues who performed similar behaviours (Kidwell et al., 1997). According to the findings of others, there is evidence indicating that the citizenship behaviour among colleagues positively influences individual employees' engagement in similar behaviours (Bommer et al., 2003). Additionally, it has been observed that when colleagues provide increased support behaviours (a type of OCB), individuals are more likely to exhibit their own OCB (Chiaburu & Harrison, 2008). Further, this positive relationship has been found in collective citizenship behaviour (collective OCB) in relation to organisational performance (Gong et al., 2010). Thus, if an individual perceived their colleagues to be performing EGB, then they themselves would be influenced to also perform these behaviours.

The current research looking at this phenomenon is sparse, only one study has been found to look as this normative influence by looking at ‘work group green advocacy’ (Kim et al., 2014). They operationalised this by measuring behaviours that were in the ‘influencing others’ category of EGB and this was distinct from personal initiative (although not stating they were using ‘influencing others’ – but using the taxonomy from this thesis, that would be what is determined i.e. from Francoeur et al., 2021;Ones & Dilchert, 2012a). An example item they used to operationalise influencing others was, “I share knowledge, information, and suggestions on workplace pollution prevention with other group members”. These behaviours were aggregated and using the consensus shift model (Chan, 1998), a green group advocacy

was assumed and at a later timepoint related to individual EGB. Although they described this as collective behaviours, they were in actuality they were measuring a green descriptive norm in the organisation. This emerging evidence shows how a group can influence an individual in terms of their pro-environmental behaviours.

This chapter extends these contributions to the literature by not just using the injunctive green norms operationalised as a green organisational climate (i.e. Norton et al., 2014), or solely the influence of the influencing others category of EGB (i.e. Kim et al., 2014), but using general perception of EGB of colleagues as a predictor of individuals EGB. As described by the theory of normative conduct (Cialdini et al., 1990), the salience of the green descriptive norm to employees will predict the likelihood that they perceive EGB as a socially approved of behaviour and be will be influenced to perform these behaviours to greater extents.

Hypothesis 10: The green descriptive norm of the organisation will be positively related to each category of the:

(a) green five EGB scale

(b) goal proximity EGB scale

3.3.3 Employee commitment to environmental goals

As environmental sustainability becomes more prevalent in organisations, the role of employee commitment to the environmental goals of the organisation (employee environmental commitment) will concomitantly become more important (Keogh & Polonsky, 1998). Commitment is a key component of predicting behaviour (Kiesler, 1971), and can lead to individuals behaving in line with this commitment to fulfil the psychological need for consistency (Festinger, 1957).

Research has begun to explore this environmental commitment construct, explicitly using multiple commitment literatures in its creation (Raineri & Paillé, 2016). This construct includes affective commitment and commitment to change. These constructs are together encapsulated in the 'mindset' that would be needed for employee environmental commitment, as both a sense of affective attachment to the environmental concerns of the organisation and a commitment to change would be required. This employee environmental commitment has been described as similar to affective commitment but combines the specificity of environmental sustainability as an *''emotional attachment, identification, and involvement with environmental behaviors*'' (Cantor et al., 2012, p.36). It is argued that environmental sustainability is also a social responsibility issue and acts as a pro-social motivator that goes beyond the organisation (Aguilera et al., 2007; Raineri & Paillé, 2016). This pro-social component to employee environmental commitment could also introduce normative commitment elements, as it is ''*an internal, obligation-based motivation''* (Perez, 2009, p. 599), meaning that individuals feel they *ought* to act in a certain way as it is the right thing to do (Wiener, 1982). This is because of the social cause (protecting the natural environment and consequentially society), which has led some to argue that employee environmental commitment would include feelings of responsibility to be good citizens, resulting in normative commitment to their organisations goals of becoming more socially responsible (Paillé & Raineri, 2016; Perez et al., 2009). Therefore, while normative commitment has been found to not be a strong a predictor of OCB (Meyer et al., 2002), this pro-social element would be more integral to employee environmental commitment (Meyer & Parfyonova, 2010). Thus, this construct could be argued to have a strong predicting power of EGB as the concept includes normative commitment (ibid), commitment to change (Herscovitch & Meyer, 2002), and affective commitment to the organisation (Allen & Meyer,

1990). Combining these three commitment elements represents the power that this construct could exert on individual EGB.

Employee environmental commitment is a relatively new construct but has shown great capacity as a predictor of EGB. The study that created the measurement instrument found a strong relationship between this construct and EGB (Raineri & Paillé, 2016). Since then there has been consistent evidence that this is an important predictor of EGB (Afsar & Umrani, 2020; Paillé & Mejía Morelos, 2017; Perez et al., 2009; Safari et al., 2018). Strong correlation was also found between employee environmental commitment and EGB by others, although not directionally hypothesised (Abbas et al., 2022; Pham et al., 2020) and leads to other outcomes, such-as environmental performance (Pham et al., 2020; Sharma et al., 2021). Therefore, employee environmental commitment is a prominent factor in the antecedents of EGB. This is likely because of the focused characteristic of the commitment (to the environmental goals of the organisation) would logically lead to discretionary behaviours that reflect this type of commitment i.e. EGB. It seems likely that this focal attention would be the reason for the strong evidence for employee environmental commitment and EGB.

Hypothesis 11: Employee environmental commitment will have a strong positive relationship with each category of the:

(a) green five EGB scale

(b) goal proximity EGB scale

3.3.4 The influence of norms on commitment

The evidence for descriptive normative influence on pro-environmental behaviour is substantial (Cialdini et al., 1991; Cialdini & Jacobson, 2021; Cialdini et al., 1990; Mortensen et al., 2017; Sparkman & Walton, 2017), yet there has been little exploration into any individual mechanisms behind how this translated into pro-environmental behaviours in the

workplace. To make oneself consistent with this green descriptive norm in an organisation, employees will perceive that a specific way of behaving is valued in their workplace (e.g. EGB). While there is likely a direct relationship between green descriptive norm and EGB, as hypothesised, there will also be some kind of individual psychological factor that could mediate this relationship within the employee. One of these mediating factors could be employee environmental commitment.

As employees determine that there is a green descriptive norm, meaning that they observe colleagues to act in a certain way, while they may adhere to this norm through unconscious mechanisms, they would also likely need to justify the behaviours that they are performing to themselves. This will mean they may undergo some motivational process to give meaning to their choice to perform EGB. One mechanism would be commitment, as this is generally considered a 'mindset' which is a psychological state that can be expressed intuitively (Herscovitch & Meyer, 2002). This commitment would need to be present to reduce any cognitive dissonance that an employee would experience between performing EGB and their own commitment to the organisation's environmental goals. Thus, the employee would have to resolve the discrepancies that they would detect between their potential action (EGB) and commitment to the goals of these actions (or lack of). This is supported by Festinger's (1957) consistency model, that people go through a process of aligning their actions and beliefs, by either performing less of a behaviour or changing their attitudes. As commitment is a psychological state, is can be thought of as an attitude in this sense (Meyer et al., 2002).

The influence of green descriptive norms on EGB will be mediated by this individual psychological mechanism (commitment to the organisations environmental goals). Through the psychological process of maintaining consistency in the self, behaviour and attitude

should align. It is therefore hypothesised that the green descriptive norm could lead to EGB through the mediation pathway via employee environmental commitment.

Hypothesis 12: Employee environmental commitment of the organisation will mediate the relationship between perceived colleague EGB and each category of the:

(a) green five EGB scale

(b) goal proximity EGB scale

4. Method

Chapter 4 will describe the methodology that this thesis used to examine the EGB construct and test the relationships between EGB and the social psychological mechanisms.

4.1 Two-part methodology

To create an instrument that represents the green five taxonomy (Ones & Dilchert, 2012a), a two-step process was undertaken. The first part distilled this large set of items from the 171-item catalogue (Francoeur et al., 2021) into five workable measurement scales by a four phase reduction process. The aim of this process was to reduce the number of items within each category of the green five taxonomy to five items, which would lead to a 25-item measurement scale in total (described in more detail in section 5.2). Further, through this reduction process, items were also representative of the subcategories within each of the five categories. This process included four phases: (1) clustering the items by similarity within each sub-category (or using the subcategories themselves as the pre-defined cluster, if there were not enough items in the subcategory to warrant clustering), (2) finding items that represented that cluster of items adequately, (3) refining these items and changing the wording of each item slightly to create consistency (while maintaining the meaning of the item), and (4) finalising the five items that were chosen to represent that category (See appendix A - E for a full breakdown of each category and the phases). This resulted in five subscales of EGB that broadly represented the categories and sub-categories of the green five taxonomy (Table 3.1), thus giving a five-part subscale instrument of EGB. The face validity of these five subscales were evaluated and item representativeness checked through discussion with other researchers.

The second part of this research consisted of the statistical tests. This included testing this newly operationalised 25-item scale via confirmatory factor analysis, to determine the

multidimensionality of EGB. The nomological network of the green four EGB scale and the goal proximity EGB scales were then tested. After this, 2 models were used to examine the data and further explore EGB. The first used support mechanisms in a moderated mediation model to test the EGB outcome. The second model used a green descriptive norm to see the relationship with EGB.

4.2 Operationalising the green five taxonomy

The first phase was to group the items into clusters by the similarity of the questions, this has already been done in part by Francoeur et al. (2021) and this phase of the study furthered that work, identifying similar items through mentioning of similar behaviour (e.g. turning off computer/turning off laptop/switching off computer/powers down desk electronics) and grouping them to reduce the number of items that described the same concept. This was especially needed for the 'conserving' category as there were a total of 81 items in this category alone, constituting 47.65% of the items found in the literature. This large number of items within some subcategories required the clustering efforts at phase 1 of the reduction process. For example, there were 23 items alone describing in various forms whether the employee recycled paper, batteries, cans, and bottles at work. Thus, even within sub-categories such as 'recycling' that was within the category of 'conserving', there were clusters of questions, which needed to be delineated. There were 12 clusters within conserving category (split between the two subcategories), 0 clusters in avoiding harm and transforming (low number of items which meant sub-category delineation sufficed), two of the three subcategories within influencing others required clustering (leading to both having four clusters), and taking initiative also had two of the four subcategories having further delineation via clustering of items (leading to two clusters in each of these subcategories). At this stage the subcategory 'educating and training for sustainability' was split into two subcategories as some of the items referred to educating others e.g. "I share knowledge,

information, and suggestions on workplace pollution prevention with other group members" (Kim et al., 2014), while other questions were focused educating the self e.g. "At work, I try to learn more about the environment" (Graves et al., 2013). The items that matched this latter question, were assigned as a new subcategory within the transforming category as these were considered to be behaviours that would transform the workplace through knowledge gained by the individual. It may be that it leads to educating others, but this seemed like a conceptual difference and was therefore split in this first phase (See appendix C and D).

The second phase was to reduce the number of items by choosing key items that represented each cluster of questions. Many of the subcategories had a few items that were identified as being in that category. For example, this was the case for the subcategory 'creating sustainable products and processes' which only had one item, so this item was then moved into the next phase as representing that subcategory. The original items from the studies were kept at this stage, the only exception was the conserving category as there were so many items that were similar these had to be rewritten and summarised as one question e.g. "at work I recycle all paper waste (including cardboard)", which was an amalgamation of six separate items from five studies. At the end of this phase the number of items had been reduced from 171 to 60 with the largest reduction of 81 items down to 16 occurring in the conserving category (this required to perform this second phase twice on this category due to its size). Table 3.2 shows the number of items at each phase of the reduction process.

The third phase was to refine the 60 items further by reducing the number of items for each subcategory to three (or less if possible). The purpose was to have a few items representing each sub-category, ultimately representing each category equally through the diversity of their defined subcategories. In this phase the questions were slightly edited to be more coherent with other items, similarly to the process in phase two for the conserving behaviours category. This meant rewriting some of the questions and changing the tense

(removing phrases such-as ‘today’) and adding phrases at the beginning (‘at work…’) to make the questions more consistent and analogous. Any items that seemed to overlap with other subcategories were identified and items were chosen that represented that subcategory more accurately. At the end of this phase the number of questions had been reduced from 60 items to 41 with there being less than 10 items for each category.

The fourth phase was to choose five items to represent each category, this had mostly been attained already by the actions of the previous phases of refinement and therefore meant discarding only a few items from each category in the final selection process. The aim was to have at least one item for each subcategory where possible, so if there were five subcategories (i.e. within transforming) then one item from each subcategory was selected. This reduced the final selection of items from 41 down to the intended 25-items with five items for each category of the green five taxonomy. Thus, through this four-phase process a 25-item usable measurement scale was produced based on the green five taxonomy. These items were not only representative of each of the five categories but also representative of the subcategories (see appendix A - E for details).

Table 4.1 - Number of items during each phase of creating the measurement model

	Conserving	Avoiding harm	Transforming	Influencing others	Taking initiative	Total
Phase 1	81	7	18	24	41	171
Phase 2	16	6	12	12	14	60
Phase 3	9	6	9	8	9	41
Phase 4	5	5	5	5	5	25

As there is now a clear construct definition from section 3.2, and this construct definition has been operationalized through the reduction process in this section (3.3.2), the next step of scale development is to test the construct validity of the items (Lambert & Newman, 2022).

4.3 Statistical methodology

The following section of reported results follows the guidelines suggested by (Jackson et al., 2009). The software used to perform the structural equation modelling was 'lavaan', a package in the program R (Rosseel, 2012) with the estimation routine being maximum likelihood and missing data treatment was listwise deletion, which is the default setting for lavaan. All the data used in this study was checked for normality before being included in the modelling. This was done by checking visually the frequency distribution (histograms) of each item's dataset. It was found that there were bell curves throughout all item datasets. This is an appropriate way to check for normality, and statistical tests will be reliable when you have a moderate to large sample size (Field et al., 2012; Ghasemi & Zahediasl, 2012). If the dataset is small researchers can use tests that specifically aim to test the normality of the data, such-as the Shapiro-Wilk test, but these tests are generally suggested to be used if the sample size is less than 50 (Elliott & Woodward, 2007). However, due to the size of this study (455 participants) using visual tests is deemed adequate (Ghasemi and Zahediasl, 2012), and the results showed normal distribution throughout the items datasets. Also due to the central limit theorem, when a study has a sufficiently large sample size from a population the distribution of the sample mean will approximate a normal distribution, regardless of the original population's distribution (Field et al., 2012).

In all the tests ran on the models in this chapter, the latent variables were scaled by loading the variance of the first item in each subfactor to 1 which is the default in the lavaan package. By fixing the indicator items to specific factors, a deductive approach can be taken that is more in line with confirmatory factor analysis (CFA), rather than an inductive approach looking at exploratory factor analysis. This could be done due to the previous work on the green five taxonomy already present in the literature, and the reduction and refinement process undertaken in section 3.2. CFA was used as it is a statistical technique used to test

whether the observed variables (indicators or items) adequately represent the latent constructs (factors) they are supposed to measure (Brown & Moore, 2012).The final model was tested as a unidimensional construct to compare how well the data fits to the model, determining if the hypothesised categories were in fact the most appropriate way to conceptualise the EGB categories.

In CFA, the researcher starts with a hypothesised measurement model, where each observed variable is associated with one or more latent factors. The relationships between the observed variables and the latent factors are represented by factor loadings, which indicate the strength and direction of the relationship (Brown & Moore, 2012). CFA assumes a predefined factor structure based on theory and specifies how many factors there are, and which observed variables load onto each factor. This structure guides the analysis by providing a framework for testing the fit of the model to the data. So, in the case of this study, how well the items load onto each subfactor and determining if these subfactors are related to each also. This CFA is then assessed by how well the measurement model fits the observed data. This is done by testing the goodness-of-fit indices, such as the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), standardized root mean squared residual (SRMR), and Root Mean Square Error of Approximation (RMSEA), all of which are the more commonly used indices to evaluate model fit (Hu & Bentler, 1999).

The CFI assesses the goodness-of-fit of a hypothesized model relative to a baseline model that is unspecified. It ranges from 0 to 1, with values closer to 1 indicating a better fit. Generally, a CFI value of 0.95 or higher suggests an excellent fit, values between 0.90 and 0.95 indicate a good fit. The TLI also assesses model fit by comparing a specified model to a null model but includes degrees of freedom to and so adjusts for model complexity. TLI values also range from 0 to 1, with values above 0.95 indicating a good fit and values

between 0.90 and 0.95 considered acceptable. The SRMR measures the average discrepancy between observed and predicted correlations; values less than 0.08 generally indicate a good fit and below 0.06 very good fit. The RMSEA estimates the lack of fit per degree of freedom, adjusting for model complexity. RMSEA values below 0.05 suggest a close fit, values between 0.05 and 0.08 indicate a reasonable fit (Fan & Sivo, 2007; Hu & Bentler, 1998, 1999).

Once the model fits the data to satisfactory level (according to the fit indices), the factor loadings can be interpreted to understand how well the observed variables represented by the underlying constructs. In the case of this chapter, this means that that the items referring to certain behaviours (observed variables) do in fact represent the underlying construct (i.e. the category of EGB – 'conserving', for example). If the factor loadings are high, this shows that the items (types of behaviour) are good indicators of factor (category of EGB.

For the moderation, the interaction variable was created by mean centring the two indicator items (affective commitment and green organisational climate) and then calculating their interaction. This was done using the 'indProd' function in lavaan. Mean centring involves subtracting the mean of a variable from all individual observations of that variable in the dataset, resulting in a new mean of zero for the variable (Iacobucci et al., 2016). This is done to prevent the new interaction variable being too closely related to both the variables that are used to make it in the model, thus preventing multicollinearity (ibid).

The analysis was done through structural equation modelling, using this technique to elucidate the structural relationships among the latent variables. This was completed using Lavaan – a package in the software R (Rosseel, 2012) – with the estimation routine being maximum likelihood and missing data treatment was listwise deletion. For both Model 1 and

Model 2, fit indices were reported to test the validity of the model in accurately representing the data (not including the EGB factors as these had already been tested in the scale development model). The recommended fit indices for maximum likelihood modelling were used (Hu & Bentler, 1998), these were the chi-square statistic, the comparative fit index (CFI), the Tucker Lewis Index (TLI), the root mean square error of approximation (RMSEA), and the standardized root mean residual (SRMR).

This study tested a confirmatory factor analysis with only the predictor and mediating variable, as the outcome variables has been tested extensively in the previous scale development model. This is to check that the other variables in this study factor structures as expected. This study was built upon Jackson's (2001) previous work that when the number of participants is between 200-400 it produced better confirmatory factor analysis results that samples of only 100 participants. Tinsley and Tinsley (1987) also have suggested a ratio of 5 to 10 participants per item.

In this study, mediation was examined using a method involving 5,000 bootstrap resamples. The main objective was to assess the significance of the indirect effect of the colleague's behaviours on the individuals, and the extent to which the employee's environmental commitment mediates this relationship. Mediation is considered evident if the bias-corrected confidence interval (95%) does not encompass zero, as outlined by Preacher and Hayes (2008).

4.4 Sample and Procedure

Participants comprised 455 full-time employees in the UK and USA. The aim of the study was to reach over 400 participants in the recruitment of the sample, as samples of this size produced better confirmatory factor analysis results than smaller samples (Jackson, 2001,

2007). This study satisfies Tinsley & Tinsley (1987) suggestion of a ratio of 5 to 10 participants per item. The participants were recruited through dissemination on social networking sites (LinkedIn and twitter) as well as Amazon Mechanical Turk. It is argued that convenience sampling is appropriate when the aims of the study are focused on underlying theoretical relationships, which is the case with this study (Highhouse & Gillespie, 2009), and that it also has some advantages (such-as increasing the sample heterogeneity – Demerouti & Rispens, 2014). Amazon Mechanical Turk also accesses a large and diverse population, and some argue it to be as reliable as other traditional methods for data collection (Buhrmester et al., 2011). As some of the participants did not complete all the questions in the survey related to the factors in this study, some of the later mediation analyses was done with 408 full-time employees in the UK and USA. The sample was dominated by ethnic origin white with 342 (86%), had higher male respondents 268 (59%), average age 37 (SD = 11.15), average tenure 14 years (SD=13.8). The participants organisational size was not dominated by any group, 84 respondents from small organisations (1-25 employees), 83 (25-50 employees), 80 (50-100 employees), 70 (100-250 employees), and 102 from larger organisations (250+ employees).

As the data collected were self-reported questionnaires, common method variance (CMV) is an issue that could arise (Podsakoff et al., 2003). In an attempt to partially reduce CMV in the procedure, double-barrelled questions were avoided, clear concise questions were used, and also uncomplicated language was used (MacKenzie & Podsakoff, 2012). Additionally to these preventative procedures a Harman's single-factor test was also used, which is one method to test CMV (Podsakoff et al., 2003).

Two models were tested to determine the relationship between the factors used in this study. The difference between the models was how the outcome variable (EGB) was conceptualised and how the items were constrained. In model 1 the green four scale was used which included the four categories of EGB (conserving, transforming, influencing others, and

taking initiative), whereas model 2 was tested through the goal proximity Scale which is constituted of proximal and distal scales.

4.5 Measurement variables

The items in the EGB scales (green five and goal proximity) were on a 1-5 Likert scale with the range of answers from 'never' to 'always'. The items used for each of these scales can be found in Tables 3.3 and 3.4. The Cronbach's alpha for each of the EGB categories were: 0.75 (conserving), 0.86 (transforming), 0.89 (influencing others), 0.89 (taking initiative), 0.8 (proximal), 0.92 (distal). The following constructs were measured using the validated scales of other researchers and maintained their choice of Likert scale and naming of response options.

Green Human Resource Management was measured with six items measured using a 5 point Likert scale from 1 = 'not at all' to 5 = 'very much'. (Dumont et al., 2017). An example item from this scale is "My organisation considers employees' workplace green behaviours in promotion", "My organisation sets green goals for its employees", "My organisation provides employees with green training to promote green values", "My organisation provides employees with green training to develop employees' knowledge and skills required for green management", "My organisation considers employees' workplace green behaviour in performance appraisals", "My organisation relates employees' workplace green behaviours to rewards and compensation". The Cronbach's alpha was 0.94.

Employee environmental commitment was measured with a seven-item scale developed by (Raineri & Paillé, 2016) a 6 point Likert scale was used from 1 = strongly disagree to 6 = strongly agree. The items in this scale are 'I really care about the environmental concern of my organisation'; 'I would feel guilty about not supporting the

environmental efforts of my organisation'; 'The environmental concern of my organisation means a lot to me'; 'I feel a sense of duty to support the environmental efforts of my organisation'; 'I really feel as if my organisation's environmental problems are my own'; 'I feel personally attached to the environmental concern of my organisation'; 'I strongly value the environmental efforts of my organisation'. The Cronbach's alpha was 0.92.

Affective commitment was again measured by a shortened validated version of the construct developed by Bentein et al. (2002) and has been used in previous research around EGB (Paillé et al., 2013; Paillé & Boiral, 2013). This was shortened from the original model developed by Allen & Meyer (1990) and was measured on a 7 point Likert scale from 1 = strongly disagree to 7 = strongly agree. These items were 'I really feel that I belong in this organisation'; 'My organisation has a great deal of personal meaning for me'; 'I am proud to belong to this organisation'. The Cronbach's alpha was 0.86.

EGB was measured by both the green four scale and goal proximity Scale. The former measurement instrument is 16-items long and has four categories (conserving, transforming, influencing others and taking initiative), and is split evenly with four items in each of the four categories. The latter measurement instrument is made up of 10-items, split evenly so that five items are in the proximal category and five items represent the distal category. These items are from the same original 25-item scale and figure 1 illustrates the relation between the two scales. The first category is conserving (focused on reducing waste), a sample item of this is: 'At work I recycle everything that I can'. Transforming is concerned with enhancing sustainability through work, a sample item of this category is 'At work I think of ways we can better monitor and measure our emissions'. Influencing others is the third category and aligned with spreading environmental sustainability ideas to others, a sample item: 'At work I talk to colleagues about how they can do their work in more environmentally friendly ways'. Lastly, taking initiative items were focused on pro-actively initiating behaviours or sacrifices

for sustainability. An item from this category is ‘At work I volunteer for projects, endeavours or events that address environmental issues in my organization’.

Perceived organisation support in this study was measured using the shortened four item scale that were taken from (Paillé & Boiral, 2013). This shortened version of the original 17-item scale (Eisenberger et al., 1986) is often used in this field to measure this concept. The items are ‘My organization really cares about my well-being’; ‘My organization appreciates my contribution’; ‘My organization considers my aspirations and values’; ‘My organization is prepared to help me when I need a special favor’. The Cronbach’s alpha was 0.84.

Perceived supervisory support was measured by four items in the same process as others in this field (Paillé et al., 2013) by replacing ‘organisation’ with ‘supervisor’ as has been common in other research (Eisenberger et al., 2002). These items were ‘My supervisor values my contributions’; ‘My supervisor strongly considers my opinions’; ‘Valued help is available from my supervisor when I have a problem’; ‘My supervisor really cares about my well-being’. The Cronbach’s alpha was 0.88.

Affective commitment was again measured by a shortened validated version of the construct developed by Bentein et al. (2002) and has been used in previous research around EGB (Paillé et al., 2013; Paillé & Boiral, 2013). This was shortened from the original model developed by Allen & Meyer (1990). These items were ‘I really feel that I belong in this organisation’; ‘My organisation’ has a great deal of personal meaning for me’; ‘I am proud to belong to this organisation’. The Cronbach’s alpha was 0.86.

The *Green organisational climate* was measured by the scale created by Norton et al. (2014). This has 8-items and was edited slightly to replace the word ‘company’ with ‘organisation’ to stay consistent with other questions throughout the wider survey. These items were: ‘Our organisation is worried about its environmental impact’; Our organisation is

interested in supporting environmental causes; ‘Our organisation believes it is important to protect the environment’; ‘Our organisation is concerned with becoming more environmentally friendly’; ‘In our organisation, employees pay attention to environmental issues’; ‘In our organisation, employees are concerned about acting in environmentally friendly ways’; ‘In our organisation, employees try to minimise harm to the environment’; ‘In our organisation, employees care about the environment’; ‘Our organisation is worried about its environmental impact’; ‘Our organisation is interested in supporting environmental causes’. The Cronbach’s alpha was 0.96.

The measurement of green behaviours of individuals at work was measured with the EGB scales developed in chapter 3. One is the green five EGB scale that represents the EGB construct through four dimensions that are categorised as: conserving, transforming, influencing others, and taking initiative. The other scale developed, the goal proximity EGB scale, is different conceptualisation that splits the behaviours into the more immediate and easier to perform behaviours as proximal, and then conversely the harder to complete and interpersonal distal EGB category.

Green descriptive norms were measured using the eight-item scale created by Pinzone et al. (2016). The item terminology was adapted from ‘trust’ to ‘organisation’ to make the questions generalisable to multiple sectors and consistent with the rest of the survey language. Also, ‘my colleagues’ was used at the beginning of the questions, rather than simply ‘employees’. This was to make the questions more clear as individuals may find the terminology of employees confusing as it could refer to the whole organisation. By using ‘my colleagues’ this issue was averted. Thes items were on a 1-5 Likert scale with the range of answers from ‘none at all’ to ‘a great deal’.

The items used, derived from this scale, were ‘my colleagues actively participate in environmental events organised at work (e.g. cycle to work days/workshops on sustainability)’; ‘my colleagues stay informed on environmental activities’; ‘my colleagues undertake environmental actions that contribute positively to the organisation's image’; ‘my colleagues volunteer for projects, initiatives or events that address environmental issues (e.g. serve on committees)’; ‘my colleagues suggest ways to reduce our environmental impacts’; ‘my colleagues do everything they can to protect the environment at work’; ‘my colleagues encourage work colleagues to care about environmental issues’; ‘my colleagues are willing to do additional work that result from environmental practices’. The Cronbach’s alpha was 0.94.

It should be noted here that due to the questions used by these authors; the measurement scale is measuring the employee’s perception that their colleagues engage in distal EGB. This behavioural scale did not use any items that could be interpreted as proximal or conserving EGB. Thus, if we are comparing accurately what these behavioural scales are actually measuring, it should be noted this predictor variable is not focusing on the conserving or proximal type behaviours and could influence the relationships accordingly.

Employee environmental commitment was measured with a seven-item scale developed by (Raineri & Paillé, 2016) and was measured using a 6 point Likert scale from 1 = strongly disagree to 6 = strongly agree. The items in this scale are ‘I really care about the environmental concern of my organisation’; ‘I would feel guilty about not supporting the environmental efforts of my organisation’; ‘The environmental concern of my organisation means a lot to me’; ‘I feel a sense of duty to support the environmental efforts of my organisation’; ‘I really feel as if my organisation’s environmental problems are my own’; ‘I feel personally attached to the environmental concern of my organisation’; ‘I strongly value the environmental efforts of my organisation’. The Cronbach’s alpha was 0.92.

4.6 Ethics approval

Following a comprehensive review process, this study has been granted ethics approval by Norwich Business Schools ethics committee. This adherence to established ethical principles from the school ensures the protection of participants' rights and well-being. Due to the items being relatively benign, and that no specific organisations are used as case studies, the potential risks to participants safeguarding and confidentiality issues are easily mitigated. Lastly, the attainment of informed consent, right to redact data from the study by the participant at any time aligns with standardised ethical requirements in psychological research.

5. Results

5.1 Measurement scale results

5.1.1 Confirmatory Factor Analysis

The testing of the new EGB measurement scale led to a finalised four subscale instrument. Testing hypothesis 1, the first model of 25 items across the five categories of EGB had negative variance estimate due to a problematic item in the avoiding harm category. This item was "At work environmental protection has to take second place behind other obligations". While there are multiple potential causes for this error (negative variance estimates), structural misspecification is among the most important causes of this error (Kolenikov & Bollen, 2012). This item was highly negatively related to the category of avoiding harm, this was the only negatively scored item in the dataset and after the scoring had been reversed this extreme outlier could be identified. This means it is more likely due to this item being an outlier, causing the negative variance estimate (Bollen, 1987). The model was rerun without this item ($\chi 2 = 711.576$, $Df = 242$, CFI = 0.937, TLI = 0.928, RMSEA = 0.066, SRMR = 0.048), however there were still negative variance estimates found. This issue was still found with two more items from the 'avoiding harm' category. These two items were highly correlated to all of the green five EGB categories and most likely causing the structural misspecification (Kolenikov & Bollen, 2012). After examining these two items for issues around meaning, they were removed from the scale, as their meaning was ambiguous and quite general (e.g. "I try to reduce my impact on the environment" / "I look for opportunities to reduce pollution from work-related activities"). Due to the avoiding harm category being problematic and having to have removed 3 of the items, this category was examined and removed completely. One of the final two items was reassigned to the transforming category ("At work I think of ways we can better monitor and measure our emissions"), and the final item was removed due to difficulty identifying a distinct

categorisation ("I use alternatives to driving to work (walking, cycling, public transport, car pooling"). The whole categories removal is examined in the discussion.

After item reduction, the model was tested with 21 items across four categories (with 5 items in each category except one category with six) and was found to have a better fit to the data across the model fit indices ($\chi 2 = 473.674$, *Df* = 183, CFI = 0.956, TLI = 0.949, RMSEA = 0.060, SRMR = 0.039; $\Delta\chi 2 = 237.902$, *Df* = 59, p > .001). While the model fit was good at this point (table 3.3), due to the conceptual evaluation that the avoiding harm category underwent, the other four categories were similarly re-evaluated. This was to see if the items were a) redundant as other items captured the concept more appropriately, b) conceptually similar enough to other items in that category or c) would be better aligned with other categories. After these reductions a 4-factor model with 16 items with four within each category was tested and has extremely good fit indices (Fan & Sivo, 2007; Hu & Bentler, 1998, 1999): $\chi 2 = 162.103$, *Df* = 98, CFI = 0.986, TLI = 0.983, RMSEA = 0.038, SRMR = 0.028. This 16-item model had a significantly better fit than the previous iterations, a CFA was then tested to determine if this was a better fit than the 16-items as a single factor. This single factor 16-item model had moderate fit to the data ($\chi\ 2 = 520.238$, *Df* = 104, CFI = 0.908, TLI = 0.894, RMSEA = 0.094, SRMR = 0.06), however the 16-item model delineated into four factors showed significantly better fit ($\Delta\chi 2 = 358.135$, *Df* = 6, p > .001).

Table 5.1 shows each of these models as their related fit indices. Starting at the bottom of the table the first model is shown with 24 items. As the model went through iterations of refinement the results are shown in each consecutive row above the previous model. As you move up the table, the model is more refined. This was to compare the best fit of the finalised four-factor model with previous iterations. The best fitting model for the 'green four scale' was 16 items spread across four factors (conserving, transforming, influencing others, and taking initiative). The chi-square difference and degrees of freedom

difference between the previous iterations of the model and the final four factor model with 16 items are also displayed in the respective rows. In contrast with hypothesis 1, our analysis shows that a four-factor model is better than the five theorised categories of EGB (Ones & Dilchert, 2012a).

Hypothesis 2 was then tested by splitting along the proximal-distal distinction. This meant including items from transforming, influencing others, and taking initiatives into to the distal EGB category, and the items from conserving were used for proximal EGB (due to issues with the avoiding harm category). This resulted in two 5-items scales, one representing proximal EGB and the other representing distal EGB (Table 5.3). This second model (hypothesis 2) combines these three into the distal category, while conserving behaviours represented the proximal category. This model shows good fit indices (χ^2 = 85.273, *Df* = 34, CFI = 0.978, TLI = 0.971, RMSEA = 0.058, SRMR = 0.036), and had a much better fit than the model when tested a single factor of 10 items (χ^2 = 85.273, *Df* = 34, CFI = 0.978, TLI = 0.971, RMSEA = 0.058, SRMR = 0.036) (Table 5.1). The goal proximity model crucially reduces the very high correlations between categories of EGB from above 0.949 down to a correlation of 0.633 (Table 5.3). This is still a strong correlation but is to be expected since these categories both represent EGB.

Table 5.1 - Comparison of orginal model fit with modified models fit for model 1 and model 2

		χ^2	Df	CFI	TLI	RMSEA	SRMR	χ2 difference	Df difference
Model 1 - Green Four scale	**5-factor (24 items) ***	711.576	242	0.937	0.928	0.066	0.048		
	4-factor (21 items)	473.674	183	0.956	0.949	0.060	0.039	237.902	59
	1-factor (16 items)	520.238	104	0.908	0.894	0.094	0.06	-46.564	79
	4-factor (16 items)	162.103	98	0.986	0.983	0.038	0.028	358.135	6
Model 2 - Goal Proximity scale	**1-factor model (10 items)**	401.986	35	0.844	0.800	0.153	0.104		
	2-factor model (10 items)	85.273	34	0.978	0.971	0.058	0.036	316.713	1

**this model had negative variance estimates; χ2 = chi-square; all χ2 results significant to P>0.001*

Table 5.2 displays the 16 items associated with the model 1 (green five EGB scale), and the 10 items used in model 2 (goal proximity EGB scale). Reported table 5.2 are the respective subfactor coefficients and standard errors for the items that were included in both of these scales. This confirmed convergent structural validity of these subfactor measurement scales. All Items across transforming, influencing others and taking initiative all show factor loadings (λ) above 0.7, which are considered 'excellent' (Comrey & Lee, 1992; Lambert & Newman, 2022). Conserving had two items outside this range, one marginally at 0.692, the other being 0.452. While this last item is noticeably different from the rest of the item loadings, it has been suggested that the lower end or 'cut off' for loading of items onto factors is 0.4 (Ford et al., 1986; Lambert & Newman, 2022).

CMV was tested at this point using Harman's single-factor test with 32 items, 16 items came from the three nomological variables and the final 16 items from the green four scale. It was found the proportion of the variance was 0.42, which is less than 0.5. This means that CMV does not explain a majority proportion of the variance of a 'general factor' created from all the study variables. Therefore, CMV is not of significant concern (Podsakoff et al., 2003). CMV was also tested concomitantly when determining the structure of the EGB scales. As multiple categories of EGB have better fit indices than one factor category of EGB.

Table 5.2 - The final items and their factor loadings onto each subcategory in the Green Four EGB Scale (16 items) and the Goal Proximity EGB Scale (10 items).

		Green Four Scale		Goal Proximity Scale	
	Items	**Coeff.**	**Std.Err**	**Coeff.**	**Std.Err**
		Conserving		**Proximal**	
At work …	I recycle everything that I can	0.452	0.044	0.467	0.044
At work …	I reduce the amount of resources I use	0.749	0.044	0.743	0.044
At work …	I reuse materials as much as I can	0.724	0.045	0.721	0.045
At work …	I avoid creating unnecessary waste	0.692	0.044	0.696	0.043
At work …	I try to use reusable items, rather than disposable ones			0.669	0.043
		Transforming		**Distal**	
At work …	I weigh up/assess the environment impact of my decisions	0.752	0.045		
At work …	I consider the environmental cost of our products or processes	0.756	0.045		
At work …	I look for new ways to reduce my organisations environmental impact	0.849	0.047		
At work …	I think of ways we can better monitor and measure our emissions	0.736	0.05		
At work …	I make suggestions to improve the envrionmental performance and practices of the organisation			0.834	0.051
		Influencing others			
At work …	I talk to colleagues about how they can do their work in more envrionmentally friendly ways	0.875	0.049	0.858	0.050
At work …	I encourage others to think about environmental issues	0.811	0.047		
At work …	I encourage colleagues to suggest how the organisation can improve on its environmental performance	0.881	0.049	0.870	0.049
At work …	I defend the compliance with pro-environmental policies and objectives when other employees criticize it	0.722	0.05		
		Taking initiative			
At work …	I take the initiative to research solutions to my organisation's environmental problems	0.839	0.05	0.807	0.051
At work …	I try to draw management's attention to potentially environmentally unfriendly activities, policies or practices	0.812	0.049		
At work …	I volunteer for projects, endeavours or events that address environmental issues in my organization	0.793	0.052	0.792	0.052
At work …	I champion the use of energy conservation efforts	0.816	0.051		

Table 5.3 - Correlation matrix of the Green Four EGB scales and the Goal Proximity EGB scales with hypothesised criterion-related factors

		M	SD	1	2	3	4	5	6	7	8
Green Four EGB scale	**1. EGB (all)**	3.48	0.90	0.95							
	2. conserving	3.81	0.73		0.75						
	3. transforming	3.46	0.99		0.714	0.86					
	4. influencing others	3.37	1.12		0.622	0.868	0.89				
	5. taking initiative	3.29	1.15		0.682	0.891	0.949	0.89			
	6. GHRM	3.00	1.36	0.796	0.476	0.697	0.805	0.802	0.94		
	7. EEC	4.17	1.57	0.723	0.687	0.674	0.711	0.668	0.658	0.92	
	8. AC	5.00	1.84	0.474	0.406	0.419	0.512	0.455	0.560	0.656	0.86
Goal Proximity EGB Scale	**1. EGB (all)**	3.55	0.81	0.89							
	2. Proximal EGB	3.81	0.72		0.8						
	3. Distal EGB	3.29	1.13		0.633	0.92					
	4. GHRM	3.00	1.36	0.810	0.470	0.825	0.94				
	5. EEC	4.17	1.57	0.727	0.682	0.686	0.657	0.92			
	6. AC	5.00	1.84	0.490	0.400	0.478	0.556	0.656	0.86		

Internal reliability estimates in shaded diagonal (Cronbach's alphas). GHRM = green human resource management. EEC = employee environmental commitment. AC = affective commitment.All correlation values standardised and p >.001

5.1.2 Nomological network

The correlation matrix for both the green five EGB scale and the goal proximity EGB scale can be found in table 5.3, including the means and standard deviations. As can be seen in this table, all the correlations are significant to the $p<0.001$ level. All of the nomological variables chosen have at least a 0.4 correlation with categories of EGB, indicating strong relationships with each (Funder & Ozer, 2019). The correlations between all the EGB categories were unsurprisingly highly correlated due to their similarity as all these are subfactors of categories of pro-environmental behaviours. Internal consistency (Cronbach's α) of each factor is also reported in the shaded region in table 3.5 (Lambert & Newman, 2022). All Cronbach's α were above 0.75 with many being above 0.9. It I generally considered a rule of thumb that is a factor has an acceptable level of self-consistency when it is above 0.7 (Taber, 2018).

The nomological network was evaluated to determine the validity of the scale by establishing how it relates to other constructs (Cronbach & Meehl, 1955). This was done by testing the nomological network of both the green five EGB scale and the goal proximity EGB scale (hypothesis 3a, 3b and 3c). We examined the relationship between both of these EGB scales and green human resource management (Dumont et al., 2017), employee environmental commitment (Raineri & Paillé, 2016), and affective commitment (Paillé & Boiral, 2013). This was done with multiple regression to determine the criterion-related validity and to confirm the broader nomological network.

A multiple regression was also performed at this stage (Table 5.4), and it was found that green human resource management and employee environmental commitment were significantly related to each category of EGB, again confirming hypothesis 3a and 3b. The results show that the whole model for the green four EGB scale showed significant relationships with green human resource management ($\beta = 0.32$; CI = [0.27 - 038]; $p <$

0.001), and employee environmental commitment (β = 0.16; CI = [0.09 - 0.22]; p < 0.001), however affective commitment was non-significant. The F-statistic was significant (F = 103.1; p < 0.001) and the nomological variables showed explained 41% of the variance of the EGB in this model (R^2 = 0.41).

Similarly, the goal proximity EGB scale showed significant relationships with green human resource management (β = 0.29; CI = [0.24 - 034]; p < 0.001), and employee environmental commitment (β = 0.16; CI = [0.10 - 0.23]; p < 0.001), affective commitment was marginally significant, contrastingly showing a negative relationship (β = -0.06; CI = [-0.11 - 0.00]; p < 0.05). However overall, the F-statistic for this model however was significant (F = 89.8; p < 0.001) and also the nomological variables showed explained 38% of the variance of the EGB in this model (R^2 = 0.38).

In each multiple regression performed affective commitment was either insignificant or very slightly negatively related to the factor or subfactor of EGB used as the outcome variable (rejecting hypothesis 3c). This is likely due to the strong correlation between affective commitment and employee environmental commitment (0.795); their overlapping meaning and concomitant high correlation would interfere with their relationships to EGB. The nuance of the relationship between EGB and affective commitment is further explored in section 5.3.

Table 5.4 - Results of multipleregression analysis with hypothesised nomological variables with each subfactor of EGB scales and whole scale combined

Green Four EGB scale (Model 1)

	Whole instrument			Conserving			Transforming			Influencing others			Taking initiative		
	Coeff.	[95% CI]	SE	Coeff.	[95% CI]	SE	Coeff.	[95% CI]	SE	Coeff.	[95% CI]	SE	Coeff.	[95% CI]	SE
GHRM	0.32***	[0.27 - 038]	0.03	0.10***	[0.05 - 0.15]	0.03	0.34***	[0.28 - 0.40]	0.03	0.39***	[0.33 - 0.46]	0.03	0.46***	[0.40 - 0.53]	0.03
EEC	0.16***	[0.09 - 0.22]	0.03	0.18***	[0.11 - 0.25]	0.04	0.16***	[0.08 - 0.24]	0.04	0.15***	[0.07 - 0.24]	0.04	0.14**	[0.05 - 0.22]	0.04
AC	-0.05	[-0.11 - 0.00]	0.03	-0.07*	[0.13 - 0.01]	0.03	-0.08*	[-0.14 - -0.01]	0.03	-0.02	[-0.09 - 0.05]	0.04	-0.05	[-0.12 - 0.02]	0.04
Intercept	2.11***	[1.92 - 2.30]	0.10	3.10***	[3.30 - 2.90]	0.10	2.12***	[1.89 - 2.35]	0.12	1.65***	[1.40 - 1.90]	0.13	1.57***	[1.32 - 1.82]	0.13
R^2	0.41			0.15			0.32			0.37			0.41		
F statistic	103.1***			26.61***			72.84***			88.54***			103.9***		
df	447			447			447			447			447		

Goal Proximity EGB Scale (Model 2)

	Whole instrument			Proximal EGB			Distal EGB		
	Coeff.	[95% CI]	SE	Coeff.	[95% CI]	SE	Coeff.	[95% CI]	SE
GHRM	0.29***	[0.24 - 0.34]	0.03	0.10***	[0.05 - 0.15]	0.03	0.48***	[0.41 - 0.54]	0.03
EEC	0.16***	[0.10 - 0.23]	0.03	0.18***	[0.12 - 0.25]	0.03	0.14**	[0.06 - 0.23]	0.04
AC	-0.06*	[-0.11 - -0.00]	0.03	-0.07*	[-0.13 - -0.02]	0.03	-0.04	[-0.11 - 0.03]	0.04
Intercept	2.29	[2.10 - 2.48]	0.10	3.11***	[2.92 - 3.31]	0.010	1.46***	[1.21 - 1.71]	0.13
R^2	0.38			0.15			0.43		
F statistic	89.8***			26.97***			113.5***		
df	447			447			447		

*GHRM = green human resource management. EEC = employee environmental commitment. AC = affective commitment. Correlations; * = p < .05, ** = p < .01, *** = p < .001*

5.2 Descriptive statistics and correlations of the variables from SEM models

The previous section (5.1) found that the 16-item green four scale to be the best way to conceptualise the green five taxonomy, also this thesis suggested a new categorisation, the 10-item goal proximity EGB scale. The descriptive statistics and correlations of all the variables used in the proceeding two models along with these new EGB scale are provided below. First in Table 5.5 the correlation matrix of all variables with the green four scale, including EGB split into its four categories. The same can be seen for the goal proximity Scale with the correlation matrix displayed in Table 5.6.

Cronbach's alpha can be seen across the shaded diagonal of both Table 5.5 and Table 5.6. They all show good internal consistency for each of the factors used in this study as all values are above the generally considered acceptable standard for Cronbach's alpha, which is 0.7 (Lance et al., 2006).

These correlation matrices in this section were done at this stage as they could not be done before the measurement scales had been created and tested through confirmatory factor analysis. In the previous section 5.1.

Table 5.5 - Means (M), standard deviations (SD), reliability and correlations of study variables

	M	SD	1	2	3	4	5	6	7	8	9	10
1. Conserving (EGB)	3.81	0.73	0.75									
2. Transforming (EGB)	3.46	0.99	0.764	0.86								
3. Influencing others (EGB)	3.37	1.12	0.665	0.943	0.89							
4. Taking initiative (EGB)	3.29	1.15	0.675	0.959	0.992	0.89						
5. Perceived organisational support	3.63	1.31	0.413	0.414	0.416	0.408	0.84					
6. Percieved supervisory support	5.08	1.76	0.426	0.320	0.277	0.278	0.815	0.88				
7. Affective commitment	5.00	1.85	0.412	0.426	0.448	0.435	0.861	0.731	0.86			
8. Green organisational climate	4.74	1.98	0.526	0.560	0.567	0.565	0.692	0.706	0.706	0.96		
9. Green descriptive norm	3.49	0.99	0.518	0.728	0.738	0.763	0.634	0.550	0.649	0.775	0.94	
10. Employee environmental commitment	4.54	0.99	0.703	0.715	0.705	0.670	0.680	0.621	0.654	0.810	0.762	0.92

Internal reliability estimates in shaded diagonal (Cronbach's alphas). All correlation values standardised and p >.001

Table 5.6 - Means (M), standard deviations (SD), reliability, and correlations of study variables

	M	SD	1	2	3	4	5	6	7	8
1. Proximal EGB	3.81	0.72	0.8							
2. Distal EGB	3.29	1.13	0.639	0.92						
3. Perceived organisational support	3.63	1.31	0.418	0.409	0.84					
4. Percieved supervisory support	5.08	1.76	0.436	0.252	0.822	0.88				
5. Affective commitment	5.00	1.85	0.409	0.436	0.858	0.735	0.86			
6. Green organisational climate	4.74	1.98	0.538	0.555	0.685	0.704	0.701	0.96		
7. Green descriptive norm	3.49	0.99	0.525	0.740	0.631	0.549	0.648	0.774	0.94	
8. Employee environmental commitment	4.54	0.99	0.699	0.678	0.680	0.617	0.655	0.811	0.759	0.92

Internal reliability estimates in shaded diagonal (Cronbach's alphas). All correlation values standardised and p >.001

5.3 Support mechanism model results

Before full structural models were tested, a confirmatory factor analysis was tested on the four variables that were not included in previous results section (5.1) (i.e. not the outcome variables of EGB). This showed that the factor structures fit well ($\chi 2 = 570.152$, *Df* = 142, CFI = 0.938, TLI = 0.926, RMSEA = 0.086, SRMR = 0.038). The factor loadings for all the items were significant to ($P < 0.001$) and greater than 0.65, with one item below this threshold at 0.45. These are good levels of factor loading confirming the convergent validity of the measurement scales used in this study (Comrey & Lee, 1992; Lambert & Newman, 2022), even the one item that has a lower factor loading is above suggested threshold cut offs for loading of items onto factors (Ford et al., 1986; Lambert & Newman, 2022).

CMV was tested at this point using Harman's single-factor test with 35 items, 19 items came from the organisational support, supervisory support, organisational commitment and green organisational climate, and the final 16 items from the green four scale. This was expected as the model has a large number of items in the outcome variable although the predictor variables were different. It was found the proportion of the variance was 0.40, which is less than 0.5. This means that CMV does not explain a majority proportion of the variance of a 'general factor' created from all the study variables. Therefore, CMV is not of significant concern (Podsakoff et al., 2003).

5.3.1 Full structural model coefficients

Model 1 (green four scale)

The fit indices for the full structural equation model with the hypothesised pathways constrained were: $\chi 2 = 765.698$, *Df* = 303, CFI = 0.937, TLI = 0.927, RMSEA = 0.061 (0.055-0.066) and SRMR = 0.039. These show that the model fits well as according to Bentler (1990) CFI and TLI above 0.90 are considered to indicate good fit. Also MacCallum

et al. (1996) suggest that 0.05 to 0.08 indicate a good fit for RMSEA, and values under 0.8 considered good fit for SRMR (Hu & Bentler, 1998).

Hypothesis 4a, that POS has a positive relationship to all the categories the green four EGB scale, was accepted for 3 of 4 of the categories. POS had medium and significant relationships with transforming ($\beta = 0.27$; $Z = 2.68$, $p < 0.01$), influencing others ($\beta = 0.325$, $Z = 2.40$, $p < 0.05$) and taking initiative ($\beta = 0.32$; $Z = 2.48$, $p < 0.05$). However, conserving was insignificant. Hypothesis 5a, that supervisory support was related to each of the green five categories was only accepted for conserving ($\beta = 0.08$; $Z = 2.819$, $p < 0.01$), the other 3 categories relationship with perceived supervisory support were insignificant. Hypothesis 6a was completely accepted, as affective commitment to the organisation was significant related to all four categories of the green four EGB scale. This relationship was especially strong for taking initiative and influencing others, with transforming also showing a strong relationship. The hypothesis that focused on the moderating effect of a green organisational climate (hypothesis 8a) was accepted for all four categories, although, much like affective commitment, this was weaker for conserving compared to the other three categories, with specifically the 'indirect' categories (Ones & Dilchert, 2012a) of taking initiative and influencing others being strongly affected.

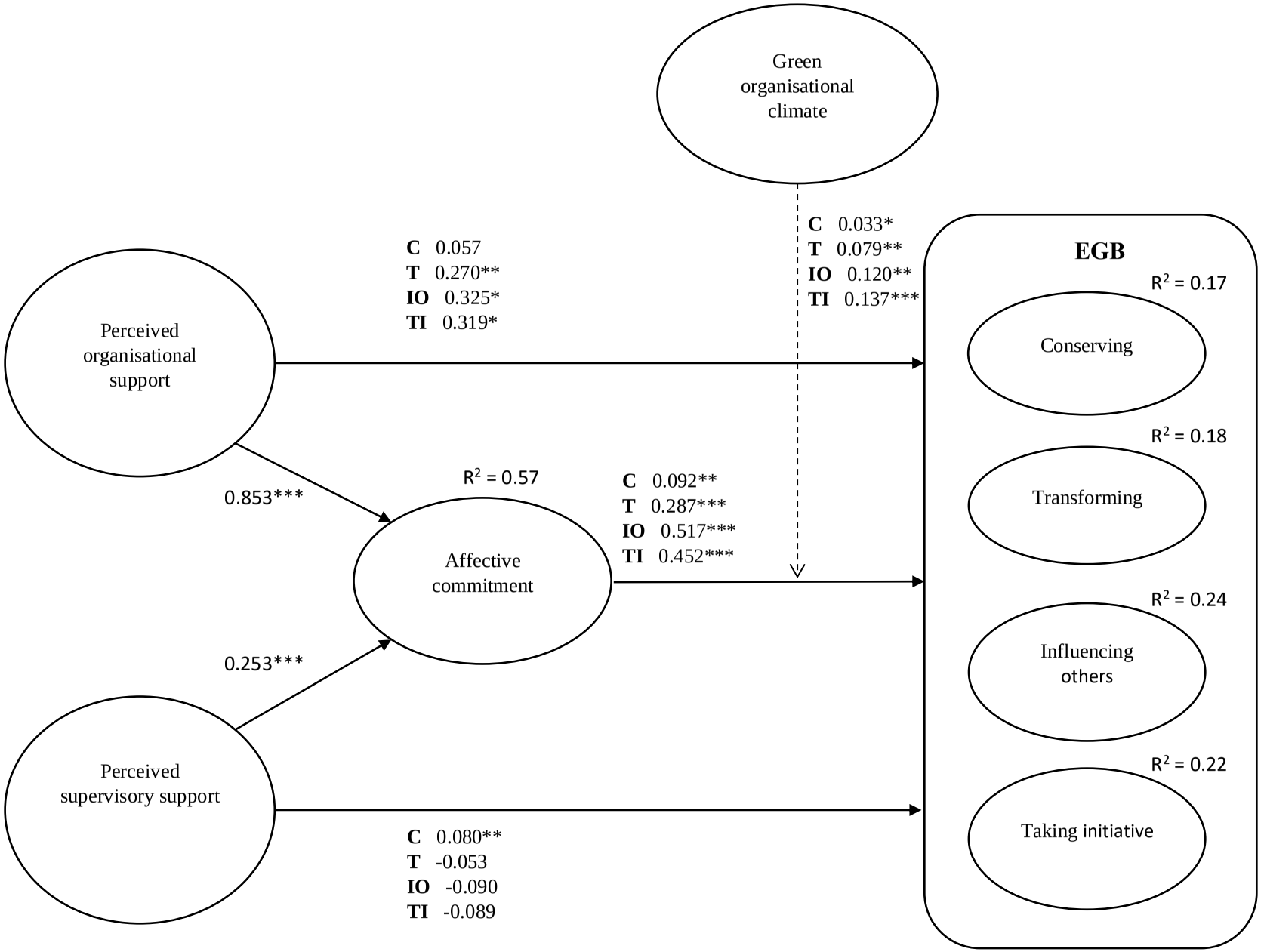
Table 5.7 displays the results of the full structural equation model, and an illustration of these results is displayed in figure 5.1 to give an illustrative understanding of the results of model 1.

Table 5.7 - Model coeffcients and R-square of SEM with Green Four Scale

	ACOM				Conserving (EGB)				Transforming (EGB)				Influencing others (EGB)				Taking initiative (EGB)			
	β	Z - Value	95% CI		β	Z - Value	95% CI		β	Z - Value	95% CI		β	Z - Value	95% CI		β	Z - Value	95% CI	
POS	0.853***	12.084	0.715	0.992	0.057	1.183	-0.037	0.151	0.270**	2.684	0.073	0.466	0.325*	2.404	0.060	0.591	0.319*	2.489	0.068	0.57
PSS	0.253***	5.281	0.159	0.347	0.080**	2.819	0.024	0.135	-0.053	-0.896	-0.17	0.063	-0.090	-1.124	-0.247	0.067	-0.089	-1.171	-0.237	0.06
ACOM					0.092**	3.262	0.037	0.147	0.287***	4.859	0.171	0.403	0.517***	6.493	0.361	0.673	0.452***	5.996	0.304	0.600
ACOM.GOC					0.033*	2.429	0.006	0.060	0.079**	2.763	0.023	0.135	0.120**	3.118	0.044	0.195	0.137***	3.772	0.066	0.209
R-square:	0.567				0.173				0.183				0.239				0.218			

*POS = Perceived organisational suppor; PSS = Percieved supervisory support; ACOM = Affective commitment; ACOM.GOC = interaction variable of affective commitment and green organisational climate Significance levels: * = p < .05, ** = p < .01, *** = p < .001*

Figure 5.1 – Illustrated results of Model 1 with the green five EGB scale. The solid lines represent direct relationships, and the dotted line represents a moderating effect.



Model 2 (goal proximity Scale)

Model 2 fit indices were also satisfactory in meeting the standards of the good fitting models, these were $\chi 2 = 603.859$, *Df* = 179, CFI = 0.920, TLI = 0.907, RMSEA = 0.076 [0.069-0.082] and SRMR = 0.044).

In a similar way to the green four scale, hypothesis 4b was also partially supported. This can be seen in Table 5.8 and Figure 5.2, as the distal category from the goal proximity Scale (made up of the latter three categories of the green four EGB scale) was significantly related to POS ($\beta = 0.38$, $Z = 2.97$, $p < 0.01$) and proximal EGB was found to be insignificant in the relationship with POS. This similarity with model 1 was also true for hypothesis 5b, as the relationship in model 2 was significant between proximal EGB and PSS ($\beta = 0.10$, $Z = 3.37$, $p < 0.001$), where-as there was no significant relationship between PSS and distal EGB. These results can be seen in table 5.8 with confidence intervals included.

Hypothesis 6b was also confirmed similarly to hypothesis 6a, as model 2 found that proximal EGB was significantly related to affective commitment – although this was by a small effect. However, distal EGB had a strong relationship and was significant ($\beta = 0.48$, $Z = 6.39$, $p < 0.001$). Thus, hypothesis 6b was accepted. The moderating effect of a green organisational climate was found to be slightly more important in model 2 than in model 1. Hypothesis 8b was also accepted as the interaction between affective commitment to the organisation and a green organisational climate was found to be related to both proximal EGB ($\beta = 0.03$, $Z = 2.23$, $p < 0.05$) and distal EGB ($\beta = 0.128$, $Z = 3.48$, $p < 0.001$). This shows the significant moderating effect of a green organisational climate on all types of EGB, especially with the distal EGB.

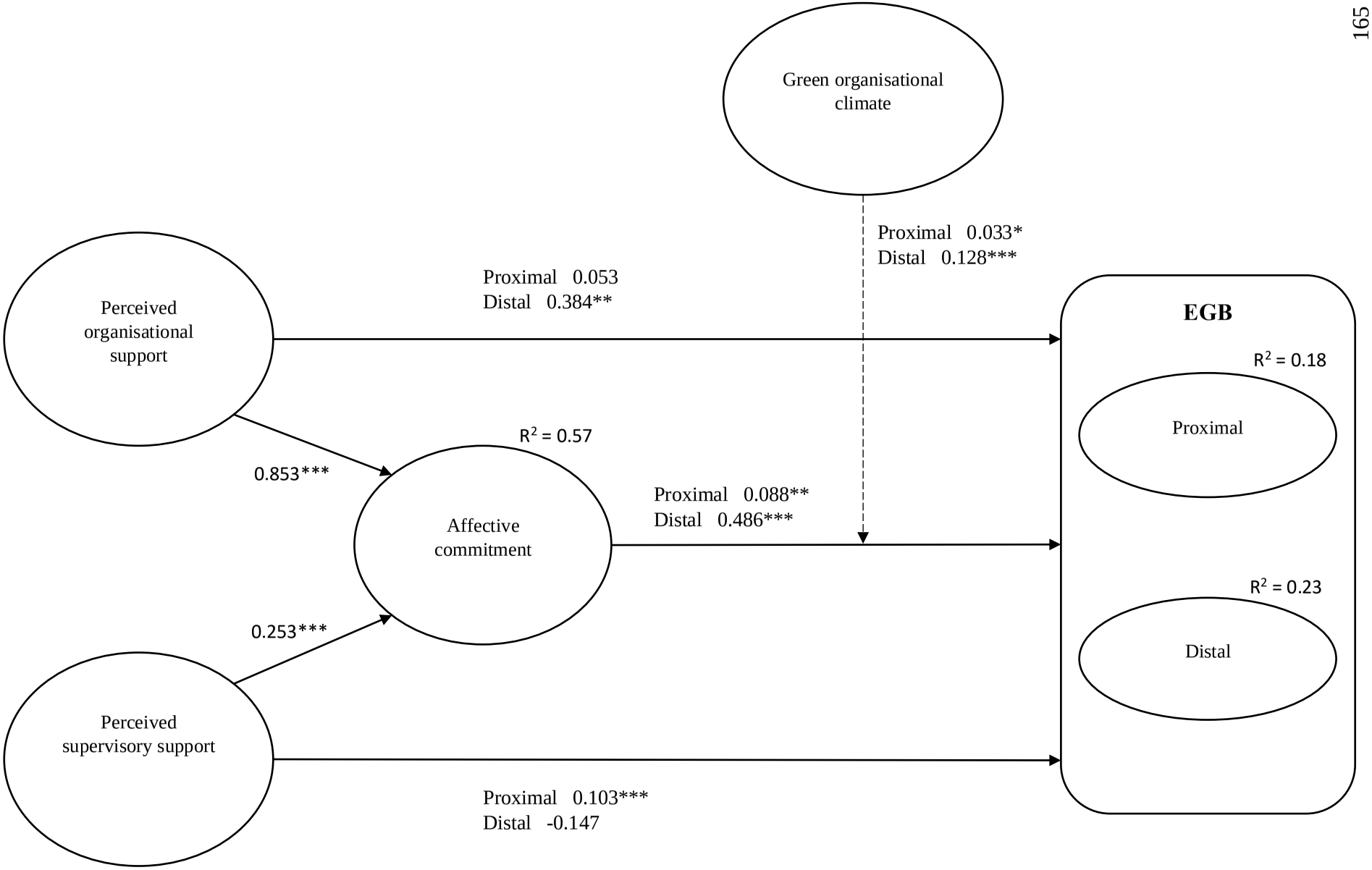
Table 5.8 displays the results of the full structural equation model, and an illustration of these results is displayed in figure 5.2 to give a diagrammatical understanding of the results of model 2.

Table 5.8 - Model coeffcients and R square of SEM with Goal Proximity Scale

	ACOM				Proximal EGB				Distal EGB			
	β	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**	
POS	0.853***	12.084	0.715	0.992	0.053	1.022	-0.048	-0.154	0.384**	2.972	0.131	0.638
PSS	0.253***	5.281	0.159	0.347	0.103***	3.371	0.043	0.162	-0.147	-1.926	-0.297	0.003
ACOM					0.088**	2.918	0.029	0.148	0.486***	6.396	0.337	0.635
ACOM.GOC					0.033*	2.239	0.004	0.061	0.128***	3.481	0.056	0.2
R-square:	0.567				0.175				0.237			

*POS = Perceived organisational suppor; PSS = Percieved supervisory support; ACOM = Affective commitment; ACOM.GOC = interaction variable of affective commitment and green organisational climate; Significance levels: * = p < .05, ** = p < .01, *** = p < .001*

Figure 5.2 – Illustrated results of Model 2 with the goal Proximity EGB scale. The solid lines represent direct relationships, and the dotted line represents a moderating effect.



5.3.2 Mediation

Hypothesis 7a and 7b formed the mediation analysis, affective commitment to the organisation was hypothesised to mediate both direct supportive relationships of POS and EGB, as well as PSS and EGB. These relationships were tested with bootstrapping simulation using 5,000 iterations to determine a confidence interval (Shrout & Bolger, 2002). This is recommended to confirm mediation, as mediation can be demonstrated when the confidence interval of the indirect effect does not overlap zero (confidence intervals = 95%) (Preacher & Hayes, 2008).

Model 1 (green four scale)

The green four scale showed that the indirect effect (i.e. the mediation pathway) was significant for all four of the categories, showing that both perceived organisational support and perceived supervisory support are both positively related to EGB via affective commitment. This confirms hypothesis 4a. The indirect effects of POS ($\beta = 0.078$, $p < 0.01$, 95% CI = [0.03, 0.127]) and PSS ($\beta = 0.023$, $p < 0.01$, 95% CI = [0.007, 0.04]) on conserving had a small effect size. While the other three categories had medium sized effects. Specifically, the influencing others category showed the strongest relationships with both POS ($\beta = 0.441$, $p < 0.001$, 95% CI = [0.29, 0.592]) and PSS ($\beta = 0.131$, $p < 0.001$, 95% CI = [0.068, 0.194]). This is explored in the discussion.

The results for the POS mediation can be seen in Table 5.9, and the results for the PSS mediation in Table 5.10, these have the confidence intervals and Z scores across all four categories of green four EGB scale.

Table 5.9 - The indirect and total effects of perceived organistion support on EGB (Green Four Scale). Mediated by affective commitment.

	Conserving (EGB)				Transforming (EGB)			
	β	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**	
POS	0.078**	3.149	0.03	0.127	0.245***	4.508	0.138	0.351
Total	0.135**	3.222	0.053	0.217	0.514***	5.767	0.34	0.689

	Influencing others (EGB)				Taking initiative (EGB)			
	β	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**	
POS	0.441***	5.72	0.29	0.592	0.386***	5.371	0.245	0.526
Total	0.767***	6.25	0.526	1.007	0.705***	6.109	0.479	0.931

*All mediation tested with 5,000 bootstrap. POS = Perceived organisational suppor; PSS = Percieved supervisory support; Significance levels: * = p < .05, ** = p < .01, *** = p < .001*

Table 5.10 - The indirect and total effects of perceived superviory support on EGB (Green Four Scale). Mediated by affective commitment.

	Conserving (EGB)				Transforming (EGB)			
	β	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**	
PSS	0.023**	2.775	0.007	0.04	0.073***	3.576	0.033	0.113
Total	0.103***	3.715	0.049	0.158	0.019	0.33	-0.096	0.135

	Influencing others (EGB)				Taking initiative (EGB)			
	β	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**	
PSS	0.131***	4.097	0.068	0.194	0.115***	3.963	0.058	0.171
Total	0.041	0.504	-0.119	0.201	0.026	0.337	-0.124	0.176

*All mediation tested with 5,000 bootstrap. POS = Perceived organisational suppor; PSS = Percieved supervisory support; Significance levels: * = p < .05, ** = p < .01, *** = p < .001*

Model 2 (goal proximity Scale)

The indirect effect of POS and PSS via affective commitment was significantly related to both proximal EGB and distal EGB, thus hypothesis 7b was accepted.

When the model was tested with the goal proximity EGB scale, similar results were found in that proximal was very similar to conserving as expected, due to the content of the factors being similar. Both perceived organisational support and perceived supervisory support are positively related to EGB via affective commitment, confirming hypothesis 7b. The indirect relationships with POS ($\beta = 0.415$, $p < 0.001$, 95% CI = [0.271, 0.559]) and PSS ($\beta = 0.123$, $p < 0.001$, 95% CI = [0.064, 0.183]) are particularly strong for distal EGB. In contrast the relationship with proximal EGB is significant but shows weaker effect sizes and the significance levels are close to the traditional cut-offs levels for POS ($\beta = 0.075$, $p < 0.01$, 95% CI = [0.023, 0127]) and PSS ($\beta = 0.022$, $p < 0.05$, 95% CI = [0.005, 0.04]).

The results for the POS mediation can be seen in Table 5.11, and the results for the PSS mediation in Table 5.12, these have the confidence intervals and Z scores across all four categories of goal proximity Scale.

Table 5.11 - The indirect and total effects of perceived organistion support on EGB (Goal Proximity Scale). Mediated by affective commitment.

	Proximal EGB				Distal EGB			
	β	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**	
POS	0.075**	2.837	0.023	0.127	0.415***	5.653	0.271	0.559
Total	0.128**	2.847	0.04	0.216	0.799***	6.832	0.57	1.029

*All mediation tested with 5,000 bootstrap. POS = Perceived organisational suppor; PSS = Percieved supervisory support; Significance levels: * = p < .05, ** = p < .01, *** = p < .001*

Table 5.12 - The indirect and total effects of perceived superviory support on EGB (Goal Proximity Scale). Mediated by affective commitment.

	Proximal EGB				Distal EGB			
	β	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**	
PSS	0.022*	2.554	0.005	0.04	0.123***	4.072	0.064	0.183
Total	0.125***	4.2	0.067	0.183	-0.024	-0.31	-0.176	0.128

*All mediation tested with 5,000 bootstrap. POS = Perceived organisational suppor; PSS = Percieved supervisory support; Significance levels: * = p < .05, ** = p < .01, *** = p < .001*

5.3.3 Moderated mediation

To examine the moderating effects of a green organisational climate further, a test was conducted for assessing the extent to which the slopes were or were not significantly different across weak and strong levels of a green organisational climate. This was done by creating two groups that represented a weak and strong green organisational climate, calculated by taking 1 standard deviation below and 1 standard deviation above the mean of the data collected on green organisational climate (Cohen et al., 2013). This was then applied to the mediation model described in the previous section, seeing if a green organisational climate moderates the pathway from affective commitment to EGB (the second part of mediation pathway).

Model 1 (green four scale)

Testing the green four scale through the moderated mediation pathway indicates that a strong green organisational climate is important for all types of EGB across both the perceived supervisory support (PSS) and perceived organisational support (POS) pathways.

The effect of a strong green organisational climate (GOC) was most particularly pronounced for the mediation pathway of POS with influencing others ($\beta = 0.549$, $p < 0.001$, 95% CI = [0.375, 0.724]) and taking initiative ($\beta = 0.510$, $p < 0.001$, 95% CI = [0.345, 0.674]) showing that this strong climate is particularly important for these indirect and distal

behaviours. While a weak green organisational climate was still significant with medium effect sizes for these two and the transforming category, it is more pronounced for a stronger GOC across all the categories of green four scale. The only insignificant result for the POS mediation pathway was a weak GOC and conserving, it also was the smallest effect size of a strong GOC ($\beta = 0.108$, $p < 0.001$, 95% CI = [0.052, 0.164]). Thus, hypothesis 9a was accepted.

The mediation pathway via ACOM from PSS had the same relationship as POS in terms of significance, with only a weak GOC being insignificant for conserving type behaviours, where-as all other effect sizes were significant for the other relationships. Although the rest of the results were significant across both weak and strong GOC, the effect sizes were much smaller than the POS pathway. The strongest effect sizes were seen across the strong GOC condition, with influencing others ($\beta = 0.163$, $p < 0.001$, 95% CI = [0.088, 0.238]) being the largest. And although this was significant, there was only a very small effect size with conserving EGB under the strong GOC condition ($\beta = 0.032$, $p < 0.01$, 95% CI = [0.012, 0.052]).

Table 5.13 displays these results as well as the index of moderated mediation which tests the indirect effect and moderator as a linear relationship (Hayes, 2015). This test showed that all the relationships were significant, although small relationships across all factors. Confirming the relationships described in this section, this index also returned the results that the largest effect sizes were in the POS indirect pathways and also largest for influencing others ($\beta = 0.102$, $p < 0.01$, 95% CI = [0.036, 0.169]). and taking initiative ($\beta = 0.117$, $p < 0.001$, 95% CI = [0.053, 0.181]).

Table 5.13 - Results of the moderated mediation, showing the effect of a weak and strong green organisational climate on both POS and PSS mediated pathways via affective commitmnet in model 1.

		Conserving (EGB)				Transforming (EGB)				Influencing others (EGB)				Taking initiative (EGB)			
		β	Z - Value	95% CI		β	Z - Value	95% CI		β	Z - Value	95% CI		β	Z - Value	95% CI	
POS	**Weak GOC**	0.049	1.778	-0.005	0.102	0.174**	2.969	0.059	0.289	0.333***	4.093	0.174	0.493	0.262**	3.456	0.113	0.41
	Strong GOC	0.108***	3.798	0.052	0.164	0.316***	5.057	0.194	0.438	0.549***	6.169	0.375	0.724	0.510***	6.068	0.345	0.674
	Index	0.028*	2.381	0.005	0.051	0.067**	2.694	0.018	0.116	0.102**	3.019	0.036	0.169	0.117***	3.601	0.053	0.181
PSS	**Weak GOC**	0.014	1.701	-0.002	0.031	0.052**	2.65	0.013	0.09	0.099**	3.358	0.041	0.157	0.078**	2.978	0.027	0.129
	Strong GOC	0.032**	3.189	0.012	0.052	0.094***	3.832	0.046	0.142	0.163***	4.253	0.088	0.238	0.151***	4.22	0.081	0.222
	Index	0.008*	2.207	0.001	0.016	0.020*	2.448	0.004	0.036	0.030**	2.685	0.008	0.053	0.035**	3.07	0.013	0.057

*POS = Perceived organisational suppor; PSS = Percieved supervisory support; GOC = Green organisational climate; Significance levels: * = p < .05, ** = p < .01, *** = p < .001*

Model 2 (goal proximity Scale)

The second model also showed similar results to the first model. The indirect effect of the model was strong and significant for distal EGB, in contrast to proximal EGB that has a strong and significant direct relationship. Again, in the same way as the first model, all the relationships were insignificant when there was a weak green organisational climate. The total effects of both displayed in Table 5.14 illustrate the importance of strong green organisational climate for all EGB, but specifically this moderating effect is particularly important for enhancing the indirect relationship for distal EGB and the direct relationship for proximal EGB. Distal EGB are predicted most when there is a combination of affective commitment and strong green organisational climate. Proximal EGB are best predicted through the direct supportive factors and a strong green psychological climate. Thus hypothesis 9b was accepted.

Table 5.14 - Results of the moderated mediation, showing the effect of a weak and strong green organisational climate on both POS and PSS mediated pathways via affective commitmnet in model 2.

	Proximal EGB				Distal EGB			
	β	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**	
Weak GOC	0.046	1.565	-0.012	0.103	0.300***	3.879	0.148	0.148
Strong GOC	0.105**	3.459	0.045	0.164	0.530***	6.215	0.363	0.698
Index	0.028*	2.201	0.003	0.053	0.109**	3.345	0.045	0.173
Weak GOC	0.014	0.014	-0.004	0.031	0.089**	3.236	0.035	0.143
Strong GOC	0.031**	2.98	0.011	0.052	0.157***	4.268	0.085	0.23
Index	0.008*	2.061	0	0.016	0.032**	2.907	0.011	0.054

*POS = Perceived organisational suppor; PSS = Percieved supervisory support; GOC = Green organiational climate Significance levels: * = p < .05, ** = p < .01, *** = p < .001*

5.4 Green descriptive norm model results

Before the full structural model was tested, a confirmatory factor analysis was performed with the two study variables that currently haven't been examined in this thesis hitherto. Green descriptive norms and employee environmental commitment showed good fit indices: $\chi 2 = 233.189$, *Df* = 89, CFI = 0.969, TLI = 0.964, RMSEA = 0.063, and SRMR = 0.035. These results indicate a good fit for the model, in line with Bentler's (1990) criteria of CFI and TLI above 0.90 indicating good fit. Additionally, MacCallum et al. (1996) suggest that RMSEA values below 0.08 are acceptable and below 0.05 indicate a good fit, also Hu and Bentler (1998) consider values below 0.8 as indicative of good fit for SRMR. All of the items in the study demonstrated significant factor loadings ($P < 0.001$), exceeding 0.65, these factor loading levels indicate strong convergent validity of the measurement scales utilized in this research study (Comrey & Lee, 1992; Lambert & Newman, 2022).

CMV was tested at this point using Harman's single-factor test, it was found the proportion of the variance was 0.47, which is less than 0.5. This means that CMV does not explain a majority proportion of the variance of a 'general factor' created from all the study variables. Therefore, CMV is not of significant concern (Podsakoff et al., 2003).

5.4.1 Full structural model coefficients

Model 1 (green four scale)

The fit indices for the structural model for the green four EGB scale are as follows $\chi 2 = 786.518$, Df = 419, CFI = 0.96, TLI = 0.956, RMSEA = 0.046 (0.041 - 0.051), and SRMR = 0.036.

The first model using the green four EGB scale, the relationship between green descriptive norm and individual EGB was strong for three of the four behavioural categories: transforming ($\beta = 0.38$; $Z = 7.52$, $p < 0.001$), influencing others ($\beta = 0.64$; $Z = 9.96$; $p <$

0.001), and taking initiative (β = 0.66; Z = 10.56; p < 0.001). This result means that hypothesis 10a is partially confirmed as the fourth category (conserving) was not found to be significant. Employee environmental commitment was also found to be related to all four of the green four EGB scale EGB categories – supporting hypothesis 11a. Conserving had a similar relationship to employee environmental commitment (β = 0.32; Z = 9.66; p < 0.001), as transforming (β = 0.39; Z = 6.08; p < 0.001) and taking initiative. Influencing others showed a stronger relationship than these other three categories (β = 0.51; Z = 6.21; p < 0.001), The explained variance for each of the four categories of the green four scale were R^2 = 0.35 (conserving), R^2 = 0.44 (transforming), R^2 = 0.53 (influencing others), R^2 = 0.50 (taking initiative) and can be seen in Table 5.15 and illustrated in Figure 5.3.

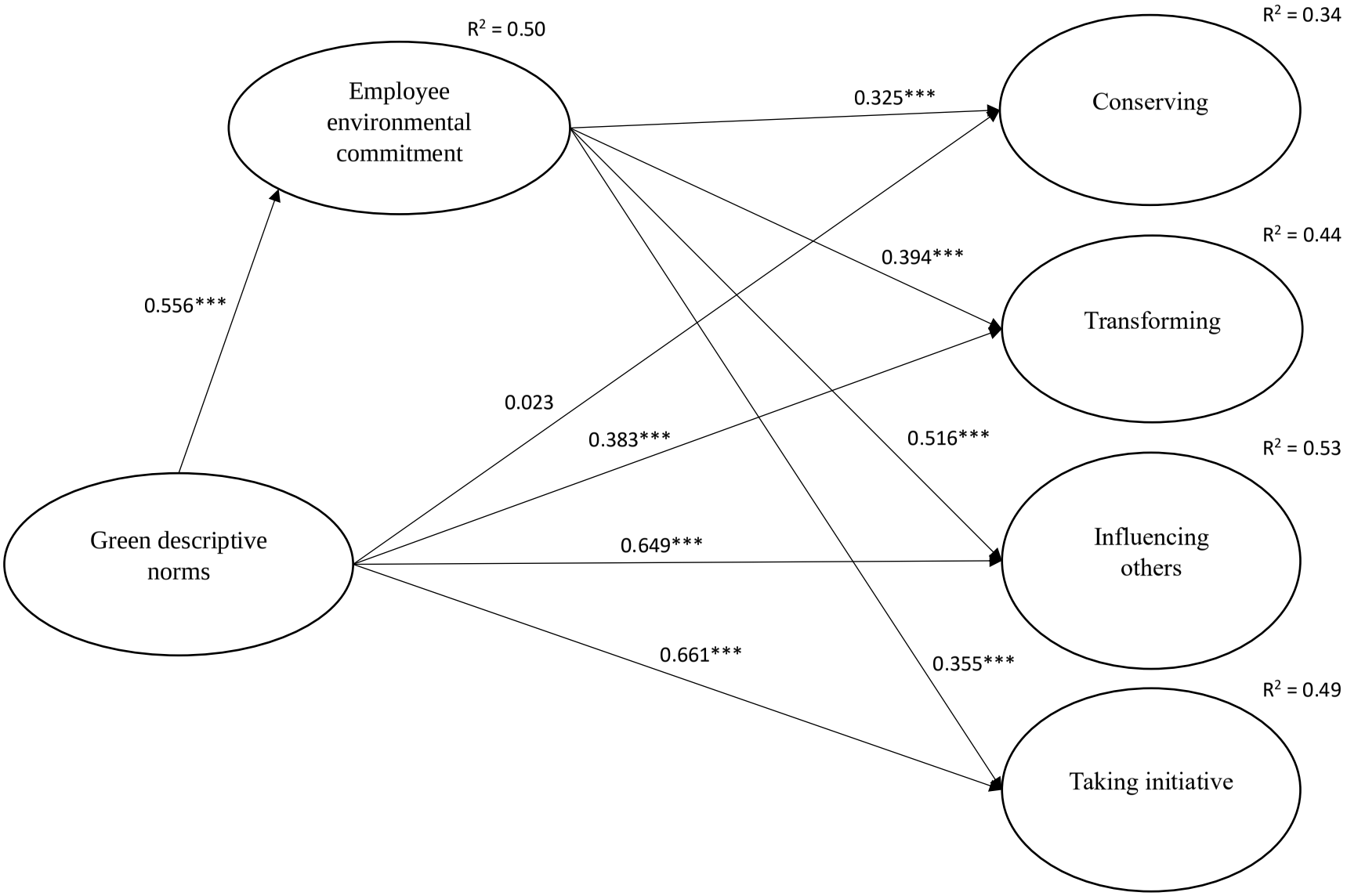
Table 5.15 - Model coeffcients and R-square of SEM in model 1 (Green Four Scale)

	EEC			
	β	**Z - Value**	**95% CI**	
GDN	0.556***	20.107	0.502	0.61
R-square	0.501			

	Conserving (EGB)				Transforming (EGB)				Influencing others (EGB)				Taking initiative (EGB)			
	β	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**	
GDN	0.023	0.856	-0.029	0.074	0.383***	7.523	0.283	0.482	0.649***	9.966	0.521	0.776	0.661***	10.56	0.539	0.784
EEC	0.325***	9.669	0.259	0.391	0.394***	6.082	0.267	0.521	0.516***	6.217	0.353	0.678	0.355***	4.451	0.199	0.512
R-square	0.346				0.441				0.53				0.497			

*GDN = Green descriptive norm; EEC = Employee environmental commitment; Significance levels: * = p < .05, ** = p < .01, *** = p < .001*

Figure 5.3 – Model 1 illustrated with the results of SEM



Model 2 (goal proximity Scale)

Model 2 fit indices were also satisfactory in meeting the standards of good fitting models, these were $\chi 2 = 591.765$, Df = 269, CFI = 0.956, TLI = 0.951, RMSEA = 0.054 (0.048 - 0.060) and SRMR = 0.039.

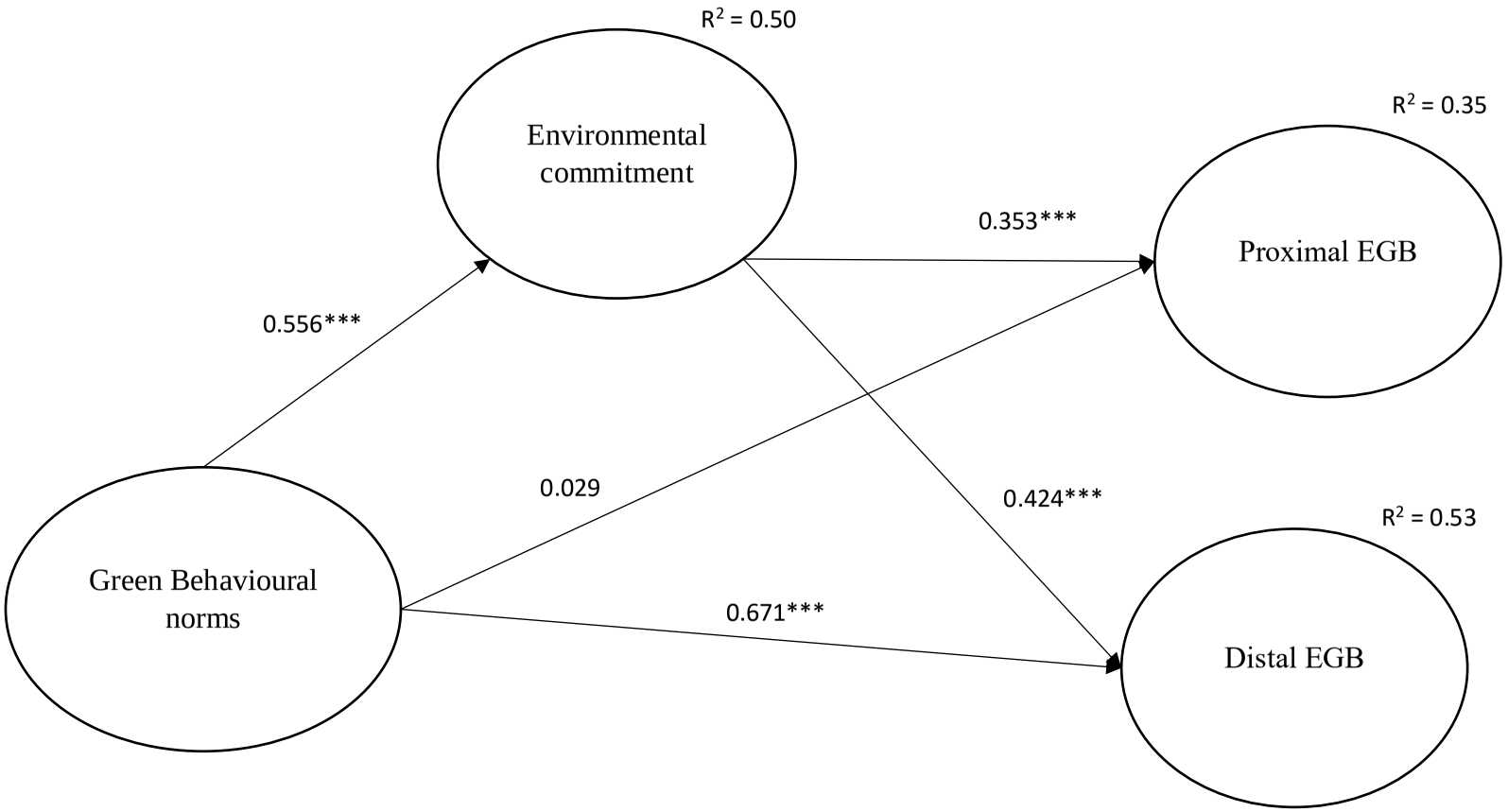
The second model utilised the goal proximity EGB scale of EGB. The results of this model showed that the green descriptive norms were not significantly related to proximal EGB, however distal EGB was ($\beta = 0.67$; Z = 8.04; $p < 0.001$). This partially confirms hypothesis 10b which stated both proximal and distal EGB would have a positive significant relationship with green descriptive norms. Hypothesis 11b was confirmed as both proximal EGB ($\beta = 0.35$; Z = 7.81; $p < 0.001$) and distal EGB ($\beta = 0.42$; Z = 3.83; $p < 0.001$) categories had positive relationships with employee environmental commitment. The explained variance for each of the categories in the goal proximity Scale were $R^2 = 0.35$ (proximal), $R^2 = 0.53$ (distal) and can be seen in Table 5.16 and illustrated in Figure 5.4.

Table 5.16 - Model coeffcients and R square of SEM in model 2 (Goal Proximity Scale)

	EEC				Proximal EGB				Distal EGB			
	β	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**	
GDN	0.556***	20.107	0.502	0.61	0.029	1.001	-0.027	0.086	0.671***	8.044	0.51	0.838
EEC					0.353***	7.817	0.263	0.44	0.424***	3.837	0.206	0.643
R-square	0.501				0.358				0.531			

*GDN = Green descriptive norm; EEC = Employee environmental commitment; Significance levels: * = p < .05, ** = p < .01, *** = p < .001*

Figure 5.4 – Model 2 illustrated with the results of SEM



5.4.2 Mediation

To assess the mediation effect of a green descriptive norm on EGB via employee environmental commitment, a bootstrapping simulation was employed. This was treated with 5,000 iterations to establish a confidence interval (Shrout & Bolger, 2002). This method is commonly advised to validate mediation, as it confirms mediation when both confidence intervals (with a 95% confidence level) do not encompass zero (Preacher & Hayes, 2008).

Model 1 (green four scale)

The Green four Scale in model 1 showed that the indirect effect was significant for all four of the categories, with medium sized effects, thus supporting hypothesis 12a. As shown in section 5.4.1 the direct effect of a green descriptive norm was significant for the latter three categories of the green four EGB scale. However, the indirect effect of green descriptive norm via employee environmental commitment was significant for all four categories: conserving ($\beta = 0.181$, $p < 0.001$, 95% CI = [0.140, 0222]), transforming ($\beta = 0.219$, $p < 0.001$, 95% CI = [0.145, 0.293]), influencing others ($\beta = 0.287$, $p < 0.001$, 95% CI = [0.192, 0.381]), and taking initiative ($\beta = 0.197$, $p < 0.001$, 95% CI = [0.108, 0.286]). Thus, there was partial mediation for these three categories. Conversely the conserving category did not have a significant direct relationship with green descriptive norm, therefore the direct effect of green descriptive norm is completely mediated by employee environmental commitment. The results of this mediation analysis can be found in Table 5.17.

The total effect size on the categories of EGB are also presented in Tabe 5.17, due to the large direct effect size, as well as medium indirect sizes, the total effect sizes are particularly high for 3 of the categories, especially influencing others ($\beta = 0.935$, $p < 0.001$, 95% CI = [0.841, 1.029]) and taking initiative ($\beta = 0.859$, $p < 0.001$, 95% CI = [0.770, 0.948]).

Table 5.17 - Model 1 (Green Four Scale), the indirect and total effects of green descriptive norms on EGB. Mediated by employee environmental commitment.

	Conserving (EGB)				Transforming (EGB)			
	β	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**	
EEC	0.181	8.714	0.14	0.222	0.219	5.821	0.145	0.293
Total	0.203	9.826	0.163	0.244	0.602	16.032	0.528	0.675
	Influencing others (EGB)				**Taking initiative (EGB)**			
	β	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**	
EEC	0.287	5.94	0.192	0.381	0.197	4.346	0.108	0.286
Total	0.935	19.436	0.841	1.029	0.859	18.958	0.77	0.948

All mediation tested with 5,000 bootstrap. EEC = Employee environmental commitment; All significance levels p < .001

Model 2 (goal proximity Scale)

Hypothesis 12b was accepted as the indirect effect (mediation via employee environmental commitment) was significant for both proximal EGB ($\beta = 0.196$, $p < 0.001$, 95% CI = [0.147, 0.246]) and distal EGB ($\beta = 0.236$, $p < 0.001$, 95% CI = [0.118, 0.349]). The effect of this mediation pathway differed between the categories of EGB. For proximal EGB, the effect of green descriptive norm was completely mediated by employee environmental commitment, as there was no direct effect. In contrast distal EGB was only partially mediated due to the strong relationship between a green descriptive norm and distal EGB. The results of this mediation analysis can be found in Table 5.18.

Table 5.18 - Model 2 (Goal Proximity Scale), the indirect and total effects of a green descriptive norm on EGB. Mediated by employee environmental commitment.

	Proximal EGB				Distal EGB			
	β	**Z - Value**	**95% CI**		**β**	**Z - Value**	**95% CI**	
EEC	0.196	7.842	0.147	0.246	0.236	4.001	0.118	0.349
Total	0.225	8.442	0.174	0.279	0.906	17.169	0.8	1.007

All mediation tested with 5,000 bootstrap. EEC = Employee environmental commitment; All significance levels p < .001

6. Discussion

Chapter 6 will discuss the results. It will be structured following the models and hypotheses. Starting with the results of the tests on the measurement scale, next the results of the second model that used social exchange mechanisms to test levels of EGB, and lastly the discussion of the green descriptive norm model.

6.1 Discussion (measurement scale)

The aim of the first empirical chapter in this thesis was to determine if there are categories of EGB that go beyond the commonly conceptualised idea of EGB as a unidimensional construct. While it is simple to measure EGB as a single scale, it behoves us as researchers to make sure that we are truly measuring what we intend to be measuring. Previous constructs have gone through similar processes as they reach certain stages of maturity. An apparent comparison is with organisational citizenship behaviours (OCB), which needed a 'clean-up' after there was a state where researchers used overlapping constructs and did not define them clearly (Organ, 1997). This was a decade after this same author wrote a seminal book on the topic (Organ, 1988), and as we are now a decade after the green five taxonomy was published (Ones & Dilchert, 2012) it seems equally fitting that a EGB construct clean-up is required.

The results found four dimensions, rather than five, due to issues with the avoiding harm category. Therefore, hypothesis 1, that there are five distinct categories of EGB, was rejected. This was due to a few factors concerning the removed category 'avoiding harm'.

First, the items in this category and even one of the sub-categories within it (pollution) has similar items to the conserving category. In that the concept behind them seemed very aligned with the conserving type behaviours, for example 2 of the items talk about reducing the impact on the environment and pollution (e.g. Cantor et al., 2012). There is a subcategory within conserving called reducing use that these are plausibly more

conceptually related to. Although maybe slightly different in terms of the focus of what is being reduced, these didn't seem conceptually distinct enough and was supported by the empirical results. Arguably other items in this category also align with taking initiative more closely (e.g. 'I take part in environmentally friendly work programs').

Second, previous researchers found very few items filtered into this category in their review (Francoeur et al., 2021), perhaps an indication of the conceptual obscurity. Either conceptually it is difficult to asked questions relating to this or that it is not distinct category of EGB.

Third, an alternative could be that this EGB category (avoiding harm) conceptually underpins all pro-environmental workplace behaviours. The definition of this category – 'the avoidance and inhibition of negative environmental behaviours' – would be implicit in doing positive environmental behaviours. If I recycle everything at work (environmental behaviour), inherent in this is avoiding a negative environmental behaviour (putting recyclable materials into general waste for a dumpsite). Therefore, conceptually it seems justified that this category caused problems in the analysis.

The green four scale was a result of the removal of the avoiding harm category. It had a good fit to the data and made sense theoretically due to the steps taken in the reduction process. However, three categories of the green four EGB scale (transforming, influencing others, and taking initiative), had very high correlations with each other. There was a noticeable difference between these categories and the conserving EGB category. Therefore the goal proximity model makes more sense as the better conceptualisation of EGB.

Hypothesis 2 was confirmed showing a strong relationship between the two dimensions of EGB based on the desired outcome of the behaviour. The separation was theorised to be surrounding the desired goal of the behaviour. The goal proximity distinction

builds upon previous conceptual distinctions of direct-indirect (Ones & Dilchert, 2012a) and intensity and uncertainty aspects of EGB (Ciocirlan, 2017), meaning they are higher in terms of social risk by challenging the status quo (Morrison, 2011; Organ, 1988). The desired goal of distal EGB are complex, long-term, and need collaboration among employees. This is likely why these categories are better grouped together, in contrast to the individual focused, immediate, and simpler to achieve conserving behaviours (Graves et al., 2013). Indeed, Bandura (1997, 2000) highlights the importance of collective efficacy in achieving certain desired outcomes of higher level goals. Research has found evidence that collective outcome expectancy is associated with both pro-environmental intentions and behaviour outside organisations (Bonniface & Henley, 2008), and can act as a mediator for conserving behaviours at work, however this relationship requires further research (Carrico & Riemer, 2011).

Due to this outcome based distinction, it is likely that proximal EGB would be more strongly related to individual mechanisms e.g. self-efficacy (Bandura, 1997), and distal EGB showing stronger relationship with social mechanisms e.g. theory of normative conduct (Cialdini & Jacobson, 2021) or collective efficacy (Bandura, 2000). Lastly, as transforming more accurately fits within the distal behaviours, it brings into question the previous 'direct' and 'indirect' taxonomic separation of proposed by Ones and Dilchert (2012b). This separation seems not the ideal way to conceptualise EGB, rather the goal proximity of the behaviour is a better way to distinguish types of EGB. The authors of this direct-indirect distinction have proposed more recently that the environmental outcomes that are outside of the individuals control are an important distinction (Ones et al., 2018). Thus, furthering the support for the goal proximity hypothesised separation.

The associations with green human resource management, commitment to organisations green goals, and affective commitment to the organisation all confirmed

hypothesis 3. All the relationships were positive and significant for both model 1 (green four scale) and model 2 (goal proximity EGB scale). This was true when tested as a whole model and as also when tested independently as separate subfactors, confirming the validity of the nomological network. In this study, commitment to the organisation has the weakest relationship with the EGB factors, this is in line with previous findings showing small effect sizes of affective commitment on EGB (Paillé & Boiral, 2013; Saifulina et al., 2021; Temminck et al., 2015). When the models were tested as a multiple regression this relationship became insignificant. This is not unexpected as employee environmental commitment logically would completely mediate the relationship between affective commitment and EGB, due to the foci of 'green' in both employee environmental commitment and EGB constructs. This relationship should be further examined in additional research. Lastly, similarly to the results of this study, green human resource management has been shown to consistently have medium effect size on affecting EGB (Chaudhary, 2020; Dumont et al., 2017; Hameed et al., 2020). Commitment to the green goals of the organisation also has previously shown medium (Paillé & Mejía Morelos, 2017; Pellegrini et al., 2018) to strong predictive strength of EGB (Afsar & Umrani, 2020; Raineri & Paillé, 2016).

In the same way that organisational citizenship behaviours have multiple categories (Organ et al., 2006), and characteristics influenced by different level antecedents (Masterson et al., 2000), EGB will equally have various distinctions. This multidimensional scales of EGB presented here consolidates the five-dimension theorisation proposed in the literature (Ones & Dilchert, 2012a; Wiernik et al., 2016) and also provides evidence for two dimensional scale of proximal EGB and distal EGB. This research coherently brings together the established green five taxonomy and other conceptualisations of intensity (Ciocirlan,

2017), difficulty (Graves & Sarkis, 2018), and uncertainty (Ones et al., 2018). Thus, moving the literature forward on EGB by developing novels ways to understand, and measure, EGB.

More clarity is needed on EGB to understand the complexity of environmental transitions and the behaviour changes that are required (Tang et al., 2023). Some have started to test the difficulty of performing EGB (Graves & Sarkis, 2018) and others have added conceptually to the idea that pro-environmental behaviours at work are not all equal and there are differing levels of 'intensity' (Ciocirlan, 2017). This research built on these ideas, especially the notion of uncertainty around the outcome of the behaviour (ibid). Furthering the justification for this distinction were the original authors of the green five taxonomy who also called for considering the environmental outcomes of EGB, as focusing on *only* the behaviour itself, a component of the EGB construct is omitted (Ones et al., 2018).

A main takeaway from this research is the high correlations that were found between three of the four categories in the green four EGB scale, meaning these three categories may be grouped by some related characteristic. This led to the testing of a second hypothesis of the goal proximity EGB scale which seems a more accurate separation. This new distinction is suggested to be based around individuals' perception of the certainty surrounding the goal of the behaviour. This focused on the idea of outcome expectancy (Bandura, 1997), that the belief you will be able to achieve the outcome desired is a key part of the behavioural characteristic. This built on the work of previous conceptualisations (Ciocirlan, 2017; Francoeur et al., 2021; Ones et al., 2018) and critical evaluation of the green five taxonomy (Ones & Dilchert, 2012). This goal proximity EGB scale also proved to have very good psychometric properties. This chapter found that the two categories (proximal and distal EGB) in this scale are strongly correlated constructs – as would be expect – yet were distinct from each other.

Although not specifically the aim of the chapter, it lends itself to more theoretical development. EGB should not be considered a singular concept that focuses on recycling a piece of paper or reusing a coffee cup. These behaviours are not commensurate with attempting to reduce organisational emissions through novel work processes. Surprisingly it is not standard practice that these quite different behaviours are delineated clearly, although some have started this process (Ciocirlan, 2017; Graves & Sarkis, 2018; Francoeur et al., 2021). This thesis goes some way to achieving this, supporting the idea with empirical evidence.

6.2 Discussion (supportive mechanisms)

6.2.1 Summary of supportive mechanism results

The focus of this part of the study was on relational mechanisms derived from social exchange theory (Blau, 1964) and normative mechanisms from the theory of normative conduct (Cialdini et al., 1990). The research addressed the paucity of studies examining traditional exchange mechanisms (supervisory and organisational support) and their impact on EGB, as generally support for environmentally specific behaviours dominate this field (Paillé, et al., 2019; Raineri & Paillé, 2016; Graves et al., 2013, 2019; Robertson & Carleton, 2018; Cantor et al., 2012; Lamm et al., 2015; Saifulina et al., 2021; Zientara & Zamojska, 2018). As a green factor seems to be an important element in the antecedents to EGB, this study combined the traditional exchange mechanisms with a green normative influence in one model. This examined the potential moderating role of a green organisational climate (the operationalisation of the green normative mechanisms) on the mediation pathway between organisational and supervisory support and EGB, via affective commitment.

The results of the research in this thesis found that perceived organisational support is more important for transforming, influencing others and taking initiative in the green five EGB scale, or the distal behaviours in the goal proximity EGB scale. Where-as perceived

supervisory support was more important for conserving behaviours in model 1, which are more or less equivalent to proximal EGB in model 2. Proximal EGB were significantly related to perceived supervisory support, meaning that a supervisors support can, logically, affect the immediate and individual behaviours of the employee as this satisfies the reciprocity principle of social exchange theory (Gouldner, 1960). The proximal EGB, however, was not related to perceived organisational support and had only a small relationship with the other organisational level factor (affective commitment to the organisation). In contrast to these results, distal EGB were significantly and strongly related to these organisational level factors but were not related to supervisory support. This also is logical as the distal EGB have outcomes that are related to the organisation. Thus, the organisational level mechanisms will influence the prevalence of these organisational level outcome EGB. In this way the findings support previous research into OCB, in that they can be categorised as focused on the supervisor or focused on the organisation (Cropanzano & Mitchell, 2005; Masterson et al., 2000). Similarly, distal EGB outcomes will most likely be beyond the remit of the supervisor meaning these behaviours will not satisfy the reciprocity mechanism with supervisory support; this would explain the non-significant result. The small relationship between affective commitment and proximal EGB could be due to affective commitment being an organisational level construct, and perhaps commitment to the supervisor would be a more appropriate construct to use for these behaviours in future research.

Affective commitment to the organisation is an important factor across all EGB categories, although the effect size was small for the proximal type behaviours and a large effect size for distal EGB, especially influencing others in the green four EGB scale. This is logical as the long-term, collaborative nature of distal EGB requires commitment from the employee too be willing to put the effort into these behaviours without certainty of a final

outcome. Green organisational climate had a significant moderation effect on the relationship between affective commitment and all EGB categories. It was particularly strong for distal behaviours and taking initiative. Unsurprisingly as these behaviours focus on the organisation more generally as a perception of a green organisational climate would logically encourage this type of behaviour through normative mechanisms. The moderated mediation test found that a strong green organisational climate was significant for all EGB categories across the green four EGB scale and goal proximity EGB scale. These effect sizes were larger under the perceived organisational support (POS) mediation pathway, showing that again EGB is more strongly affected by organisational level factors. A weak green organisational climate was still significant for many categories, although smaller effect sizes than the strong green organisational climate condition. This shows that affective commitment mediation is still effective at predicting EGB to a certain extent. No effect on conserving or proximal EGB was found under weak climate conditions.

6.2.2 Perceived organisational support

There was an expected small to medium relationship between POS and all the categories of EGB in model 1 and 2. Although not directly hypothesised, the effect size of organisational support on distal EGB would be expected to be larger as these behaviours necessitate more organisational level change. This was the case as it was found that for green four EGB scale, POS was significantly related to the transforming, influencing others and taking initiative categories, these relationships were medium sized. This is expected as these behaviours require collaboration and working with others (i.e. the outcome is beyond the individuals' actions) within in the organisation than a simple individualistic EGB. No relationship was found with conserving EGB. Similarly, the findings of model 2 (goal proximity EGB scale) showed that POS was significantly related to distal EGB and not proximal EGB. The small to medium effect sizes found in these relationships is comparable

to that found by others (Lamm et al., 2013; Paillé & Boiral, 2013), although this thesis goes further and uncovers the nuance within EGB categories that has not been examined. The findings show that conserving (or proximal) behaviours are not significantly affected, so if these behaviours were measured together with other categories

Although this study found that there was no significant relationship of POS to proximal or conserving EGB. There was an indirect effect through the mediation via affective commitment, with the total effect between small, but significant. There is a clear difference between these categories of EGB and the distal EGB category (and its equivalents in the green four EGB scale), which all showed significant direct relationships, strong mediation effect and thus a high total effect. A reason for this difference in effect size could be due to the former EGB (proximal and conserving) being small scale and it is unlikely they would not be noticed or acknowledged by the organisation. The simple and individual nature of proximal EGB would not help the organisation in any significant way, as compared to the distal EGB which require more effort from the employee. Essentially, these proximal EGB are unlikely to satisfy the reciprocity mechanism as theorised in social exchange theory (Blau, 1964), as high-quality exchanges underpin this theory (Brandes et al., 2004), meaning that employees would want to give back to the organisation in a meaningful way by supporting organisational improvement (Rhoades & Eisenberger, 2002). Thus, the finding that there is a smaller relationship between POS and proximal EGB (the total effect) is understandable, as these low-effort proximal behaviours is unlikely to be considered supporting organisational improvement.

6.2.3 Perceived supervisory support

As a recent review suggests, further understanding is needed around the pros and cons of supportive behaviours by leaders in organisations (Tang et al., 2023). It must be clear what kind of supportive behaviours are present and under what contexts. After reviewing different

areas of literature of supervisors and managers, it was concluded that not all of these leadership constructs are effective at predicting green behaviours in the workplace (Robertson & Barling, 2015). This does not mean it is not a relevant area, rather it is more complex than simply support from a leader will result in encouraging EGB. This is confirmed by multiple literature reviews that found support from managers to be an important factor in EGB, with a quarter of studies referencing a lack of leadership as an obstacle to EGB (Yuriev et al., 2018), and others reviews highlighting importance of leadership activities and behaviours (Norton et al., 2015). It is important to note the strength of the relationship between PSS and EGB is more focused on the environmentally specific leadership element, which has several studies supporting this relationship (Cantor et al., 2012, 2015; Graves et al., 2013; Paillé, Mejía Morelos, et al., 2019; Raineri & Paillé, 2016; Ramus, 2001; Ramus & Steger, 2000). As well as a lack of pro-environmental behaviour from the leader affecting the willingness of employees to perform EGB (Robertson & Barling, 2013; Wesselink et al., 2017).

The more contentious issue, is around the more general conceptualisation of PSS (i.e. support for wellbeing) as having a mixed relationship with EGB, which contradicts the established relationship of PSS with OCB (Cropanzano & Mitchell, 2005; Eisenberger et al., 2002). This study aimed to build on the research of others as some find a significant positive relationship between PSS and EGB (Gkorezis, 2015) while others has found a slight negative relationship with EGB (Paillé et al., 2013). A recent study looked into this difference between general PSS and environmentally specific PSS (naming them 'emotional' and 'instrumental' supervisory support respectively), finding that while the environmentally specific support was important for all EGB, the general support was only important under certain conditions (Paillé, Mejía-Morelos, et al., 2020).

This thesis did not measure multiple types of supervisory support, yet it does support the findings of these previous research. It shows the PSS does not have a strong relationship with EGB and that it is not just conditions that alter its effectiveness, but also the type of EGB expressed. Proximal EGB does have a relationship through the direct and indirect pathways, although the direct pathway has a much stronger effect. Moreover, distal EGB is only significantly affected by PSS through the mediation pathway (see 4.5.5), with the direct and total effects being insignificant. These results show that different categories of EGB have unique relationships with PSS, and this could be an explanation for the previous mixed results in the literature, as the type of EGB has not been defined and separated in previous models. One difference is the immediacy of the behaviour, proximal EGB are immediate and simple behaviours one can do around the office could be considered more aligned with the 'helping' OCB, such-as courtesy behaviours around the office (Organ, 1988). Alternatively it may be that the results show that proximal and distal EGB distinction may be similar conceptually to the study done by Masterson et al. (2000) who found that there were two components to OCB. They found OCB-O (citizenship beneficial to the organisation) and OCB-S (citizenship beneficial to the supervisor). We could postulate that proximal and distal EGB follow this relationship, that proximal EGB is beneficial to the supervisor due to its immediate nature, while distal EGB is beneficial to the organisation as the behaviours aim is larger organisational change.

Leadership has many different conceptualisations and while the environmentally specific leadership constructs have clear relationships with EGB, the more generalised leadership styles are not convincingly related. The results of this chapter show that the characteristic of the EGB is an important component that has been overlooked. Focusing on the outcome of the behaviours, the goal proximity distinction shows the effect that PSS has is mediated to a great extent by affective commitment, especially for distal EGB.

6.2.4 Affective commitment

The relationship between affective commitment was strong for distal EGB as well as the three similarly aligned categories of the green four scale (transforming, influencing others, and taking initiative). Proximal EGB and conserving behaviours were also significantly related to affective commitment, although this was a much weaker relationship. These relationships are all as hypothesised, as affective commitment has been found to be positively related to EGB (Lamm et al., 2013; Paillé & Boiral, 2013; Saifulina et al., 2021), and affective commitment is a well-known construct for predicting a plethora of positive outcomes for employee-organisation relationships (Cropanzano & Mitchell, 2005). However, this study adds nuance to this relationship showing that the commitment to the organisation is strongly related to distal EGB. These distal EGB are complex as they are long-term, require collaboration with other colleagues, and has uncertainty regarding the outcome. Thus, it is logical that these behaviours have a stronger relationship with affective commitment as due to these characteristics it is unlikely that an employee would perform these behaviours unless they were committed to their organisation.

The higher levels of affective commitment would mean they are willing to put effort into behaviours that require time and collaboration with other organisational actors. Proximal EGB, on the other hand, do not require commitment due to the immediate outcome and their relative simplicity. There is still a significant relationship, perhaps due to environmental sustainability being considered a social responsibility and acts as a pro-social motivator that goes beyond the organisation (Aguilera et al., 2007; Raineri & Paillé, 2016). Thus, the social exchange mechanism still can justify this to some extent. If the organisation is committed to their organisation, and they understand recycling as a pro-social behaviour (see chapter 6), they are more likely to perform these. Although the commitment is less of an explanatory factor.

6.2.5 Mediation

The indirect effects (i.e. the mediation pathway via affective commitment) shows significant results across model 1 for both POS and PSS. Affective commitment is an important mediator of these support factors when predicting EGB. This indirect effect was stronger in particular for transforming, influencing others, and taking initiative when mediating the effects of POS. This resulted in the total effects being very strong for these three categories. The strength of the relationship reinforces the argument that the organisational level factors (which affective commitment is argued to be - Eisenberger et al., 2001), are the msot important level when attempting to predict these distal EGB. In contrast these organisational level factors are less important for conserving EGB, which showed a much smaller relationship as these are proximal EGB which require less organisational level support and commitment as theorised.

PSS mediation pathway was significant across all four categories, but they had all much smaller effects compared to the mediation pathway from POS. The only exception was conserving again that had a smaller effect size from PSS mediation but not substantial. For the latter three categories (transforming, influencing others, and taking initiative) affective commitment completely mediates the relationship. The direct effects and the total effects were found to be insignificant for these categories. Conserving was also the only EGB category in the green four EGB scale to have a significant total effect.

In goal proximity EGB scale the relationship explained in the previous paragraph become more evident. For the POS mediation pathway, the indirect effect was strong for distal EGB and combined with the direct effect had a very high total effect. Proximal EGB was significant but showed very modest results. The indirect pathway from PSS was significant both proximal and distal EGB, again much smaller effect sizes than POS pathway, especially for distal EGB.

Models 1 and 2 show the strength of the mediation effect of affective commitment with varying effect sizes. As discussed in the previous section, affective commitment is likely to have a more pronounced relationship with the distal EGB and behaviours that require collaboration and an investment of time to achieve the desired outcome of the behaviours – which was resolutely confirmed in the mediation analysis. Through both the mediation analysis of model 1 and 2, the categories that have higher levels of social requirement has the strongest relationship with affective commitment (transforming/influencing others/taking initiative and distal EGB respectively). Thus, support is important, but the organisational level influence (through POS and affective commitment) is far more important than supervisory support, as well as supervisory support only being important for distal EGB if affective commitment is present in the employee.

6.2.6 Moderation

The hypothesised moderation of affective commitment by green organisational climate was significant across all categories of EGB. The interaction variable that was created to test this found a small relationship for conserving and proximal EGB, gradually getting slightly larger in its effect size across the other categories (transforming/influencing others/taking initiative and distal EGB), with the largest being taking initiative. This could be due to the combination of the employee being affectively committed to the organisation and also perceiving that organisation to have a green organisational climate, meaning they will be more prepared to engage in more complex social EGB. This relationship was expected and again shows the organisational level factors (green organisational climate) has a more pronounced effect on the distal EGB than proximal.

Previous research found that a green organisational climate moderates employee's personal environmental norm (i.e. feelings of obligation towards environmental protection)

(Chou, 2014), and also moderates leadership relationships with employees which leads to higher instances of EGB (Wu et al., 2021). Another study found a positive enhancing effect of a green organisational climate on affective commitment relationship with EGB in the tourism industry (Zientara & Zamojska, 2018). The research in this chapter supports the findings of this latter study, showing that this moderating effect is likely to be across multiple organisations rather than specifically one industry. This chapter also adds nuance by showing that the moderating effect of a green organisational climate is particularly convincing with the more complex EGB.

6.2.7 Moderated mediation

The moderating effect was explored further in the moderated mediation analysis which elucidates the importance of the green organisational climate. This analysis shows that when there is a strong green organisational climate the effect on all categories of EGB is effective in both model 1 and model 2. More specifically, when there is a strong green organisational climate the indirect effect pathway via POS is strong for transforming, influencing others, and taking initiative (model 1), and distal EGB (model 2). Similarly, the effect strong green organisational climate on the indirect pathway for PSS was significant for all categories. For the week green organisational climate condition, the indirect pathway for POS shows an insignificant relationship with conserving and proximal EGB, the other categories were all significant. There is a sizable difference between the effect sizes of a weak and strong climate, showing the variability of the perception of a green organisational climate and its effect on EGB. These are particularly noticeable for influencing others and taking initiative, showing for these types of distal EGB a strong climate is particularly important for committed employees to engage in the behaviour. These two categories are the 'indirect' category of Ones & Dilchert's (2012b) green five taxonomy, meaning they require

interaction with other employees and the environmental outcome being actoned by others. As discussed in chapter 3 the new distinction of goal proximity has been used, including transforming. But perhaps these two categories of EGB are more sensitive to the green organisational climate than the other distal EGB (transforming), which is considered direct by Ones & Dilchert's (2012b).

These findings are in line with previous research that also show a stronger green organisational climate can increase green behavioural intentions and EGB, where-as a weak green organisational climate can reduce intention to perform EGB (Norton et al., 2017). This strength of a green organisational climate also can explain the differences of EGB reported by employees between hotels, where other individual factors (personal environmental norm) become more important for EGB when there is a weak green organisational climate (Chou, 2014). Similarly, others found that a strong green organisational climate can moderate the effect of personal environmental values and EGB (Zientara & Zamojska, 2018).

This study adds to these findings through understanding the difference between proximal and distal EGB. There is a clear difference in the mediation of PSS and POS, with POS and affective commitment being much more effective at explaining EGB that PSS. The exception is the direct effect of PSS, that is significantly related to conserving or proximal EGB. A green organisational climate enhances relationships across all EGB categories but is noticeably impactful for the EGB behaviours that require the most collaboration. Social exchange theory proves useful for predicting EGB when considering the organisational level factors, especially affective commitment and green organisational climates.

Organisations would enable more EGB behaviours by increasingly signal their commitment to environmental sustainability, these green values in turn are perceived by employees as organisation and will lead to more EGB through both a social exchange

mechanism and a normative effect. Evidently the organisational level factors should be explored more from these findings, as these were far superior predictors than supervisory support.

6.3 Discussion (green descriptive norms)

This part of the study aimed to investigate the influence of the currently underexplored normative mechanisms from the theory of normative conduct (Cialdini et al., 1990). The research addressed the lacuna of studies examining green descriptive norms (operationalised as colleagues' pro-environmental behaviours at work) and their relationship with EGB and the potential mediating effect of employee's commitment to the organisation environmental goals. The theory posits that individuals notice the behaviours of similar others in a given context and are influenced to mimic these behaviours (Cialdini et al., 1991). Generally, research uses a green organisational climate as the operationalisation of green norms in the workplace (Norton et al., 2014) which has being shown to have a strong relationship with EGB (Biswas et al., 2021; Dahiya, 2020; Das et al., 2019; Naz et al., 2023; Norton et al., 2014). This is an injunctive norm meaning that it is based on what is perceived to be valued in a given context rather than actually what is observed in terms of behaviour. What has not been explored is whether the descriptive norm, that is focused on how others actually behave (Göckeritz et al., 2010), has a relationship with employee EGB.

Similarly to the previous section this study examined how different categories of EGB may be influenced in unique ways by the proposed antecedents (through the use of the green five and goal proximity EGB scales). While research has used employee environmental commitment and shown a strong relationship (Paille et al., 2016), we do not know if this construct has specific relationships to different categories of EGB.

Hypothesis 10a and 10b were partially accepted as the green descriptive norm was also found to be important for transforming, influencing others, and taking initiative in model 1 as well as distal EGB for model 2. However, the results showed that the conserving and proximal behavioural categories had no significant relationship with EGB. This could be due to 2 reasons, firstly it could be due to the instrument used to represent the colleague behaviour construct in this study (Pinzone et al., 2016). This instrument is comprised of items that represented similar items to transforming, influencing others, and taking initiative. Foer example one item 'my colleagues suggest ways to reduce our environmental impacts' is very similar to the transforming EGB item 'I look for new ways to reduce our environmental impacts'. These similarities can be seen across the three categories or the 'distal' EGB. It therefore is unsurprising that they were found to have a strong relationship with green descriptive norms. Therefore, if the green descriptive norm is a norm of employees behaving in a specifically 'influencing others' type of manner, then this is more likely to be related to an individual's EGB. This would not necessarily lead to proximal type EGB, as was found in this chapter's study.

This adds evidence for the conclusions of the measurement scale analysis, that the proximal-distal divide is a clear and identifiable demarcation. That employees do in fact conceptualise distal and proximal behaviour broadly as two subcategories of EGB. Two reasons could explain this, one explanation is the lack of the green descriptive norm including items about colleagues recycling (as explained in the previous paragraph). An alternative proposition is that the characteristics of these categories of behaviours makes them inherently different and that proximal EGB are just less affected by the behaviour of others (i.e. descriptive norms). The individual characteristic of proximal EGBs means they are less affected by the normative pressure that the theory of normative conduct argues (Cialdini et al., 1991). If a green behavioural norm is present at work, it can lead to more distal EGB,

where-as proximal EGB is unaffected by this. Another competing potential explanation around this divide could be due to the cultural understanding and lexicon of conserving and proximal type behaviours in western societies and is explained in more detail in the further theoretical implications section.

Hypothesis 11a and 11b were both confirmed as employee environmental commitment was found to have a strong relationship with all the categories of EGB tested, this is in line with previous studies that have also found a strong relationship with EGB (Afsar & Umrani, 2020; Paillé & Mejía Morelos, 2017; Perez et al., 2009; Raineri & Paillé, 2016; Safari et al., 2018). is likely that this pro-environmental internal motivation mechanism (the commitment to environmental goals) (Herscovitch & Meyer, 2002), is akin to pro-environmental values of the employee and they are committed to behave in any way that supports any environmental practices at their organisation, although this was not tested it could be a fruitful avenue for further research.. Therefore, whatever the pro-environmental behaviour is – whether proximal EGB or distal EGB – an employee with high levels of commitment to the environmental goals of the organisation would perform more EGB, as was found in this study. This points to the need to maximise this specific environmental commitment mindset in employees.

Employee environmental commitment also led to complete mediation of the conserving EGB (model 1) and proximal EGB (model 2) categories and partial mediation of transforming, influencing others, and taking initiative as well as distal EGB. Thus, accepting hypothesis 12a and 12b. These results show that the distal EGB, that require collaboration and time to successfully be achieved, are strongly affected by a green descriptive norm. This is logical as if employees see the colleagues behaving in a pro environmental way, they are more likely to believe that their behaviour (EGB) will be successful in achieving their goals of decreasing environmental impact. Proximal EGB only needs oneself to achieve the desired

outcome and therefore is only affected by the individual mechanism in this chapter. As employee environmental commitment is an individual motivational mechanism, it is logical that it affects the individual focused EGB. The green descriptive norm does not have an effect when mediated by employee environmental commitment. Showing this individual psychological mechanism is more important for the proximal behaviours which are inherently more individual.

As this research has found it is not just the social influence that can affect employees, but also this intra-personal process that leads to EGB such-as employee environmental commitment. This latter mechanism being more important for the individual focused EGB (i.e. proximal). Thus, while an individual may perform more distal EGB when they notice their colleagues also performing these behaviours, they also are partially influenced by their own psychological commitment to these behaviours. It is unclear whether this commitment is a consequence of perceiving these green descriptive norms or if there are other factors present, for example collective efficacy may moderate this relationship (Bandura, 2007; Chen et al., 2015).

6.4 contributions

6.4.1 Measurement scale contributions

This thesis has two main theoretical contributions around the construct of EGB. First, developing our understanding of the established taxonomic categorisation of EGB into five categories by Ones and Dilchert (2012a), this chapter applies empirical tests to the categorisation adding to the conceptualisation of EGB as a multidimensional construct. Contrary to the initial five category structure in the green five taxonomy, the analysis reveals it is more likely to be a four-factor model. The reasons are discussed in the previous section. Notably, due to substantial correlations among three of these factors, a two-factor conceptualisation emerges as more fitting. This separation is based on the uncertainty surrounding the attainment of the outcomes of the EGB (i.e. the environmental goals) and is focused on the 'goal proximity'. This is akin to Bandura's (1982) notion of outcome expectancy, distinct from self-efficacy, a novel perspective on EGB. Collaboration, temporality, and complexity contribute to this uncertainty. This builds on other conceptualisations around EGB of intensity (Ciocirlan, 2017), difficulty (Graves & Sarkis, 2018), and uncertainty (Ones et al., 2018). As the goal of many EGB transcends the individual, acknowledging this distinction is important, so much so that the original authors of the green five taxonomy argue that outcomes EGB has neglected environmental outcomes that are outside the control of individuals (Ones et al., 2018).

Second, the thesis introduces two alternative measurement scales for EGB that can be used to further the intricacy of research on this subject. Both scales have good psychometric properties and provide subscales that represent distinct categories of EGB. The first model is the four-dimensional scale that is similarly aligned with the five category taxonomy (Ones & Dilchert, 2012a), named the green five EGB scale. The alternative is a two-dimensional scale, with the two dimensions distinguished by the outcome of the behaviour, this is named the

goal proximity EGB scale and determines whether the EGB is proximal or distal. This builds on other conceptualisations of intensity (Ciocirlan, 2017), difficulty (Graves & Sarkis, 2018), and uncertainty (Ones et al., 2018). This goal proximity EGB scale is the most important contribution, as three of the four categories of the green four EGB scale had very high correlations, implying that the two dimensions of the goal proximity EGB scale are a better way to think about EGB.

This contribution is important to move the literature beyond measuring EGB unidimensional conceptualisation of EGB, preventing further unique and incomparable conceptualisations of EGB. However, this is especially useful in transcending the dominance of conserving behaviours in EGB research. We are unlikely to develop useful results or consistent theories around constructs of employee behaviour if proximal behaviours and distal behaviours are considered equal. While this chapter does not completely solve this issue, it moves our understanding beyond some of the limitations of the current state of the literature (Katz et al., 2022). This second contribution can be seen as answering the call that "*Urgent progress therefore is needed by extending the concern to all the literature on the operationalization of green workplace behaviors*."(Francoeur et al., 2021, p.2).

6.4.2 Social exchange mechanism contributions

This thesis contributes theoretically to our understanding of EGB and social exchange theory in multiple ways. First, it found that similar to OCB having different levels of focus (Masterson et al., 2000), EGB also can be divided along this idea of different levels of focus. The related mechanisms are also delineated by this focus around the level of support. For example, a more proximal level of support (supervisory) leads to more proximal EGB, in contrast to a more distal form of support (organisational) leads to more distal EGB. This insight provides evidence to the characteristics of these different categories of EGB.

Second, a green organisational climate is important to enhance the effect of affective commitment to the organisation and EGB. This finding shows how a strong green organisational climate is especially important, with large differences in effect size between a weak and strong green organisational climate. This shows that the green contextual factors are particularly important.

6.4.3 Green descriptive norm contributions

The descriptive normative effect is well-known in pro-environmental behavioural literature (Cialdini et al., 1990; Jaeger & Schultz, 2017), but has yet to make it into organisational psychology literature on EGB. The theoretical contribution of this thesis in terms of a green descriptive norm shows us that there is a very strong effect of a green descriptive norm on individual EGB. By elucidating this research gap, this study contributes to the existing literature and provides empirical evidence that these norms are important, especially for the distal EGB. These distal EGB are the more 'important' ones that will lead to larger changes within organisations. These constructs clearly hold potentially substantial predictive capability for EGB, with the strong relationships between green descriptive norms and distal EGB particularly. By considering psychological literature in different fields, and delineating differences between what constitutes norms, this research chapter has shown the effect that the green behaviour of others can have.

6.4.4 Practical contributions

The practical contributions of this research can be seen as enhancing organisation's ability to investigate their own employees' characteristics regarding sustainability behaviour. These scales be used as tools to benchmark their employees on categories of EGB, allowing them to pinpoint areas of good practice and relate these to environmental performance more effectively. Some behaviours may lead to greater shifts in organisation culture and actual reduction in environmental damage. Moreover, these instruments could be used to inform interventions aimed at achieving their sustainability transitioning goals.

Creating a green organisational climate can increase the prevalence of EGB through enhancing the effect of support and commitment from the employee. Being aware that support at a higher-level support can lead to the more substantial EGB, especially with the more transforming behaviours that lead to larger changes towards environmental sustainability, thus organisational level factors need to be focused on, rather than relying on supervisors to push the environmental agenda.

6.5 Limitations

The limitations of this thesis are outlined in this section. First, the cross-sectional method means that the direction of these relationships is unknown. Cross-sectional studies cannot establish causality as they only provide correlations between variables at one specific time point and do not demonstrate changes over time. This lack of longitudinal data is a major limitation. Ideally linear growth model would have been applied as a research methodology, showing how increasing levels of green organisational climate would lead to increasing instances of EGB over time. It could be that the converse of the models presented here is true, that EGB also leads to higher levels of employee environmental commitment over time. This would be theorised under the behavioural commitment concept introduced in chapter 2. Indeed, recent research has found this relationship to exist with EGB predicting the outcome variable of affective commitment, although their study was cross-sectional and one could question the models direction, they acknowledge this in the conclusion that their causality claims could be questioned (as the reversed may be true, affective commitment leading to EGB) (Ren et al., 2023).

Second, this research was intended for three targeted organisations meaning that the perceptions of a green organisational climate could be aggregated by unit within an

organisation. If this could be done in the future it would be strong evidence or the effect of creating a green organisational climate and their effect on EGB. Through a referent-shift consensus model (Chan, 1998), which would determine within group agreement of more focused green climates within the organisation – i.e. psychological climates (Schneider & Reichers, 1983). This would give a more substantial underpinning to the relationships, rather than individuals perception of these factors.

Third, cross-sectional designs may overlook individual variability and fail to capture intra-individual fluctuations. We cannot account for unknown factors that influenced the way in which the participants answered the items on that day. Overcoming these emotional factors can be done by using diary methodologies that account for these fluctuations, as some have done regarding EGB (Norton et al., 2017).

Fourth, there is a risk of bias in the participant selection. The participants are either one or two steps removed from the lead researcher through social media or other dissemination processes, or they use amazon mechanical Turk. This may have biased the responses to people interested in answering these questions of EGB. Additionally, social desirability bias may affect the accuracy of self-reported data. This issue is pervasive in the study of EGB and future research should go beyond relying on exclusively self-reported measures and employee other methodologies, such-as experimental approaches (Unsworth & McNeill, 2017).

Fifth, the operationalisation of the green descriptive norm was done with the only previously validated measurement scale it could find (Pinzone et al., 2016), the consequence was it was represented by items that represent the distal category of EGB. There were no items that asked whether the individual perceived their employees to recycle or reuse items i.e. proximal EGB.

6.6 Future research

Further research could utilise either the green four EGB scale or the goal proximity EGB scale to represent EGB completely or use any of the sub-factors independently depending on the research aims. This could lead to novel understanding of the nature of the separate subfactors as they clearly have unique characteristics (proximal vs distal). Proximal EGB, seems more influenced by direct effects of supervisors rather than organisational level factors. Through determining the motivational, normative, relational, or structural mechanisms that affect each EGB category uniquely. Potentially, individual focused psychological mechanisms will predict proximal EGB e.g. self-determination theory (Deci et al., 2001), self-efficacy (Bandura, 1997), theory of planned behaviour (specifically perceived behavioural control) (Ajzen, 1991). Whereas distal EGB would be more influenced by organisational and social factors due to their more collective and collaborative nature (e.g. social exchange theory (Cropanzano & Mitchell, 2005), theory of normative conduct (Cialdini et al., 1990), or collective efficacy (Bandura, 2000)).

Pro-environmental values and identity based theories may affect both proximal and distal in different ways, again these are avenues for productive research (e.g. value-belief-norm theory (Stern, 2000), social identity theory (Haslam, 2004), or person-organisation fit (Hicklenton et al., 2019b)). This line of inquiry lends itself to further interdisciplinary research, moving beyond individual based theories of behaviour towards collective action. Lastly, considering the importance of leadership on climate issues, exploring how leadership styles can influence these categories of EGB differently is important for practical application in organisations (e.g. transformational leadership (Bass, 2010), and environmentally focused leadership styles (Ramus & Steger, 2000; Robertson & Barling, 2013)).

Another recent review also referred to the theory of locus of control (Katz et al., 2022), which has similarities with self-efficacy (Bandura, 1997), with their conclusion stating

that this construct is likely to be an important correlate with EGB (Katz et al., 2022). Utilising these constructs to further explore and understand the characteristics of the proximal EGB and the distal EGB categories differently is an exciting avenue to pursue. As this study found that the distal behaviours require higher levels of employee commitment, it would also be a worthwhile pursuit to examine EGB in relation to motivational theories, such as self-determination theory (Ryan & Deci, 1985). This theory highlights the importance of autonomy, competence and relatedness (Deci et al., 2001) – it may be that the autonomy and competence aspects are more related to proximal behaviours as the collaboration and complexity needed for distal behaviours would perhaps stymie this relationship, although related may be more connected to distal EGB due to the collaboration needed.

Regarding the final model of this study looking at a employee environmental commitment leading to EGB (Cantor et al., 2012; Raineri & Paillé, 2016), there is a lacuna in the literature in whether behavioural commitment acts as a driver for more attitudinal commitment towards the environmental goals of the organisation. That is to say, as employees perform more EGB they will, overtime, become more committed to environmental sustainability goals. As such this research cannot be completely certain of the directionality of the effects. For example, it may be that the individual conforms to the green descriptive norm in the workplace without being committed to environmental goals, and that overtime this results in the commitment to the environmental goals of the organisation. This would be through cognitive dissonance model presented earlier, that people aim to achieve consistency with their attitudes and behaviours (Festinger, 1957).

Further research could utilise the goal proximity EGB scale to determine whether the green descriptive norm is in fact only related to distal EGB. This would mean extending the green descriptive norm into a multidimensional construct (proximal and distal) as the scale utilised in this study operationalises EGB as a unidimensional construct (Pinzone et al.,

2016). This would lead to an understanding of whether specific types of green descriptive norm are distinctive. Does a green descriptive norm that is based on recycling and proximal type behaviours of colleagues' lead to proximal EGB of individuals, and do they also have a relationship with the distal EGB. Perhaps a green descriptive norm that is based on recycling and proximal type behaviours may only lead to distal EGB, similarly to the results of this chapter. This hypothesis can be tested equally contrarywise to test the validity of the results of this study. This would require testing multiple types of green descriptive norms – based on unique types of behaviours that may constitute that norm e.g. proximal green descriptive norm and distal green descriptive norm – and their effects of each of these eon individuals EGB (proximal and distal).

6.7 EGB cateories not used

This study excluded three areas of pro-environmental behaviours at work: in-role, counterproductive, and collective behaviours. First, in-role behaviours will have separate antecendents to EGB and require research into the dyanmics of the organistion, roles and tasks that are set. However, while it is important to understand EGB and their antecedents, the onus of environmental sustainability far exceeds individual discretionary behaviour. One example of an EGB item is "consider fuel efficiency of the work vehicles you use when appropriate" (Stritch and Christensen, 2014). This raises the issue that the goal of these behaviours (create a low-emission fleet of vehicles) are not within the control of an employee to complete through their discretionary choices. And even if the employee 'considers' this, they may be in no position to act upon this – perhaps even being egatively affected but the realisation they cannot change their potetnailly polluting vehicle. Considering this, future research should focus on understanding how distal EGB interact with changes in oranganisation policy and processes, as the these organisational level factors are perhaps even

a pre-requirsite to some types of EGB. And equally some distal EGB will influence organisational policy and practices.

Second, counterproducitve EGB was omitted as it needs to be "*entirely constructed*" (Francoeur *et al.*, 2021, p.17). The concept of counterproductive EGB needs to be developed further, as it raises difficult questions such-as: counterproductive for who? Some have describe counterproductive EGB as bad for the organisation and good for the environment (e.g. environmental whistleblowing or using resources at work to prevent the organisation progressing in areas that would be detrimental to the environment) (Ciocirlan, 2017). Others have described counterproductive EGB as bad for the environment and bad for the organisation (e.g. leaving the lights on, not using the proper waste streams provided) (Ones & Dilchert, 2012a), and some operationalise counterproductive EGB as being potentially good for the organisation while being bad for the environment (e.g. "environmental protection taking second place behind other work obligations") (Homburg & Stolberg, 2006), which would maximise profit activities over environmental behaviours. Thus, further research should develop the definition of counterproductive EGB, deciding if they are bad for the environment, bad for the organisation, or both. If the organisation is striving for environmental sustainability, and the norms and goals of the organisation are 'green', then counterproductive EGB could be defined as bad for both. This is similar to workplace deviance, which are behaviours that violate the (green) norms and threatens organisational wellbeing (Robinson & Bennett, 1997). This contextual dependency complicates counterproductive EGB as environmental sustainability creates tensions between organisational values that require managerial compromises (Demers & Gond, 2020). This transition towards organisational sustainability also results in conflicting subcultures and logics (Kok et al., 2019) and 'tough moral reasoning' (Hengst *et al.*, 2020, p.258). Thus,

counterproductive EGB are an extremely complicated construct that would require many cautions when researching.

Third, collective EGB is an understudied component in this literature. Collective behaviours require aggregations of reported EGB and using the referent shift model (Chan, 1998). This would be important for EGB, as a collective behaviour in these domains would lead to green organisational climates (Norton et al., 2014) and green cultures (Norton et al., 2015). Collective distal EGB would be particularly important for supporting environmental sustainability transitions within organisations. To our knowledge no studies have used the perceived collective behaviours of others in a work unit as an antecedent to other factors. This line of inquiry is similar to testing the effect of the behaviours of leaders (Blok et al., 2015; Wesselink et al., 2017) and emotional contagion (Robertson & Barling, 2013) on EGB, as the conduct of others is known to affect our own behaviour (Cialdini et al., 1991). We would argue that this influence of the behaviours of other employees in one's unit (i.e. descriptive norm) is important due to the power of normative influence in pro-environmental behaviour (Cialdini et al., 1990). In chapter 5 this relationship is explored to a certain extent, attempting to elucidate the relationship between behaviours of others (colleagues in this case) and individuals own EGB. This chapter will shine a light on this new potential mechanism for organisational change. Inquiry into how dynamic norms shift across an organisation and the conditions of contagion effects in relation to EGB are very interesting routes, especially as this has recently been shown to be effective in pro-environmental behaviour research (de Groot et al., 2021; Loschelder et al., 2019; Sparkman & Walton, 2017).

7. Theoretical and practical implications

Chapter 7 will synthesise the findings of this thesis into a critical perspective that implicates policy implications and further theoretical implications. This chapter takes the findings and situates it more widely beyond the small corner of psycho-social mechanisms affecting EGB to be more expansive and acknowledge that these behaviours and practices more widely need more interdisciplinary consideration. This chapter essentially highlights how this thesis will help the understanding of pro-environmental behaviours at work with more efficacious ways to promote employees to perform more EGB. Practical implications are outlined that discuss not only the findings from this thesis but again some other recommendations for how organisations can expediate these changes, for example how to create a green organisational climate. Lastly, future research directions are outlined with these constructive criticisms in mind.

7.1 Further theoretical implications

To understand the findings in the wider context of organisational change towards environmental sustainability, the findings will be expanded to other concept adjacent to the ones used in this thesis. The chapter will point to potential theoretical contributions and will go beyond the previous chapter, which reported the results and discussed each chapter on an individual basis, to extend the findings of the thesis towards further meaning and potential insights that may be gleaned from this research. This section will also apply a more critical lens to the research, highlighting issues with isolated research attempting to understand complex multilayered problems, such-as environmental sustainability transitions.

7.1.1 Behavioural commitment

An employee's commitment to their organisation's pro-environmental goals has a strong relationship with EGB, as shown in chapter 5. This green commitment is important as it gives people a direction in their behaviours and this sense of commitment facilitates the

realisation of goals that transcend the self-interest of the individual (Meyer & Herscovitch, 2001), leading to its usefulness as a concept to solving collective problems (Paillé & Raineri, 2016), such-as environmental sustainability. All the commitment constructs used in this thesis so far come under attitudinal commitment (affective commitment in chapter 4, and environmental goal commitment in chapter 5), which is a psychological state that can be expressed intuitively (Herscovitch & Meyer, 2002). However, what has not been explored is the extent to which behavioural commitment can also play a role in shaping employees. Behavioural commitment is a commitment to the organisation through the process of behaving in a certain way (Brown, 1996), meaning that it is not a mindset but rather a process of doing something that eventually leads to commitment. The phrase "*To act is to commit oneself*" (Salancik, 1977, p.4) encapsulates the concept.

The concept of behavioural commitment has generally received a lot less attention in the literature as others have noted (Shiu et al., 2014), presumably because it lacks a motivational component. It simply represents the idea that by acting in a certain way can result in that individual being committed to the thing that behaviour represents. Unlike attitudinal commitment, Salancik (1977) argues that commitment is not primarily motivated by a desire to reciprocate rewards received. Instead, it stems from a desire for psychological consistency across various situations. According to this viewpoint, commitment evolves from one's own actions as a means of justifying oneself retrospectively, this evaluation is referred to by others as a "post hoc self-justification" regarding commitment (Oliver, 1990). For example, if I were to recycle at work because it was required and there were ample mechanisms to influence me to recycle, then one would see oneself as a person who recycles. I would then become committed to recycling and what it represents. The mechanism for this behavioural commitment could be explained through cognitive dissonance (Festinger, 1957). The consistency model of cognitive dissonance is an amelioration process, where either

behavioural change or attitudinal change is required to maintain a sense of internal consistency in one's identity (Festinger, 1957). Cognitive dissonance avoids the apparent tensions between personal values and the behaviours one exhibits, by either changing one's behaviour or changing one's attitudes towards it. Either I would stop recycling or integrate it into my sense of self as someone who recycles.

The idea of behavioural commitment is also argued by other academics who note that some sort of commitment (verbal, behavioural, or otherwise), even if they are not attitudinally committed, will ultimately lead to consistent behaviours that are aligned with what that behaviour represents i.e. a behavioural commitment (Cialdini, 2009). In an organisation this would mean employees would engage in EGB as it becomes more accepting and desired at work, would also become committed to what the EGB represents. In this case, as employees perform EGB they would become more committed to the environmental goals of the organisation as it aligns with their own behaviour.

This chapter at various points argues for further theoretical implications and thinking beyond siloed understanding of large-scale transitions, such-as environmental sustainability. Utilising learning from other fields can expedite our learning within organisational psychology and sustainability. For example, political ecology, although not in an organisational setting, discusses these behavioural commitment issues in other language, *"the ways people's behaviours and livelihoods (their actions) within ecologies of influence what they think about their environment (their ideas), which in turn influences who they think they are (their identities)"* (Robbins, 2019, p.216). This field takes a critical approach to the influence of powerful actors and institutions on 'environmental subjects' - essentially how people come to care about the environment and what this relationship looks like (Agrawal, 2005; Robbins, 2019). Agrawal's (2005) seminal paper discusses the notion of 'environmentality', where-by institutional forces and environmental regulation ultimately

changes the identity of the subjects of these new regulatory forces. This research was focused on the relationships of communities to the environment and how they evolve when management along with an imperative for conserving was bestowed upon them.

The parallels with the coming wave of environmental sustainability in organisations is evident. Institutional forces (government policy for net-zero - Skidmore, 2019) and organisational forces (more than half of the world's largest companies commit to net zero - Net Zero Tracker, 2023) will have effects of changing relationships to the environment, albeit from a unique business model framing, rather than direct management of a forest (e.g. Agrawal, 2005). While this thesis is not taking a critical approach, it is worthwhile noting that researchers in this field are, through a different lens, discussing ideas around the 'behavioural commitment' concept. As EGB is required more in organisations, the ideas employees have about these behaviours will shift, and ultimately will likely influence how they perceive themselves (their identity), at least at work.

The behavioural commitment approach is unusual as it focuses mainly on the behaviours that are desired, rather than any consideration of the way the individuals may feel about it (Brown, 1996). Moreover, while behavioural commitment is generally not used for OCB, OCBE or other discretionary behaviours, it will become an increasingly pertinent factor in EGB, as organisations will have to constrain the behaviours of their employees at some point to meet their net-zero targets. The literature on EGB is still focused mainly on the voluntary nature of the behaviours, which this research has followed, meaning that this behavioural commitment focus has not gained traction yet. However, in the future this will likely be a pertinent part of the commitment construct to be used. It could be argued that if the organisation requires green behaviours as part of the employee's job role, or at least for employees to refrain from certain activities (e.g. driving to work), then these behaviours would become more 'in-role'. This would lead to an individual being aware of committing to

‘green behaviours’, thus resulting in them becoming committed to the organisations environmental goals through the behavioural commitment mechanisms. Moreover, it could be hypothesised that over time if EGB increase, this would also reinforce higher levels of attitudinal commitment leading to a reinforcing cycle of behavioural to attitudinal commitment and contrarywise.

It may also be that this is part of a dynamic process of commitment where-by the behaviour and affective commitment both co-evolve, that some suggest (Brown, 1996). This would be the organisational, or even institutional level, actors signalling the importance of these EGB, which would manifest through various psychological mechanisms (individual, motivational, support, norms, leadership, teams etc.). These higher levels could also mandate these behaviours, which gives rise to another avenue for research. Through an employee working at a ‘green’ organisation, which means the behavioural norms are more aligned with EGB, this could act as a ‘binding of the individual to behavioural acts’(Kiesler & Sakumura, 1966). And thus, the behavioural commitment concept could be researched.

As this thesis looked at EGB, that are widely studied as extra-role behaviours, it could be argued that this behavioural commitment concept is not useful as very few will be contractually required to perform these behaviours (i.e. ‘in-role’). However, as transitions occur in organisations the goals and concomitant values are shifting, the movement toward valuing sustainability would lead to benefits to the individual at a later point. This is similar to the reflection on OCB that occurred after a maturation of the construct, concluding that perhaps it is best to exclude the conceptualising of OCB as ‘extra-role’, ‘beyond the job’, or ‘unrewarded by the formal system’ (Organ, 1997). Thus, as organisations shift to these new domains of value, a behavioural commitment mechanism may become indicative – especially in coming decades when legal requirements will force new organisational behaviour towards environmental sustainability.

Further research could also include concepts of person-organisation fit theories that look at how these green values may align and converge over time (Edwards, 1996) as the value congruence is known to be important motivating mechanism for employees (Edwards & Cable, 2009), and has some evidence with green organisational values congruence (Hicklenton et al., 2019b). The mechanism for increasing this value congruence between organisation and employee may derive in part from this behavioural commitment notion. In that as organisations encourage and even require EGB, it would lead to behavioural commitment, subsequentially attitudinal commitment, and consequentially shift their own personal values towards environmental sustainability.

Lastly, studies could then look at how this leads to spillover in personal lives. Do organisational environmental transitions lead to EGB in employees, leading them to be committed to the green goals of the organisation? and subsequently lead to spillover effects in their personal lives? These longitudinal research questions were originally considered as part of this thesis but unfortunately was frustrated due to data collection issues.

7.1.2 Collective behaviour & the group/unit level

It is often discussed in climate change discourse that collective action is needed and that the problems are beyond the scope of individuals (Beck, 2016; CCC, 2019; Cialdini & Jacobson, 2021; ECC, 2022; Heald, 2017; Hornsey et al., 2021; IPPR, 2021). Considering this, the literature has yet to truly develop the idea of collective behaviour in relation to pro-environmental behaviour, especially at work. While this thesis did not specifically look at collective behaviour, it goes some way to understanding how this collective notion is integrated into the characteristics of pro-environmental behaviours at the individual level.

Collective behaviour is somewhat difficult to define as there can be multiple conceptualisations of the construct. Collective behaviour has been attributed to the behaviour

of crowds and groups through a threshold model where a certain type of behaviour is done through cost-benefit analysis of multiple individuals (Granovetter, 1978). This is harder to measure in organisations, as collective behaviour is more akin to behavioural patterns within the organisation overtime, where the collective behaviours in pro-environmental transitions are more based on shifting norms, rather than instances of group behavioural dynamics (de Groot et al., 2021). This means that new collective behaviour (or perhaps more appropriately 'practices') emerge when old institutional norms fail (Turner & Killian, 1957). This is an interesting approach and requires deconstructing institutional norms and logics that affect organisational practices and culture (Kok et al., 2019). However, this thesis is focusing on psychological mechanisms of EGB, which has a more focal approach to collective behaviour. This would be, for example, operationalised by using the reference shift model, that essentially aggregates the behaviours of multiple individuals to come to the conclusion of a collective behaviour (Chan, 1998). This method has been used with collective citizenship behaviour (collective OCB), and has been shown to positively related to organisational performance (Gong et al., 2010). In this way collective EGB would likely be very important for environmental performance of organisations; especially due to all employees needing to behave environmentally sustainably for the organisation to effectively reach its net-zero and sustainability goals.

There is a lack of research in this area as the most influential scales do not include collective behaviours (Bissing-Olson et al., 2013; Boiral & Paillé, 2012; Graves et al., 2013; Robertson & Barling, 2013), however in a review of all the scales measuring green behaviours at work, it was found that two studies did use collective measures (Kim et al., 2014; Pinzone et al., 2016) which totalled only 13 items (7.65%) (Francoeur et al., 2021). The collective EGB that was measured in Kim *et al.* (2014) was the 'green advocacy' of the group members, essentially this was an aggregation of the individuals 'influencing other'

EGB (Ones & Dilchert, 2012a). This found that at a later point individuals performed more individual recycling EGB. What this studied measured was akin to a descriptive norm effect, meaning that the perceived green values of others (green advocacy) led employees to also behave in a pro-environmental way. This aggregation would be considered a collective EGB in psychological research, although could be described just as easily as a 'green norm', rather than collective EGB (green advocacy). This again highlights the need to be aware of what is defined as an EGB as if green advocacy is a EGB, this can easily be conflated with the perception of green values of colleagues (a green psychological climate - Norton, Zacher and Ashkanasy, 2014) (see 2.4 for more details).

The only other study to have looked at collective EGB define it as an "*aggregation of individual EGBs, defined as individual discretionary actions contributing … towards the improvement of environment-related performance*" (Pinzone *et al.*, 2016, p.202). They measured individuals perception about the amount other employees perform EGB across the organisation, and then aggregated these results as the outcome variable (Pinzone et al., 2016). Arguably this study is measuring what factors lead to a green descriptive norm or a green behavioural work climate, as it is looking at the perception of the group's behaviour, rather than an aggregation of individual EGB. This is a more interesting approach to collective EGB as it is determining the effect of the perceived EGB of others on one's own EGB. That is the descriptive norm (the behaviour of others) influencing one's own behaviour, as described in the theory of normative conduct (Cialdini et al., 1990), and is explored in section 2.4. This is the case with much organisational literature as those that focus on collective factors usually focus on organisational climate perspectives (Chou, 2014; Norton et al., 2014) (arguably the aforementioned green group advocacy is also a green psychological climate within the work unit).

In the goal proximity EGB scale a major differentiator between the categories of EGB is the *individual* characteristic of proximal EGB and the *collaborative* characteristic of distal EGB. This is not to be confused with individual and collective behaviours as collective green behaviours at work are *aggregations of individual EGBs*. Therefore, you could have 'collective' proximal EGBs in the workplace through this aggregation. If many individuals recycle in a unit, then there is 'collective proximal EGB' in that unit. This is useful in its own right for determining knowledge and the robustness of this construct. However, this does not address the wider issues of organisational transformation towards environmental sustainability that requires long-term changes, and therefore more reliant on distal EGB

Considering the stated need for collective behaviour it behoves researchers to understand this better. Collective behaviour that is recycling in an organisational unit, will not alone reach net-zero goals. Hence the long-term and collaborative nature of distal EGB is more important to focus on, even though it is an 'individual' behaviour. Individual here means that an employee is performing that behaviour, for example, suggesting a new energy saving process to the manager. However, the conceptualisation of distal EGB (the category of EGB that this behaviour would be included in) means that it will need collaboration to be successfully achieved. Essentially it has 'collective' characteristics overtime. Thus, it is important to focus on the outcome-based conceptualisation of these behaviours (i.e. goal proximity EGB scale). While 'collective recycling behaviour' is important in one instance, it is not the same as behaviours that focus on a larger outcome that requires collaboration (i.e. distal EGB). Ultimately individuals must perform a specific behaviour themselves, but it must be in pursuit of a larger goal. If organisational psychologists want to contribute to sustainability transitions, research should not just focus on 'collective behaviour', if these behaviours are not targeted on effective environmental goals.

The reframing described here of collective behaviour towards collective outcome (i.e. distal EGB or pro-environmental behaviours with similar characteristics), is an important way to bridge the seemingly insurmountable gap between individual action and the collective problem. Organisational behavioural science can help this environmental sustainability transition by focusing on individuals, as organisations are a "*function of persons behaving in them*" (Schneider, 1987, p.438) and "*sustainability at the macro level starts with individual action*" (Ciocirlan, 2017, p.63). However, as we have seen it is best to reorient our understanding of collective action in organisations based around the outcomes. Therefore, while behaviour starts with individuals actually performing a behaviour, the scope and structures they have around them need to direct and enable people.

The perception that others are acting towards environmental sustainability has also been noted in relation to pro-environmental behaviour (Steg & de Groot, 2010), and that it is "*particularly important in case of large-scale problems that can only be solved when many people cooperate, such as reducing harmful emissions*" (p.727). Collective behaviour is important in the transition to environmental sustainability, but it should be noted that collective behaviours in the way described above are more akin to behavioural norms (Cialdini et al., 1991). This thesis explored the descriptive norms as important for influencing individual EGB but does not consider this as collective EGB per se.

7.1.3 Descriptive norms and culture

There is growing evidence of the strength of descriptive norms in influencing pro-environmental behaviours (Cialdini & Jacobson, 2021; Cialdini et al., 1990; Farrow et al., 2017; Göckeritz et al., 2010; Loschelder et al., 2019; Sparkman & Walton, 2017; van der Werff & Steg, 2016). Organisations are in unique positions to enhance this relationship as they can manipulate the work context to encourage certain behaviours, such-as EGB. As the behaviours of other employees become more prominent, this will likely result in a dynamic

norm effect (Loschelder et al., 2019), whereby the behaviours of others changing towards pro-environmentalism acts as an activating normative mechanism (akin to the results of chapter 5). This will ultimately, over time, lead towards new norms where 'the way things are done around here' (Deal & Kennedy, 1988) are environmentally sustainable, and could lead to green organisational cultures that underlying beliefs about how organisations should behave has shift. Utilising organisational psychology for the transition and the new associated processes and practices could support the top-down approaches that are coming more prominent in business (CCC, 2019; Skidmore, 2019; UNFCCC, 2021). This is a potential mechanism for enhancing green organisational climates and cultures through making use of dynamic descriptive norms (de Groot et al., 2021; Schneider et al., 2013).

The organisational shift towards environmental sustainability indicate new norms and 'way things are done around here' (Deal & Kennedy, 1988). This thesis has looked at norms through psychological mechanisms, however other organisational cultural theories can be seen as related to the findings of this thesis. Schein's (1990) 3-layered model of organisational culture, with the 'underlying belief and assumptions' being the bottom layer and then increasingly more visible layers being espoused values and then the 'artefacts' that are more regularly observed on a day to day basis (Schein, 2010). For example, by promoting cycling to work schemes with visible employees partaking would be an artefact of a 'new green descriptive norm' (level 1), this could then be combined with messaging from the organisation, as well as increased prominence of cycling parking spots. This shows that this green commuting is a valued behaviour at the organisation (espoused values – level 2). Overtime as this new norm solidifies, it becomes unusual for an employee not to do this behaviour as the underlying beliefs of what it means to work at this business has shifted (level 3).

Creating green organisational cultures is not a small undertaking, and large organisations often have subcultures that understand sustainability differently (Kok et al., 2019). This notion of conflicting conceptualisations of sustainability is similar to the competing values framework, where competing cultural values can both be enacted at the same time but continually compete for prominence (Quin & Rohrbaugh, 1983). The competing values framework has been used throughout the literature in organisational cultural studies (Hartnell et al., 2011; Quinn & Rohrbaugh, 1981; Silva et al., 2004; van Muijen, 1999). The competing values framework has been applied to environmental sustainability organisational cultures by Linnenluecke and Griffiths (2009). The authors used the framework to indicate that organisational cultures (or sub-cultures within an organisation) can emphasise corporate sustainability in different ways, and that communication and change programs should be adjusted accordingly. This means that while creating green organisational cultures is an important step to change workforce behaviour, there are different 'shades of green' (Norton et al., 2015), meaning that understanding of environmental sustainability is moulded by existing (sub)cultures (Kok et al., 2019), logics (Demers & Gond, 2020), and existing processes and practices within organisations (Hengst et al., 2020).

It is important to acknowledge that there will be competing ideas in organisations and that a green organisational culture is not a homogenous concept (Linnenluecke et al., 2009). The research on green organisational culture using the competing values framework state that the 'ideal' culture profile for corporate sustainability needs to be low on internal process values, and high on open systems values." (Linnenluecke and Griffiths, 2010, p.364). However, all organisations need to transition, and using these cultural archetypes that organisation falls into would influence the interpretation of the espoused values and sustainability agendas. Artefacts have unique meanings that become symbols within organisation that go beyond their objective manifestation (Schein, 1990). Therefore, when

organisations attempt to create these green organisational norms (injunctive and descriptive), they must be cognisant of the typology of their current culture and how to communicate the new green values (Norton et al., 2015).

This thesis looked at the norms within workplaces from a psychological perspective; by linking these normative influences on other fields of research, we can make research contributions more efficacious. Thus while this thesis found that both descriptive and injunctive norms (from a psychological perspective) lead to EGB, the meaning of these green norms are not homogenous, with unique artefacts and values that create the impressions and perceptions of a green organisational culture (Schein, 2010; Wijethilake et al., 2021). This understanding that there are multiple 'shades of green' of organisational culture means that the communication and change management interventions and processes must be aware of these pre-existing understandings in the organisation to make the transition more efficacious (Norton et al., 2015) – especially when some cultures are more resistant to change (Linnenluecke & Griffiths, 2010).

7.1.4 Critiquing the underlying meaning of the goal proximity distinction

The notion of proximal and distal outcomes for pro-environmental behaviours has been the theme throughout this thesis, looking at how they are affected by antecedents separately and that EGB are not all equal and it is beyond a unidimensional construct. Two possible alternative reasons to the goal proximity distinction of EGB will be presented here, one is concerned with the level of cultural understanding and knowledge around the concept of recycling, and the second is the ability of the material and social infrastructure that permits these behaviours.

First, recycling and reducing waste have a long cultural history in the UK and USA. Since the 1970's recycling was made culturally significant in western nations, with

government policies and successful campaigns pushing individual responsibility and promoting consumers to recycle (Jaeger, 2018), alongside the development of the modern environmental movement (Carson, 1962). This can be traced back further to World War Two when recycling and reusing was forced into the public consciousness and became a culturally significant artefact (Denton & Weber, 2021), and as some have shown as far back as the seventeenth century (Werrett, 2013). Thus, it can be argued that there is historical significance and social understanding around recycling and reducing use that has a significant temporal background. The proximal category is mainly made up of these recycling and reducing use behaviours and could be an alternative reason to its separation from the other behavioural categories. This contrasts with the other categories of EGB (transforming, influencing others, and taking initiative) that all represent a contribution to the process of the organisation transitioning towards sustainability and net-zero emissions, which are new concepts when compared to recycling and reusing behaviours.

The second possibility is the availability of material infrastructure for the EGB. The proximal EGB would have physical artefacts (e.g. recycling bins, places to clean and reuse items), that make it both more cognitively visible (i.e. this is something important that this organisation does) and materially easier to perform. It is likely that if there were no recycling bins in offices many employees would not recycle. Thus, both the material infrastructure and the social relations and understandings of these behaviours (previous paragraph) could be the explanations for the difference between the proximal EGB and distal EGB. This is following ideas of social practice theory (Shove, 2010), that de-centres the individual as the main focus of analysis and focuses on the ‘practices’ that are ‘done’ in certain contexts (Warde, 2005). In this way ‘recycling’ is the practice that is ‘done’ at work, due to the physical and social circumstances that enable these behaviours. In essence this is moving away from a pure

agentic approach, towards acknowledging the (organisational) structures that also influence behaviour (Giddens, 1984).

Similarly, the idea that social and material structures are important in influencing out behaviours was acknowledged in a meta-analysis, where the authors define a need for choice architecture when time, resources and energy are low for pro-environmental behaviour (van Valkengoed et al., 2022). Choice architecture here means manipulating the context (i.e. the structure) of the environment to enable or nudge behaviours in a certain direction, in this case pro-environmental behaviours. A psychological mechanism, such-as a social norm, along with some simple adjustments to the context can increase the rate of pro-environmental behaviours (Byerly et al., 2018; van Valkengoed et al., 2022). In the case of a work context, these have been utilised over time as we have both the 'manipulation' of context (i.e. readily available recycling bins) and a social norm of recycling. It may be that the distinction between proximal and distal EGB is more to do with these social and material structures that allow for certain behaviours to be carried out. This is not as simple as nudging behaviours in a certain way to recycle more, as the complicated nature of distal EGB and the underlying implications of change throughout organisational structures, process, and practices would lead to challenging and disrupting social order within organisations.

The potential influences that go beyond individual psychology has been noted in pro-environmental behaviour change attempts through 'green champions', as changing the practices at organisations met with resistance from other employees (Hargreaves, 2011). The resistance came from colleagues who did not like change or disrupting the status quo. Although when looked at more systematically, environmental sustainability requires large changes and the resistance to change will be a major factor in sustainability transitions. The potential change embedded within environmental sustainability transitions would also have a concomitant effect on the organisational culture, changing the structures and behavioural

patterns people are familiar with, disrupting the ‘way things are done’ and would require larger cultural reorientation in the organisation (Baker-Shelley et al., 2017; Linnenluecke & Griffiths, 2010).

The ability of individuals to start to shift norms within organisations will likely come up against barriers and resistance from other employees (Hargreaves, 2011). The possible resistance is supported from recent research into pro-environmental behaviours that found that ‘innovators’ can make others feel morally inadequate and indirectly discourage then to engage in pro-environmental behaviours (Bolderdijk et al., 2018). Innovators in this context are consumers who opt for new pro-environmental products and items, their purchasing behaviour is indicate of a dynamic descriptive norms (Mortensen et al., 2017). This same mechanism could be seen by those in the workplace who deviate from the status quo by performing distal EGB. Thus, not only are the social and material structures that need to be overcome for employees but also the barriers of trying to be an example for colleagues without irritating them.

Lastly a recent meta-analysis on behavioural change interventions looked at multiple factors across many domains of behavioural research (Albarracín et al., 2024). They found that ‘access’ – defined as ‘*material or logistic resources to facilitate the performance of a behaviour*’ – was the only determinant with a large effect size across all the behavioural types (including pro-environmental behaviours). Where-as many other factors were negligible or small. Another recent paper also supports this, suggesting that generally focusing on individual level interventions are disappointingly modest and that we must focus on creating system level interventions and policy decisions across behavioural domains, including pro-environmental behaviours (Chater & Loewenstein, 2023). This again clearly shows the convergence of sociological practice theories and psychological behavioural theories.

This section has offered alternative reasons for the proposed proximal-distal divide. These have some merit; however, the issue still raises itself that ultimately the distal EGB require larger and more fundamental changes within organisations for the outcome of the behaviours to be successfully realised. They may be expedited and integrated more rapidly into organisational behavioural norms through social and material structures, as well as explicit acknowledgement and acceptance by the organisation. Nonetheless their successful outcome requires collaboration, temporal commitment, and complicated solutions that challenge current norms within organisations. The outcome of distal EGB is outside the individual's control and therefore incremental behavioural nudges are unlikely to be as effective as they are for proximal EGB. This is due to behavioural nudges being focused on the type of behaviour that can be performed immediately, individually and the intended persons have control over the outcome of the behaviours (choosing low-carbon food options, turning off to conserve energy etc.). Thus, even with social and material contextual changes it may not be sufficient to influence the distal EGB, for they must be more institutionalised into the culture and processes within the organisation. Ultimately this section reasons why these proximal and distal behaviours may have inherent differences, not critiquing the fact that those differences are in fact there.

7.2 Practical implications

This section will move towards identifying the practical implications of this research and how it may help organisations transition towards environmental sustainability. This means utilising human factors and the power of commitment and norms in deploying programs and interventions to target EGB. First, the interventions that could instigate EGB among employees will be discussed, and second the mechanisms that could create a pro-

environmental culture and climate. This latter point is important due to the strength of these social normative mechanisms as antecedents to EGB, as found in this thesis.

7.2.1 Benchmarking

One useful outcome of this thesis for organisations is the ability for human resource management to measure and monitor their employee's behaviour in regards to environmental sustainability. Organisations can use the goal proximity Scale, or the green four scale, to benchmark themselves against other organisations or against themselves over time. This will allow organisations to notice areas that they are lacking in when compared to others. This could lead to investigation or introduction of new policies and practices. For example, if they have lower levels of 'taking initiative' EGB, they could introduce channels that employees could use to recommend innovative ideas of actions the organisation could take to tackle environmental sustainability.

It would also be useful for the organisation to determine whether the type of behavioural category of EGB actually leads to their unit within the organisation transitioning towards environmental sustainability. It may be the case that the unit reports high levels of transforming behaviours, but the actual measurement of environmental metrics (emissions, waste etc.) remains unchanged. This would allow more concise investigation by the organisation to figure what types of behaviours are needed in creating the change. Thus, through using the multidimensional scales presented in this thesis, organisations could identify and target specific interventions that could support their environmental transitions.

7.2.2 Intervention suggestions for categories of EGB

This section will suggest interventions that could be utilised to increase both proximal and distal EGB, drawing on the research in this thesis and other similar studies on EGB.

Chapter 4 shows how organisational level support is important for distal EGB, however what is more important is the mediating effect of affective commitment to the organisation. This means that organisations wishing to observe more distal EGB in their employees should focus on creating more commitment to the organisation, this is especially important alongside a green organisational climate. Therefore, it is suggested that employees should be supported by their organisation more widely (not just the supervisor) and effort should be invested into creating a pro-environmental climate and culture (see section 6.2.3 for more details).

Commitment to the green goals of the organisations was also found to be significant for distal EGB, supporting others research (Raineri & Paillé, 2016). This also seems to work both ways. Recent research found that organisations that create pro-environmental working characteristics led to higher organisational commitment as well as job satisfaction and lower turnover intentions, especially when the individuals environmental values were higher (Kühner et al., 2024). Thus, while commitment leads to EGB, it can also be seen that if organisations encourage EGB through organisational climate and support, it can contrarywise lead to higher levels of organisational commitment.

Supervisory support is found to be more important for proximal EGB. Therefore, if the goal of the organisation is to promote recycling behaviours and reducing use of disposable items at the workplace, encouraging the supervisors and managers to support their subordinate's well-being is recommended, although the effect size is small. It is most important under the condition of a strong green organisational climate, which should remain the priority for organisations. This is supported by others work on supervisory support, where the well-being support led to EGB only under certain conditions (Paillé et al., 2020). However, research on leadership has found support for specifically environmental related behaviours by the supervisor has a stronger relationship (Paillé et al., 2019; Raineri & Paillé, 2016; Ramus, 2001; Ramus & Steger, 2000), and can also interact with person-environment

fit factors that lead to positive job attitudes (Kühner et al., 2024). Hence, while supervisory support it always recommended, for promoting EGB, encouraging specific environmental sustainability can work best – with concomitant benefits for employees (ibid).

The effect of a green organisational climate was found to enhance the effect of supervisory support of proximal EGB; thus, we can conclude in the same way for distal EGB that effort should be invested into creating a pro-environmental climate and culture (see section 6.2.3 for more details). Proximal EGB was also significantly related to commitment to the green goals of the organisation, showing that engendering this type of commitment is always a positive path for organisations to take to increase EGB of all types. Incentivising this commitment through green human resource management practices could be one route to this (Ansari et al., 2021; Roscoe et al., 2019)

This research found that increasing affective commitment is a perennial goal of organisations, with a plethora of positive outcomes (Cropanzano & Mitchell, 2005), and it is equally important for distal EGB. Therefore, the well documented interventions to provision organisational commitment should be utilised for EGB, such-as organisational support (Eisenberger et al., 1986), perceived fairness (Molm, 2003), and trust in the organisation (Aryee et al., 2002). Some suggestions for organisations to achieve this are as follows:

First, responsible leadership was found to be a key driver of EGB through their signalling the importance of environmental sustainability and increasing awareness in subordinates (Afsar et al., 2020). This needs to be seen as authentic leadership, otherwise employees may perceive the strategy as greenwashing, which has a negative effect on EGB (Tahir et al., 2020).

Second, integration in human resource management has been found to be positively related to EGB (Dumont et al., 2017; Roscoe et al., 2019), similarly environmental

sustainability training has been found to positively affect both environmental commitment to the organisation and EGB (Cop et al., 2020). Appraisals of employees engagement with environmental activities has also shown to be positively related to EGB (Cheema et al., 2020).

Third, dynamic norm interventions that provide information about change within the industries could be an effective way to induce behaviour change. This is based on the research that shows promise in this area in non-organisational pro-environmental behaviours (de Groot et al., 2021; Jaeger & Schultz, 2017; Loschelder et al., 2019; Sparkman & Walton, 2017).

This section discusses the interventions that could support the prevalence of EGB in organisations. All these interventions would contribute to employees perceiving that their organisations value environmental sustainability, this would consequently lead to green organisational cultures emerging. As we have seen this normative effect of green cultures and climates is an important antecedent of EGB. Thus, creating a green organisational norm is a crucial step in promoting EGB throughout organisations. This is explored more in the next section.

7.2.3 Further practical implications: creating pro-environmental climate and culture

The previous sections have discussed the importance of normative mechanisms in influencing EGB. This thesis has shown the importance of creating these green norms, the imperative that remains is how do these pro-environmental norms – or green climates and cultures – in the organisation emerge. This section extends this thesis findings to outline some of the practical step's organisations can take to instil a green climate and culture.

The concept of climate pertains to the observable aspects of organisational culture (Norton et al., 2015). This characteristic allows for quantification and comparison across different organisations, making it particularly appealing to practitioners (Schein, 2010). When considering organisational change, climate is shown to be less steady than culture (Ashkanasy & Nicholson, 2006), presenting a more viable focal point for interventions. Thus, as organisations aim to 'go green' they should measure the effect of interventions through climate perceptions as they are considered an artefact and are a more tangible construct to identify (Schein, 2010). Nonetheless it is important to have a cultural framework that provides meaning to the interventions, as attempts to change behaviour may fall short if there is not this contextualisation of the interventions to the organisation goals and values (Linnenluecke & Griffiths, 2010).

First, disseminating the new green values of the organisation is a crucial first step that is needed to inspire organisational greening at multiple levels. This can be encouraged through consistent communication of organisational values (Norton et al., 2015). Communicating the importance of becoming environmentally sustainable and the initiatives that the organisation is undertaking is vital (Brunton et al., 2017), making sure it is authentic and employees see it as such (Brunton et al., 2017; Jonsen et al., 2015). One example of an avenue to prove authenticity is to ensure transparency around the environmental performance and the steps required to meet the goals of the organisation (Delmas & Burbano, 2011). Additionally, research found that organisational support only increases individual environmental performance when they were satisfied with the organisations environmental engagement (Paillé et al., 2020). This means again that organisations must lead the way for EGB to be instilled across the employee base. This is in line with the research in this thesis finding organisational factors most important.

Second, organisational culture is intricately linked with executive leadership (Schein, 2010). Therefore, the environmental purview of executives and senior managers emerges as a crucial precursor to a pro-environmental climate and culture (Linnenluecke et al., 2009). As an example, Walls & Hoffman (2013) highlight that board members substantially contribute to positive deviations from institutional norms related to environmental sustainability. This, in turn, prompts organisations to allocate resources to sustainability endeavours surpassing conventional expectations. The importance of top management commitment has been found in other studies to effect the corporate environmentalism of multiple industries (Banerjee et al., 2003) and that training programs for corporate leaders are important for driving sustainability (Haney et al., 2020). An example of creating a pro-environmental organisational culture can be found in the Sierra Nevada case study which was far ahead of the current interest in corporate sustainability. This was driven by the strong pro-environmental values of the founder and shows that the executive leadership is important in creating a green culture (Casler et al., 2010).

Third, while executive leadership is imperative, immediate supervisory support is also an important predictor of EGB of employees. Research has shown that the exemplary (green) behaviour of the leader can influence the green advocacy of work units (synonymous with green organisational climate) (Kim et al., 2014). Other research supports this important effect of supervisors leading by example (Blok et al., 2015; Wesselink et al., 2017).

Fourth, the use of human resources management, research indicates that managers can use pro-environmental training, assessment, and incentivisation to contribute to the development of a green organisational culture (Roscoe et al., 2019). A comprehensive ability-motivation-opportunity framework is outlined by Renwick et al. (2013), showing the plethora of tools organisations have at their disposal to increase their environemntal management and practices. Green human resource management can also act as a direct antecedent to EGB

(Chaudhary, 2020; Dumont et al., 2017; Hameed et al., 2020; Renwick et al., 2013). Green competence building and green performance management also leads to perception that other employees are also engaging with EGB (Pinzone et al., 2016). Recognition and incentivising environmental initiatives and subsidising public and alternative transport are practices that the Sierra Nevada Brewing Company utilised that led to creating a green culture (Casler et al., 2010).

Fifth, avenue is the recruitment of employees whose values match with the organisations new green values (Renwick et al., 2013), which in turn will lead to person organisation fit theories of value congruence (Edwards, 1996; Edwards & Cable, 2009). Research found that green value congruence leads to increased levels of engagement at work (Hicklenton et al., 2019b). Organisations that recruit employees with green values will add to this process of organisational 'greening' as the spread environmental awareness which will embed into the behaviours of the organisation over time (Roscoe et al., 2019).

It is recommended that practitioners explore these diverse arrays of possible interventions. A final recommendation here would be that organisations should also go through a process of diagnosing their organisational culture. This could be done through the competing values framework (Cameron & Quinn, 2011) and could leverage certain processes, values or artefacts that maintain more meaning for that specific organisation (Hooijberg & Petrock, 1993). This could make interventions more efficacious if organisations also use this framework to understand the 'shade of green' in that organisation (see section 7.1.3) (Norton et al., 2015). This framework would align the green strategies and interventions along the dimensions of the culture making them more viable and contextualised (Linnenluecke et al., 2009).

7.3 Future directions

This section will start by outline the limitations of this thesis as a whole, the potential of the research aims, and therefore future research directions that could lead on from this thesis. Then discussion of the need for more integrated research into the futures that go beyond siloed theories (e.g. just psychological) in understanding organisational transitions to environmental sustainability. This is then finished with some thoughts on multi-level inquiry are outlined as these naturally follow the section on beyond siloed theories.

7.3.1 Limitations of this thesis and future directions

As has been described throughout this thesis, one of the major drawbacks of this research has been the fact that it ended up being cross-sectional. This means that the causality between the relationships of the factors used throughout this thesis cannot be certain. The intention was to work with a handful of organisations and do surveys over time to capture the change in EGB as these organisations attempt to implement environmental sustainability policies and programmes.

The lack of longitudinal data is a major limitation, and ideally the methodology used in this thesis would have been extended to linear growth models. If that was implemented, the methodology would enable the research to track the environmental policy changes over time, hypothesised concomitant increase in green organisational climates, and the resultant effect on EGB within specific units in organisations could be determined. The organisations the author was working with we're happy to engage in interviews and surveys at the outset, however after the interviews were completed, they became less favourable to surveys. One organisation did not reply, another was worried about survey fatigue in their organisations, and thus unfortunately this survey research fell short of the proposed methodology.

An additional issue around not being able to conduct longitudinal research was the lack of being able to test the difference between descriptive and injunctive norms. As both green values (green organisational climate) and green behaviours (green descriptive norm) are both considered normative effects yet are qualitatively different (Cialdini et al., 1991) with unique motivational mechanisms (Cialdini, 2011).

Ideally this thesis would have liked to study the relationship between these two normative influences and EGB, but without the longitudinal analysis it would be difficult to determine casual direction. For example, do the perceived green values (injunctive norm) of the organisation mediate the relationship between the green descriptive norm and individual EGB? Such that employees may notice colleagues performing EGB, yet it only influences them when the organisation clearly values these behaviours and indicate they are desired. Or is the opposite true, that even if there are green values espoused at the organisation the reality is that people do not actually behave in pro-environmental ways. Thus, the descriptive norm would mediate the injunctive norm. The latter seems to make more sense to the author however there is little research on this and it's difficult to justify the research aim without intervention and longitudinal based research.

7.3.2 Beyond siloed theories/disciplines

As discussed in section 7.1.4 there could be explanations beyond the scope of the psychological theories used in this thesis for the differences between types of EGB. These could supersede the nuances of the psychological mechanisms, such-as commitment to the environmental goals, and be important factors in changing the practices and behaviours throughout organisations. These behaviours, particularly distal EGB, will still eventually fall flat (even with high levels of commitment), unless there are supportive organisational conditions that both encourage and also integrate the behaviours and innovative ideas of

employees. There is evidence that burnout occurs when organisations don't support sustainability change initiatives emerging from employees (Wright et al., 2012). This thesis would argue that the psychological mechanism for that occurring is the lack of outcome efficacy that manifest from distal EGB. Thus, it is important to integrate multiple psychological theories but also sociological theories too. For instance, the structural factors (social and physical) should be considered alongside the agentic individual factors. This could be done in a number of ways.

First, if researchers wish to stay within the confines of psychological research, they could explore environmental psychology. This is a way that the context (environment) around us can have an affect the way we behave (Moser & Uzzell, 2003). This could be integrated with pro-environmental psychology (perhaps best termed 'green') that examines pro-environmental behaviours throughout society (Capstick et al., 2022). Combining these in the workplace could look at 'green environmental psychology', that explicitly investigates the ways to shape pro-environmental behaviour through the interplay of material structures with the individual. This is a way to maintain a more coherent methodological framework in exploring people within environmental transitions, however it does seem a less genuine attempt to truly understand the most efficacious way to transition, which would involve other disciplines beyond psychology.

An alternative to looking at the individual purely through psychological mechanisms, is popular sociology theories around practice. Research could look more widely at these social mechanism and structures that enable these behaviours and practices. This thesis found the social mechanisms are important for EGB and that the enormity of the problem to be solved in environmental transitions requires looking beyond the individual. This critique has been levelled at agentic theories of management regarding transitions to environmental sustainability (Shove & Walker, 2007). While these criticisms have some justification, they

can seem somewhat fatalistic – that the problem is too complex. However, acknowledging the criticisms of these authors we can glean insights from social practice theory (Hargreaves, 2011; Shove, 2010; Warde, 2005). The main arguments in social practice theory are to move beyond 'ABC' theories (attitude-behaviour-choice) which are popular with policy makers, highlighting the hypocrisy of these policy makers that promote individual change in policy, yet expound that individuals are also embedded of institutional, cultural and social norms (Shove, 2010). It is no surprise then that a value-action gap exists with regarding pro-environmental behaviours (Blake, 1999; Kollmuss & Agyeman, 2010), as even with green values the barriers to action and behaviour as insurmountable in some cases.

The framing of social practice theory is argue to be incommensurable with psychological behaviour research (Shove, 2010). Ultimately the argument of 'de-centring' the individual from analysis means that you focus on the 'practices' that are done and aim to change those, rather than attitudes and behaviours of individuals. However, this is ill-considered and seems to be in conflict with structuration theory of Giddens (1984), that explains we both reproduce structure (i.e. do practices without thinking about them) but also can change these structures through our agency (i.e. change the norms and laws through our deliberative actions). Individuals do have agency; however, we need to shift social and physical environments to enable this agency, rather than stymie it. This means integrating ideas of the 'structural' side of this practice theory, meaning that we create contexts and meanings around environmental sustainability that enable agency. Therefore, focusing on how institutional, cultural, and social norms can be transitioned towards environmental sustainability seems most important here. And where the overlap between practice theories and behavioural theories lies. This thesis has contributed by showing the importance of social norms. It would also benefit from understanding how institutional domains and the role of wider society infiltrate into our daily work lives. This could help us move beyond

understanding which mechanisms lead to slightly more recycling behaviours and enable more transformative change towards reaching net-zero through more explicit enabling by organisations and beyond.

Considering this, multidisciplinary investigation on how employees are enabled or stymied in their EGB when there are structural barriers to their implementation would be fruitful. For instance, transforming EGB (or distal EGB), requires that employees have the time and the accessible avenues to suggest and enact these behaviours. If there are not physical or cognitive spaces made available, then these distal behaviours will eventually fade away. If an employee suggests new sustainable work processes and these never come to fruition they will, of course, stop performing this behaviour. Therefore, organisational behaviour should integrate and leverage other disciplines, such-as sociology, institutional logics, strategy, human resource management, organisational development, and culture (which this thesis has done to some extent by utilising green organisational climates) to truly understand the best way to create the conditions for EGB and support the transition towards environmental sustainability. This observation is also being picked up in recent work, detailing the need for higher level (institutional and societal) factors influencing EGB (Jackson, 2022; Renwick et al., 2024) This list is not exhaustive, and research would do well to consider the multiple approaches that can and should be taken together, framing the problem in its complexity rather than attempting to solve the problems from academic siloes – especially relying on individual EGB to make this change.

7.3.3 Multi-level inquiry

The suggestion of multi-level inquiry here goes beyond the immediate pro-environmental social norms or even green organisational cultures, as some studies found there are also institutional level factors that can determine the behaviours of individuals in

organisations (Marshall et al., 2005). These organisations were small wineries and thus the employees' behaviours are affected by institutional pressures (customers, stakeholders, regulations etc.) and can have a more direct impact into the decision making and changing organisational practices. In institutional theories the practices of an organisation – and individuals within – depend on regulations and networks that the organisations is embedded in (Thornton & Ocasio, 2008). There is a lacuna of research on the institutional level factors that could influence the pro-environmental behaviours of employees (Norton et al., 2015). This is picked up in research that explores how cultural contexts of the organisation, nation or even region can interact with institutional pressures with resultant effects on the pro-environmental practices of organisations (Caprar & Neville, 2012).

These pro-environmental practices can permeate through organisations in unique ways as conceptualisations of sustainability are produced separately in (sub)cultures with concomitant logics in departments, as has been found in recent research (Kok et al., 2019). This can lead to tensions for individuals as diverging agendas and pressures come from a multiplicity of actors at institutional, organisational and unit level. These interact with employee decision making and can result in employees making sense of sustainability in ways compatible with their current cultural orientations and values, which consequentially affect their behaviours too (Demers & Gond, 2020; Hengst et al., 2020). This supports the evidence that EGB is affected by multiple levels and that a plurality of mechanisms should be analysed. There are calls by others to understand the 'micro foundations' of CSR, meaning the individual responses and behaviours of employees that manifest in response to the organisational policies and practices of corporate social responsibility (Aguinis & Glavas, 2012; Gond et al., 2017).

As the literature on EGB grows there are calls to increase this multi-level inquiry due to the fact that this is global issue, with global actors and institutions (Newell et al., 2012). As

researchers studying (green) organisational behaviour and management, there has been a noticeable siloing to old precedents of using psychological mechanisms only to study the phenomena of EGB as something akin to OCB, albeit with a green alteration. This could lead to erroneous results, as some have noted (Unsworth et al., 2021). The plethora of reviews highlighting this need for multi-level research, especially higher level factors such as institutional and society at the least (Katz et al., 2022; Norton, Parker, et al., 2015; Renwick et al., 2024; Tang et al., 2023; Zacher et al., 2023), with some arguing for political economy, critical management and sociology to be embraced when researching EGB (Renwick et al., 2024). This would make sense to combine with the ongoing research in parallel fields that take sociological and complexity approaches to organisational sustainability but still focus on people (Gond *et al.*, 2017; Gond and Moser, 2019; Kok, De Bakker and Groenewegen, 2019; Demers and Gond, 2020; Hengst *et al.*, 2020; Luo *et al.*, 2020). Indeed other notable scholars in strategy echo these sentiments that "*we need new analytical and theoretical pillars*" to deal with environmental issues, emphasising the need for multi-level theorizing and rethinking the agency of humans as part of systems at micro and macro levels (Bansal et al., 2024, p.18).

This section has explored the multi-level influence that can have an effect of EGB. Environmental sustainability transitions will occur at all levels, individual, group, organisational, cultural, national, and institutional. These will interact in various ways and will all effect the behaviours of individuals; through direct psychological mechanisms, changing normative practices, or material changes to workplaces and the processes that are enabled by them. The research here has led to one small part of the multiplicity of drivers that will affect EGB and pro-environmental practices within organisations, clearly showing the importance of social mechanisms as an antecedent. Further research should be undertaken that looks at multi-level research, especially exploring the relationships with these higher-level factors that have been neglected hitherto.

8. Conclusion

The aim of this thesis has been to understand the construct of EGB in more depth, create scales that represent the complexity of this construct, and to test some of the psychosocial mechanisms that can lead to these pro-environmental behaviours at work.

The first finding was that there are four distinct categories of EGB, rather than the five proposed in the green five taxonomy. However, three were found to be highly correlated and this seeming similarity should be noted. Due to this it may be pertinent to consider a two-dimensional distinction (proximal and distal) instead of the four categories. This latter conceptualisation is concerned around the environmental goal of the behaviour and lends itself to outcome expectancy theory (Bandura, 1982). This line of questioning should be given more attention in future research to move away from the overreliance on 'conserving' behaviours that has been prevalent in EGB scales hitherto.

Considering the outcome expectancy framing this chapter has emphasized, organisations would do well to create spaces, both physically and psychologically – that engender a sense of belief in the ability of the unit and organisation to achieve the pro-environmental goals they set. If employees believe their EGB will be acknowledged, valued and most importantly actually have some impact on the desired outcome of the behaviour, we argue that these behaviours will become far more prevalent.

The second finding of this thesis was that these distinct categories of EGB also differ in their predictive mechanisms, with the higher-level organisational factors being more important for distal EGB. However, it seems that the organisational factors are less salient when considering proximal EGB. This shows us that employees who engage in these more complex behaviours require commitment to the organisation and the perception that these behaviours are valued at the organisation. This makes sense as these distal EGB take time, collaboration and have uncertain outcomes, so the perception of support of the organisation

would logically relate to these EGB. There were only weak relationships with supervisory support and these distal EGB categories, with affective commitment completely mediating the relationship between them. A strong green organisational climate can enhance the relationship between commitment and all categories of EGB, showing that this normative effect is consistently significant for EGB, aligning with other research with this construct. Commitment to the organisation predict all categories of EGB although this was far stronger for distal EGB. This supported the goal proximity distinction created in chapter 3, showing organisational facts are important for behaviours that outcome focus is more towards organisational level change.

The last model that tested the normative effect was extended to green descriptive norms (green behaviours of colleagues) rather than the green climate normative effect. This found that this green descriptive norm was important for transforming, influencing others, and taking initiative – the distal EGB behaviours. Proximal EGB was not related to this descriptive norm. This again shows that the social mechanisms that seem more important for distal EGB while proximal EGB are inherently more individual and therefore seem less affected by these factors. This again supported the goal proximity distinction, showing that the social factors led to the behaviours that require collaboration with others and time to achieve. The commitment to the environmental goals of the organisation was unsurprisingly important for all categories of EGB in this model, which supports the findings by previous researchers.

The research presented in this thesis has elucidated the power of green norms within the organisation to affect EGB. The higher-level factors also result in EGB that focus on the higher-level changes in organisations. This situates our understanding of EGB beyond the behaviour of the individual towards the goals of those behaviours. If the goal is to change the organisation, you need to support the individual at an organisational level. Ultimately the

complex distal EGB are performed less and thus to increase these distal EGB the barriers to achieving the goal (outcome) of the behaviour should be reduced.

The social factors are indeed important when considering pro-environmental behaviours at work, both relational and normative. However, the normative mechanisms studied were particularly important and illustrate the importance of creating green organisational climate and cultures when attempting to change behaviours towards being pro-environmental. This thesis discussed in the previous chapter that the social psychological elements are important, however there are many other potential organisational, institutional and material barriers to these behaviours.

There is scope to use the findings of this thesis using psychological mechanisms, and then combine with organisational development, human resource management, institutional logics, strategy, practice theories, and pro-environmental behaviour research outside of organisations. This will ensure the outcomes and recommendations are as efficacious and useful as possible for organisations. Behaviour is just one piece of the puzzle, and this final chapter has attempted to situate it within multiple disciplines to break down siloed academic literatures and move to a more holistic recognition of the complexity of environmental sustainability in organisations. The seriousness and urgency of environmental sustainability demands as much.

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10. Appendix

Appendix A. Conserving - number of items shown at each phase (in parentheses)

phase 1 (81)	
Recycle and Reuse (33)	
cluster C.1.1	I put the following in separate recycling/compost bins: paper (Manika et al., 2015).
	I am a person who recycles used paper (Lamm et al., 2013).
	Recycle all paper waste (Stritch & Christensen, 2016).
	I put the following in separate recycling/compost bins: cardboard (Manika et al., 2015).
	Recycle office memos, computer printout, etc. (Lee & Young, 1994)
	I put recyclable material (e.g. cans, paper, bottles, batteries) in the recycling bins (Robertson & Barling, 2013)
cluster C.1.2	I put the following in separate recycling/compost bins: toner (Manika et al., 2015).
	I put the following in separate recycling/compost bins: batteries (Manika et al., 2015).
	I am a person who properly disposes of electronic waste (Lamm et al., 2013).
	I put recyclable material (e.g. cans, paper, bottles, batteries) in the recycling bins (Robertson & Barling, 2013)
cluster C.1.3	I put the following in separate recycling/compost bins: cans (Manika et al., 2015).
	I put the following in separate recycling/compost bins: plastic cups (Manika et al., 2015)
	I put the following in separate recycling/compost bins: glass (Manika et al., 2015).
	I put compostable items in the compost bin (Robertson & Barling, 2013).
	I put recyclable material (e.g. cans, paper, bottles, batteries) in the recycling bins (Robertson & Barling, 2013)
	Recycle newspapers, glass bottles, cans, PET bottles (Lee & Young, 1994).
	Recycle all aluminum cans or plastic bottles (Stritch & Christensen, 2016).
	I am a person who recycles my bottles, cans, and other containers (Lamm et al., 2013).
cluster C.1.4	I sort and recycle garbage in the workplace (Chou, 2014).
	Sorting recyclable materials (Kim et al., 2014)
	At work, I recycle and reuse materials (Graves et al., 2013).
	Recycling reusable things in the workplace (Kim et al., 2014)
	I take measures to recycle waste in areas I'm responsible for (Fryxell & Lo, 2003)
cluster C.1.5	Use reusable bottles or cups for beverages (Stritch & Christensen, 2016).
	I am a person who uses a reusable water bottle instead of a paper cup at the water cooler or faucet (Lamm et al., 2013).
	I bring reusable eating utensils to work (e.g. travel coffee mug, water bottle, reusable containers, reusable cutlery) (Robertson & Barling, 2013).
	I use my own cup instead of disposable ones (Chou, 2014). / Using personal cups instead of disposable cups (Kim et al., 2014).
	I carry my own chopsticks instead of using disposable ones (Chou, 2014).
cluster C.1.6	I use my own cup instead of disposable ones (Chou, 2014). / Using personal cups instead of disposable cups (Kim et al., 2014).
	I use a mug for drinking coffee/tea (Blok et al., 2015).
	I take a new plastic/carton cup each time I have coffee or tea (reverse) (Blok et al., 2015).
	I am a person who uses a reusable coffee cup instead of a paper cup (Lamm et al., 2013).
cluster C.1.7	I am a person who uses scrap paper for notes instead of fresh paper (Lamm et al., 2013).
	Reusing papers to take notes in the office (Kim et al., 2014).

Reduce use and repurpose (48)

cluster C.2.1	When I am finished using my computer or the day, I turn it off (Scherbaum et al., 2008).
	When I am not using my computer, I turn off the monitor (Scherbaum et al., 2008).
	I switch off my computer/notebook when I leave my office for a considerable period (Blok et al., 2015).
	I switch off my computer/notebook when I go home (Blok et al., 2015).
	Turn off your computer monitor (Stritch & Christensen, 2016).
	Before I get off work, I turn off the electric appliances, such as computers, printers, copy machines, etc (Chou, 2014).
	I turn off office equipment when not in use, especially overnight (e.g., photocopiers, printers etc.) (Manika et al., 2015).
	I leave the computer on even when not in use for over 30 min (Manika et al., 2015).
	I am a person who powers off my computer when away for more than 3 hours (Lamm et al., 2013).
	I am a person who powers down all desk electronics at the end of the day (Lamm et al., 2013).
	When I leave my work area, I turn off my fan (Scherbaum et al., 2008).
	When I leave my work area, I turn off my radio (Scherbaum et al., 2008).
	How often you turned off office or lab equipment after you were finished using it. (Carrico & Riemer, 2011).
cluster C.2.2	When I leave a room that is unoccupied, I turn off the lights (Scherbaum et al., 2008).
	When I leave a bathroom that is unoccupied, I turn off the lights (Scherbaum et al., 2008).
	I turn lights off when not in use (Robertson & Barling, 2013).
	I switch on the lights when I come to the office in the morning and switch them when I leave my office for a considerable period of time, and there is no one else (Blok et al., 2015).
	Turn off lights in empty rooms (Stritch & Christensen, 2016).
	I am a person who turns off the lights in a vacant room (Lamm et al., 2013).
	When the office is not in use, I will turn off the light (Chou, 2014).
	I switch off lights when not needed (Manika et al., 2015).
	I am a person who turns off my lights when leaving my office for any reason (Lamm et al., 2013).
	I am a person who makes sure all of the lights are turned off if I am the last to leave (Lamm et al., 2013).
	What proportion of time during the previous work week you have turned off your lights before leaving the office for an extended period oftime (i.e., for lunch or meetings) Carrico & Riemer (2011).
cluster C.2.3	I turn off the light or electricity when I don't need it (Chou, 2014).
	At work, I try to reduce my energy use (Graves et al., 2013).

cluster C.2.4	I reduce using paper by printing double-sided (Chou, 2014).
	Avoiding unnecessary printing to save papers (Kim et al., 2014).
	Make double-sided copies on the copying machine (Lee & Young, 1994).
	I am a person who prints double-sided (Lamm et al., 2013).
	Print on both sides of the paper (Stritch & Christensen, 2016).
	I print double-sided (Blok et al., 2015).
	I copy double-sided (Blok et al., 2015).
	I print double sided whenever possible (Robertson & Barling, 2013).
	I try to get as much as possible on one sheet (e.g. by using narrow margins or printing two pages on one A4 sheet) (Blok et al., 2015).
	For informal occasions, I print with recycled paper (Chou, 2014).
	I tend to print emails for ease of reference (Manika et al., 2015). *(Counterproductive green behaviors)*
cluster C.2.5	Consuming a minimum amount of resources (Lee & Young, 1994).
	I take action where possible to reduce the amount of resources used in my company's processes (Fryxell & Lo, 2003).
	Finding ways to avoid creating waste (Lee & Young, 1994).
	Keeping things working long past their normal life (Lee & Young, 1994).
	Repairing rather than throwing things away (Lee & Young, 1994).
	I save water (Chou, 2014).
	Use common appliances as opposed to personal appliances (Stritch & Christensen, 2016).
	Volunteer to have a smaller workspace or share your workspace (Stritch & Christensen, 2016).
	Using stairs instead of elevators when going from floor to floor in the building (Kim et al., 2014).
	I take stairs instead of taking elevators when moving between 2-3 floors (Chou, 2014).
	I wash the mug in a sustainable way (e.g. cold water, no use of washing-up liquids) (Blok et al., 2015).

phase 2.1 (16)

Recycle and Reuse (8)	
cluster C.1.1	At work I recycle all paper waste (inc cardboard)
cluster C.1.2	At work I recycle all electronic waste (e.g. batteries, toner)
cluster C.1.3	At work I recycle bottles/cups/cans
cluster C.1.4	At work I sort and recycle waste materials
cluster C.1.5	At work I use reuseable bottle/cup/mug for drinking water, rather than disposable ones At work I use reuseable containers and cutlery, rather than disposable ones
cluster C.1.6	At work I use reuseable cup/mug for coffee, rather than disposable ones
cluster C.1.7	At work I reuse paper as much as possible (e.g. using both sides)
Reduce use and repurpose (8)	
cluster C.2.1	At work I switch off my computer when I am not using it At work I switch off my electronic applicances when I am not using them (photocopiers, printers etc.)
cluster C.2.2	At work I always turn off lights when the room is empty/the lights are not needed
cluster C.2.3	At work I try to reduce my energy use / turn off lights or electricity when I don't need it
cluster C.2.4	At work I avoid unnecesary printing At work I print double-sided whenever possible
cluster C.2.5	At work I try to reduce the amount of resources I use At work I reuse or repair things where possible, rather than throwing them away

phase 2.2 (16)

Recycle (4)

At work I recycle all paper waste (including cardboard)
At work I recycle all electronic waste (e.g. batteries, toner)
At work I recycle all bottles/cups/cans
At work I sort and recycle waste materials

Reuse (4)

At work I use reuseable bottle/cup/mug for drinking water, rather than disposable ones
At work I use reuseable containers and cutlery, rather than disposable ones
At work I use reuseable cup/mug for coffee, rather than disposable ones
At work I reuse paper as much as possible (e.g. using both sides)

Reduce use and repurpose (8)

At work I switch off my computer when I am not using it
At work I switch off my electronic applicances when I am not using them (photocopiers, printers etc.)
At work I always turn off lights when the room is empty/the lights are not needed
At work I try to reduce my energy use / turn off lights or electricity when I don't need it
At work I avoid unnecesary printing
At work I print double-sided whenever possible
At work I try to reduce the amount of resources I use
At work I reuse or repair things where possible, rather than throwing them away

phase 3 (9)

Recycle (3)

At work I recycle all paper waste (inc cardboard)

At work I recycle or properly dispose of electronic waste where possible

At work I recycle bottles/cups/cans

Reuse (3)

At work I use reuseable bottle/cup/mug for drinking water, rather than disposable ones

At work I use reuseable cup/mug for coffee, rather than disposable ones

At work I reuse paper as much as possible (e.g. using both sides)

Reduce use and repurpose (3)

At work I switch off my electronic applicances when I am not using them (photocopiers, printers, computers etc.)

At work I try to reduce my energy use / turn off lights or electricity when I don't need it

At work I avoid unnecesary printing

phase 4 (5)

Recycle (3)

At work I recycle everything that I can

Reuse (2)

At work I reuse materials as much as I can

At work I try to use reusable items, rather than disposable ones

Reduce use and repurpose (2)

At work I reduce the amount of resources I use

At work I avoid creating unnecessary waste

Appendix B. Avoiding harm - number of items shown at each phase (in parentheses)

phase 1 (7)

Pollution (3)

Consider fuel efficiency of the work vehicles you use when appropriate (Stritch & Christensen, 2016)

I take part in environmentally friendly programs (e.g. bike/walk to work day, bring your own local lunch day) (Robertson & Barling, 2013).

I look for opportunities to reduce pollution from work-related activities (Cantor et al., 2012)

Monitor environmental impact (3)

Today, I took a chance to get actively involved in environmental protection at work (Bissing-Olson et al., 2013).

At work, I apply new ideas for reducing our impact on the environment (Graves et al., 2013).

In my workplace, environmental protection has to take second place behind other obligations (Homburg & Stolberg, 2006) *(Counterproductive EGB)*

In my daily work, I forget to carry out environmental protection measures (Homburg & Stolberg, 2006).

Strengthen ecosystem (0)

phase 2 (6)

Pollution (3)

Consider fuel efficiency of the work vehicles you use when appropriate (Stritch & Christensen, 2016)

I take part in environmentally friendly programs (e.g. bike/walk to work day, bring your own local lunch day) (Robertson & Barling, 2013).

I look for opportunities to reduce pollution from work-related activities (Cantor et al., 2012)

Monitor environmental impact (3)

Today, I took a chance to get actively involved in environmental protection at work (Bissing-Olson et al., 2013).

At work, I apply new ideas for reducing our impact on the environment (Graves et al., 2013).

In my workplace, environmental protection has to take second place behind other obligations (Homburg & Stolberg, 2006)

Strengthen ecosystem (0)

phase 3 (6)

Pollution (3)

I consider alternatives to driving to work (walking, cycling, public transport, car pooling)

At work I take part in environmentally friendly programs (e.g. bike/walk to work day, not flying for work trips)

At work I look for opportunities to reduce pollution from work-related activities

Monitor environmental impact (3)

At work I think of ways that we can protect the environment

At work, I apply new ideas for reducing our impact on the environment

At work, environmental protection has to take second place behind other obligations

Strengthen ecosystem (0)

phase 4 (5)

Pollution (2)

At work, I use alternatives to driving to work (walking, cycling, public transport, car pooling)

I look for opportunities to reduce pollution from work-related activities

Monitor environmental impact (3)

At work, I apply new ideas for reducing our impact on the environment

At work, environmental protection has to take second place behind other obligations

At work I think of ways we can better monitor and measure our emissions

Strengthen ecosystem (0)

Appendix C. Transforming - number of items shown at each phase (in parentheses)

phase 1 (18)
Choosing responsible alternatives (3)
When I purchase goods or services, I pay attention to sustainability (Blok et al., 2015).
I choose bio food when if it is offered in a cafeteria at my workplace (Blok et al., 2015)
I make a point of incorporating energy efficiency ratings of products into any purchase decisions (Fryxell & Lo, 2003).
Changing how work is done (0)
Create sustainable products and processes (1)
At work, I help create green processes and products (Graves et al., 2013).
Embracing innovation for sustainability (4)
I am consistent in implementing environmental protection measures in my workplace (Homburg & Stolberg, 2006)
I try do my bit to protect environment (Wehrmeyer & Mcneil, 2000).
Employees willingly do additional work that can result from environmental practices (Pinzone et al., 2016).
Complain about the additional work resultant from environmental practices (Alt & Spitzeck, 2016). *(Counterproductive EGB)*
Performing sustainable work (7)
In my work, I weigh the consequences of my actions before doing something that could affect the environment (Boiral & Paillé, 2012).
Prior to making decisions with environmental implications, I prefer to obtain the opinions of environmental or community groups (Fryxell & Lo, 2003).
I consider together with my colleagues how we can work in a more environmentally friendly way in our company (Homburg & Stolberg, 2006).
Today, I adequately completed assigned duties in environmentally-friendly ways (Bissing-Olson et al., 2013).
Today, I fulfilled responsibilities specified in my job description in environmentally-friendly ways (Bissing-Olson et al., 2013).
Today, I performed tasks that are expected of me in environmentally-friendly ways (Bissing-Olson et al., 2013).
Employees do everything they can to protect the environment at work (Pinzone et al., 2016).

educating self on sustainability (3) ***(new category with items from educating others on sustainability)***

At work, I try to learn more about the environment (Graves et al., 2013).

I put a lot of effort into being aware of the environmental aspects and impacts of my business (Fryxell & Lo, 2003).

I make it a point to stay up-to-date about changes in environmental laws and regulations related to this business (Fryxell & Lo, 2003).

phase 2 (12)

Choosing responsible alternatives (3)

When I purchase goods or services, I pay attention to sustainability (Blok et al., 2015).

I choose bio food when if it is offered in a cafeteria at my workplace (Blok et al., 2015)

I make a point of incorporating energy efficiency ratings of products into any purchase decisions (Fryxell & Lo, 2003).

Changing how work is done (0)

Create sustainable products and processes (1)

At work, I help create green processes and products (Graves et al., 2013).

Embracing innovation for sustainability (3)

I am consistent in implementing environmental protection measures in my workplace (Homburg & Stolberg, 2006)

I try do my bit to protect environment (Wehrmeyer & Mcneil, 2000).

Employees willingly do additional work that can result from environmental practices (Pinzone et al., 2016).

Performing sustainable work (3)

In my work, I weigh the consequences of my actions before doing something that could affect the environment (Boiral & Paillé, 2012).

I consider together with my colleagues how we can work in a more environmentally friendly way in our company (Homburg & Stolberg, 2006).

Today, I performed tasks that are expected of me in environmentally-friendly ways (Bissing-Olson et al., 2013).

Educating self on sustainability (2) (new category)

At work, I try to learn more about the environment (Graves et al., 2013).

I put a lot of effort into being aware of the environmental aspects and impacts of my business (Fryxell & Lo, 2003).

phase 3 (9)

Choosing responsible alternatives (2)

When I buy products or services at work I pay attention to the envrionemntal sustainability of that company

I choose low-carbon food at the cafeteria or for packed lunch (e.g. vegetarian or vegan)

Changing how work is done (0)

Create sustainable products and processes (1)

At work, I help create green processes and products

Embracing innovation for sustainability (3)

At work I think of ways my organisation can run in a more environmentally sustainable way

At work I look for innovative new ways to reduce my organisations environmental impact

At work I try to think of innovative new ways of working that are better for the environment

Performing sustainable work (1)

At work I consistently implement envrionmnetal protection measures

educating self on sustainability (2) (new category)

At work I put a lot of effort into being aware of the environmental aspects and impacts of my business

At work I participate in training programs to learn more about environmental issues

phase 4 (5)

Choosing responsible alternatives (1)

I weigh up/assess the environment impact of my decisions at work

Changing how work is done (0)

Create sustainable products and processes (1)

At work I consider the environmental cost of our products or processes

Embracing innovation for sustainability (2)

At work I look for new ways to reduce my organisations environmental impact

I make suggestions to improve the environmental performance and work practices of the organisation

Performing sustainable work (0)

[This subcategory was seen as very similar to embracing innovation for sustainability and therefore the items in that subcategory were also considered to conceptually capture this subcategory]

Educating self on sustainability (1) (new category)

At work I participate in programs to learn more about environmental issues and solutions

Appendix D. Influencing Others - number of items shown at each phase (in parentheses)

phase 1 (24)	
Educating and training for sustainability (4) (educating other)	
	I share knowledge, information, and suggestions on workplace pollution prevention with other group members (Kim et al, 2014).
	At work, I share my knowledge about the environment with others (Graves et al., 2013).
	Constantly participate in programs of education for sustainable development (Alt & Spitzeck, 2016).
	When I skim the newspaper, I often read articles that appear to address the environmental impacts of my company and industry (Fryxell & Lo, 2003).
Encouraging and supporting others (11)	
cluster IO.1.1	I encourage others to protect nature (Wehmeyer & Mcneil, 2000).
	Employees encourage work colleagues to care about environmental issues (Pinzone et al., 2016).
	At work, I encourage others to think about the environment (Graves et al., 2013).
	I help employees understand our environmental problems (Roy et al., 2013).
cluster IO.1.2	I encourage my colleagues to adopt more environmentally conscious behavior (Boiral & Paillé, 2012).
	I encourage my colleagues to express their ideas and opinions on environmental issues (Boiral & Paillé, 2012).
cluster IO.1.3	At work, I help others solve environmental problems (Graves et al., 2013).
	I spontaneously give my time to help my colleagues take the environment into account in everything they do at work (Boiral & Paillé, 2012).
cluster IO.1.4	I make suggestions to my colleagues about ways to protect the environment more effectively (Boiral & Paillé, 2012).
	I listen openly and attentively to employee suggestions for environmental improvements and often adopt their suggestions (Andersson et al., 2005).
	Frequently communicate to co-workers suggestions on how the group can improve its environmental performance (Alt & Spitzeck, 2016).

Environmental voice behaviour (9)	
cluster IO.2.1	At work, I question practices that are likely to hurt the environment (Graves et al., 2013).
	I make environmental suggestions to improve work procedures (Temminck et al., 2015).
cluster IO.2.2	I make suggestions to improve the organization's environmental performance (Temminck et al., 2015).
	I try to make innovative environmental suggestions to improve the organization (Temminck et al., 2015).
cluster IO.2.3	I am willing to speak up when policy or rules do not contribute to the achievement of the organization's environmental goals (Temminck et al., 2015).
	Defend the compliance with pro-environmental policies and objectives when other employees criticize it (Alt & Spitzeck, 2016).
	I often find that I'm speaking out on behalf of environmental issues in my company (Fryxell & Lo, 2003).
cluster IO.2.4	I try to draw management's attention to potentially environmentally unfriendly activities (Temminck et al., 2015).
	I inform management of potentially environmentally irresponsible policies and practices (Temminck et al., 2015).
phase 2 (12)	
Educating and training for sustainability (3) (educating other)	
	I share knowledge, information, and suggestions on workplace pollution prevention with other group members (Kim et al, 2014).
	At work, I share my knowledge about the environment with others (Graves et al., 2013).
	Constantly participate in programs of education for sustainable development (Alt & Spitzeck, 2016).
Encouraging and supporting others (5)	
cluster IO.1.1	At work, I encourage others to think about the environment (Graves et al., 2013).
	I help employees understand our environmental problems (Roy et al., 2013).
cluster IO.1.2	I encourage my colleagues to adopt more environmentally conscious behavior (Boiral & Paillé, 2012).
cluster IO.1.3	At work, I help others solve environmental problems (Graves et al., 2013).
cluster IO.1.4	I make suggestions to my colleagues about ways to protect the environment more effectively (Boiral & Paillé, 2012).

Environmental voice behaviour (4)

cluster IO.2.1	At work, I question practices that are likely to hurt the environment (Graves et al., 2013).
cluster IO.2.2	I make suggestions to improve the organization's environmental performance (Temminck et al., 2015).
cluster IO.2.3	Defend the compliance with pro-environmental policies and objectives when other employees criticize it (Alt & Spitzeck, 2016).
cluster IO.2.4	I try to draw management's attention to potentially environmentally unfriendly activities, policies or practices (Temminck et al., 2015).

phase 3 (8)

Educating and training for sustainability (2) (educating other)

At work I share knowledge and information about the environment with others

At work I talk to colleagues about how they can do their work in more envrionmentally friendly ways

Encouraging and supporting others (3)

I encourage others to think about environmental issues

I encourage my colleagues to suggest how the organisation can improve on its environmental performance

At work, I help others in solving environmental problems

Environmental voice behaviour (3)

At work, I question practices that are likely to hurt the environment

Defend the compliance with pro-environmental policies and objectives when other employees criticize it

I try to draw management's attention to potentially environmentally unfriendly activities, policies or practices

phase 4 (5)

Educating and training for sustainability (1) (educating other)

At work I talk to colleagues about how they can do their work in more envrionmentally friendly ways

Encouraging and supporting others (2)

At work, I encourage others to think about environmental issues

At work, I encourage my colleagues to suggest how the organisation can improve on its environmental performance

Environmental voice behaviour (2)

At work, I question practices that are likely to hurt the environment

Defend the compliance with pro-environmental policies and objectives when other employees criticize it

Appendix E. Taking initiative - number of items shown at each phase (in parentheses)

phase 1 (41)	
Initiating programs and policies (17)	
cluster TI.1.1	I actively research solutions to my company's environmental problems (Cantor et al., 2012).
	At work, I offer ideas for reducing our impact on the environment (Graves et al., 2013).
	I make suggestions about environmentally friendly practices to managers and/or environmental committees, in an effort to increase my organization's environmental performance (Robertson & Barling, 2013).
	I propose new practices that improve our environmental performance (Roy et al., 2013).
	At work, I find ways of working that are better for the environment (Graves et al., 2013).
cluster TI.1.2	Take steps to try to prevent problems with the natural environment (Alt & Spitzeck, 2016).
	At work, I perform environmental tasks that are not required by my company (Graves et al., 2013).
	Today, I took initiative to act in environmentally-friendly ways at work (Bissing-Olson et al., 2013).
	I voluntarily carry out environmental actions and initiatives in my daily work activities (Boiral & Paillé, 2012).
	Today, I did more for the environment at work than I was expected to (Bissing-Olson et al., 2013).
	I suggest revisions to work practices to achieve the organization's environmental objectives (Temminck et al., 2015)
	I work with my group members to create a more environmentally-friendly workplace (Kim et al., 2014).
	I am highly motivated to replace materials with those that are more environmentally friendly (Cantor et al., 2012).
	I ensure that equipment is properly maintained and running as efficiently as possible (Fryxell & Lo, 2003).
	Employees suggest ways to reduce the environmental impacts of the Trust (Pinzone et al., 2016).
	I refuse to commit resources and employee time for training and education in environmental issues (Andersson et al., 2005) *(Counterproductive green behaviors)*
Lobbying and activism (4)	
	I try to convince my group members to reduce, reuse, and recycle office supplies in the workplace (Kim et al., 2014).
	I try to convince my colleagues of the importance of environment protection (Homburg & Stolberg, 2006).
	I champion the use of energy conservation efforts in my department (Cantor et al., 2012).
	I am often the one to bring environmental problems to the attention of top management (Fryxell & Lo, 2003)

Put environmental interest first (7)

I check whether thermostats are set correctly in my office (Blok et al., 2015).

I wear more clothes instead of putting the heating on (Blok et al., 2015).

I make sure that heating is off or reduced outside working hours (Blok et al., 2015).

I add or remove clothing rather than turning heating or air conditioning up when it's hot or cold (Manika et al., 2015).

I open or close windows rather than turning heating or air conditioning up when it's hot or cold (Manika et al., 2015).

I turn heating or air conditioning down if I can find other ways to remain comfortable (Manika et al., 2015).

I reduce heating in unused rooms (Blok et al., 2015).

Environmental civic mindedness (14)

cluster TI.2.1

At work, I join in environmental activities that are not required by my job (Graves et al., 2013).

I participate actively in environmental events (Roy et al., 2013).

I actively participate in environmental events organized in and/or by my company (Boiral & Paillé, 2012).

Employees actively participate in environmental events organized in and/or by the Trust (Pinzone et al., 2016).

Employees stay informed on environmental activities in the Trust (Pinzone et al., 2016).

I volunteer for projects, endeavours or events that address environmental issues in my organization (Boiral & Paillé, 2012).

I am volunteer for projects, initiatives or events related to our environmental issues (Roy et al., 2013).

I perform voluntary environmental actions and initiatives in my daily activities (Roy et al., 2013)

Employees volunteer for projects, initiatives or events that address environmental issues in the Trust (e.g. serve on committees) (Pinzone et al., 2016).

cluster TI.2.2

I stay informed of my company's environmental initiatives (Boiral & Paillé, 2012).

Employees undertake environmental actions that contribute positively to the image of the Trust (Pinzone et al., 2016).

I undertake environmental actions that contribute positively to the image of my organization (Boiral & Paillé, 2012).

I undertake environmental initiatives that enhance our image (Roy et al., 2013)

phase 2 (14)

Initiating programs and policies (6)

cluster TI.1.1	I actively research solutions to my company's environmental problems (Cantor et al., 2012).
	I propose new practices that improve our environmental performance (Roy et al., 2013).
	At work, I offer ideas for reducing our impact on the environment (Graves et al., 2013).
cluster TI.1.2	Today, I took initiative to act in environmentally-friendly ways at work (Bissing-Olson et al., 2013).
	Today, I did more for the environment at work than I was expected to (Bissing-Olson et al., 2013).
	I voluntarily carry out environmental actions and initiatives in my daily work activities (Boiral & Paillé, 2012).

Lobbying and activism (3)

	I try to convince my group members to reduce, reuse, and recycle office supplies in the workplace (Kim et al., 2014).
	I champion the use of energy conservation efforts in my department (Cantor et al., 2012).
	I am often the one to bring environmental problems to the attention of top management (Fryxell & Lo, 2003)

Put environmental interest first (2)

	I wear more clothes instead of putting the heating on (Blok et al., 2015).
	I open or close windows rather than turning heating or air conditioning up when it's hot or cold (Manika et al., 2015).

Environmental civic mindedness (3)

cluster TI.2.1	I actively participate in environmental events organized in and/or by my company (Boiral & Paillé, 2012).
	I volunteer for projects, endeavours or events that address environmental issues in my organization (Boiral & Paillé, 2012).
cluster TI.2.2	I undertake environmental actions that contribute positively to the image of my organization (Boiral & Paillé, 2012).

phase 3 (9)

Initiating programs and policies (3)

I take initiative to act in environmentally-friendly ways at work

At work I do more for the environment than Is expected of me

At work I voluntarily carry out environmental actions and initiatives

Lobbying and activism (3)

I try to convince my colleagues to reduce, reuse, and recycle office supplies in the workplace

I champion the use of energy conservation efforts in my department

I try to draw management's attention to potentially environmentally unfriendly activities, policies or practices

Put environmental interest first (1)

I wear more clothes or open and close the windows rather than turning on the heating or air conditioning

Environmental civic mindedness (2)

I actively participate in environmental events and pro-environmental activities orgnaised by my organisation

I volunteer for projects, endeavours or events that address environmental issues in my organization

phase 4 (5)

Initiating programs and policies (2)

I take the iniative to research solutions to my company's environmental problems

At work I do more for the environment than Is expected of me

Lobbying and activism (2)

I champion the use of energy conservation efforts in my department

I try to draw management's attention to potentially environmentally unfriendly activities, policies or practices

Put environmental interest first (0)

[This item has potential other antecedents (this could be other reasons for doing this i.e. reducing cost). Also not specific (opening windows and wearing more clothes). Also could be considered a 'conserving' item]

Environmental civic mindedness (1)

I volunteer for projects, endeavours or events that address environmental issues in my organization