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A multilevel perspective on employee green behaviour — Source link

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A multilevel perspective on employee green behaviour

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Abstract

Modern organisations increasingly experience pressure from regulatory, normative, and social sources to be more environmentally friendly. Extant research shows that employee engagement in proenvironmental "green" behaviours enhances organisational outcomes regarding environmental sustainability. Despite contextual differences between the workplace and the home, however, and evidence that people differ in their green behaviour across these settings, contemporary explanations as to why employees engage in green behaviours at work continue to draw from environmental psychology research on private green behaviour at home. Thus, there is a need to understand more clearly the nature of green behaviour as it occurs specifically in the work context. This requires an approach that considers the organisational context as a contributing factor, and acknowledges that green behaviour at work constitutes a particular form of job performance. In this research therefore, I sought to address these points by investigating how employee perceptions of the organisational context influence both required (i.e., task-related) and voluntary (i.e., proactive) employee green behaviour (EGB). Consistent with this aim, I collected data from employee samples uisng constructs from organisational behaviour, such as organisational climate and job performance, in a multilevel and mixed-methods program of research.

In Chapter 1 (Case Study), I briefly outline the climatic changes that are prompting organisations to engage with environmental sustainability. I outline macro-level organisational activities and present a case study that highlights the central role of employee behaviour. Finally, I critique the literature and identify three limitations that inform the research questions I address through my program of research.

In Chapter 2 (Systematic Review), I present a detailed review of the EGB literature, and organise research findings into a multilevel conceptual framework. Within this framework, I propose that person and context factors contribute to motivational states that drive required (i.e., task-related) and voluntary (i.e., proactive) EGB. Based in this literature, I outline an agenda for future research to answer key questions to move the literature forward.

In Chapter 3 (Study 1), I describe a study of how perceived organisational policy for sustainability effects EGB, and whether or not perceptions of green climate mediate this relationship. I used a cross-sectional survey design to collect data from a sample of office workers (n = 168), and developed a green psychological climate construct comprising perceptions of the organisation and co-workers. Using structural equation modelling, I found unique effects for different perceptions on types of employee green behaviour. Specifically, climate perceptions regarding the organisation mediated the effect of perceived sustainability policy on task-related EGB; whereas climate perceptions regarding co-workers mediated the effect of perceived policy on

proactive EGB. This study highlights a psychological mechanism that might determine the efficacy of policy responses to sustainability.

In Chapter 4 (Study 2), I used a daily diary design to investigate whether green climate perceptions moderate the relationship between intentions on one day and EGB the next day. I collected diary data from a sample of employees (n = 75) daily for two work weeks. Results from multilevel hierarchical linear modelling showed the relationship between intentions and next-day behaviour was stronger if employees perceived a more positive green climate at their organisation. This study highlights intra-individual variation in EGB, and the role psychological green climate perceptions play in moderating the relationship between intentions and behaviour.

In Chapter 5 (Study 3), I used an experimental vignette methodology to determine the influence of different behavioural features and types of motivation towards the environment on intentions to engage in task-related and proactive EGB. Data revealed that the sample of office workers (n = 107) had (1) stronger intentions for task-related and proactive behaviours, and (2) stronger intentions for easy and enjoyable EGBs across both task-related and proactive behaviours. My analysis of employees' motivation toward the environment revealed a complex pattern of main and interactive effects on EGB intentions, with different types of motivation being more or less influential for different types of EGBs. This study also demonstrates a novel approach that researchers and practitioners may wish to use to understand the nature and effects of EGB behaviours.

In Chapter 6 (General Discussion), I describe the importance of individuals' perceptions of context, the distinction between required (i.e. task-related) and voluntary (i.e., proactive) EGB, and the dynamic nature of EGB and related intentions. Overall, my research shows that EGB is dynamic and that there is a meaningful distinction between green behaviours that contribute to task performance (i.e., task-related) and those that contribute to the broader organisational context (i.e., proactive). When considering how organisation-level actions can influence these types of behaviour, my findings reveal that employee perceptions of the green climate they are exposed to at work plays an important role. These perceptions provide an important psychological link between organisational activity regarding environmental sustainability and employee behaviour. Future research could benefit by building on this work and in particular by considering the effect of aggregated climate perceptions (i.e., organisational climate) on observable behaviours. I conclude that communication of environmental values from organisations to employees is critical, but should be executed in a way that facilitates positive green psychological climate perceptions, both for task-related and voluntary proactive green behaviours.

Declaration by author

This thesis is composed of my original work, and contains no material previously published or written by another person except where due reference has been made in the text. I have clearly stated the contribution by others to jointly-authored works that I have included in my thesis.

I have clearly stated the contribution of others to my thesis as a whole, including statistical assistance, survey design, data analysis, significant technical procedures, professional editorial advice, and any other original research work used or reported in my thesis. The content of my thesis is the result of work I have carried out since the commencement of my research higher degree candidature and does not include a substantial part of work that has been submitted to qualify for the award of any other degree or diploma in any university or other tertiary institution. I have clearly stated which parts of my thesis, if any, have been submitted to qualify for another award.

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Publications during candidature

Peer-reviewed publications

Norton, T. A., Parker, S. L., Zacher, H., & Ashkanasy, N. M. (2015). Employee green behavior: A theoretical framework, multilevel review, and future research agenda. *Organization & Environment*, *28*, 103-125. doi:10.1177/1086026615575773

Norton, T. A., Zacher, H., & Ashkanasy, N. M. (2014). Organisational sustainability policies and employee green behaviour: The mediating role of work climate perceptions. *Journal of Environmental Psychology*, *38*, 49-54. doi:10.1016/j.jenvp.2013.12.008

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Thomas A. Norton (Candidate)	Designed review (70%) Wrote the paper (65%)
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Thomas A. Norton (Candidate)	Designed research model (90%) Wrote the paper (80%)
Hannes Zacher	Designed research model (10%) Provided feedback and edited paper (10%)
Neal M. Ashkanasy	Provided feedback and edited paper (10%)

Note: The spelling conventions from each publication have been retained. All other text uses Australian spelling.

Contributions by others to the thesis

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environmental sustainability, employee green behaviour, organisational behaviour, organisational climate, motivation, task behaviour, proactive behaviour.

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“We live in an age of great events and little men, and if we are not to become the slaves of our own systems or sink oppressed among the mechanisms we ourselves created, it will only be by the bold efforts of originality, by repeated experiment, and by the dispassionate consideration of the results of sustained and unflinching thought.”

- Winston S. Churchill (21 Nov 1901)

Dedicated to Wilbur in the hope that his generation can build on the achievements of mine.

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List of Abbreviations used in the thesis

AMT – Amazon Mechanical Turk

EGB – Employee green behaviour

HLM – Hierarchical Linear Modelling

IPCC – Intergovernmental Panel on Climate Change

IUCN – International Union for Conservation of Nature and Natural Resources

MTES – Motivation Toward the Environment Scale

SEM – Structural Equation Modelling

SDT – Self-determination theory

TNC – Theory of Normative Conduct

UN – United Nations

WCED – World Commission on Environment and Development

Chapter 1: General Introduction

The global population is growing and living longer (Gerland et al., 2014; Lutz, Sanderson, & Scherbov, 2008; United Nations Department of Economic and Social Affairs, 2013). Wackernagel and colleagues (2002) indicate that this population has been using natural resources faster than the planet can regenerate them since approximately 1980, and that at the turn of the 21st century the yearly demand was at approximately 120%. At the same time, researchers observe changes in the environment, such as increases in global average air and ocean temperatures, shrinking glaciers, and rising global average sea levels (Ballantyne, Alden, Miller, Tans, & White, 2012; Radić, & Hock, 2011). On the basis of such evidence, the Intergovernmental Panel on Climate Change (IPCC) and peak scientific bodies assert with 90% confidence that the climatic changes observed since the mid-20th century are the result of increased concentrations of greenhouse gases from human activity (IPCC, 2014; Rosenzweig et al., 2008). Therefore, a change in the nature of human activity towards a more sustainable way of life is vital to avoid devastating environmental consequences.

The specific effects of climate change, and estimates of when these might be felt, continue to emerge with the proliferation of scientific evidence (IPCC, 2014). Work on how humanity should respond to this threat has been progressing for some time (International Union for Conservation of Nature and Natural Resources, IUCN, 1980; United Nations, 1972). The groundswell around sustainability evident during the latter part of the 20th century produced a greater, though still emerging, acceptance of sustainability as fundamental component of economic and social development (Hart & Dowell, 2011). The World Commission on Environment and Development define sustainable development as meeting "the needs of the present without compromising the ability of future generations to meet their own needs" (WCED; 1987, p. 43).

If traditional economic thinking and activity has contributed to climate change, as research by Barnett (2001) and Bonan (2008) suggests, then moving towards sustainability requires a paradigm shift in this area, including scientific, technological, and behavioural changes (Gladwin, Kennelly, & Krause, 1995). I now describe why this idea is relevant to organisations. Following on from this, I highlight three key shortcomings in the employee green behaviour literature. Finally, I outline a program of research that considers employee perceptions of the organisational context as a contributing factor to employee behaviour, and that employee green behaviour constitutes a type of job performance.

The Importance of Organisational Environmental Sustainability

How organisations respond to the challenge of environmental sustainability is critical, as scholars such as Hawken (1993) and Linnenluecke, Griffiths, and Mumby (2015) assert that organisations alone might have the power to effect the necessary changes required. Accordingly, there is substantial and increasing pressure for organisations to engage with environmental

sustainability (Banerjee, 2002; Sarkis, Gonzalez-Torre, Adenso-Diaz, 2010). Such pressure is provided by regulatory, normative, and cognitive-cultural sources external to the organisation (Scott, 1995), and the view that sustainability makes good business sense is supported from the perspectives of well-established resource-, and stakeholder-centric theories (Fairfield, Harmon, & Behson, 2011). As a consequence, organisations' environmental performance is becoming an important metric of overall performance in the 21st century (Jackson, 2012).

Zibarras and Ballinger (2011) surveyed 147 UK organisations and identified common initiatives aimed at addressing environmental performance. Many of these focused on a greater use of technology, such as using energy efficient light bulbs, installing movement sensors, videoconferencing, energy-efficient IT, and energy efficient air conditioning. Although these interventions are nominally positive, they reflect a bias towards the traditional paradigm of economic development and a reliance on technological responses to problems. Arguably the most prominent activity is to introduce an environmental management system, which, according to Russell and McIntosh (2011) constitutes an accommodative response. Such a system establishes environmental policies, identifying where improvement could be made and goals, defines a program to achieve these and ways to monitor progress, and introduces reviews to promote continuous improvement (Rondinelli & Vastag, 2000). Organisations often use the certification of their environmental management system as an indicator of their commitment to environmental sustainability (Rondinelli & Vastag, 2000).

Technological interventions are nominally positive, however evidence suggests that they constitute a weak form of sustainability (Gladwin et al., 1995), and do not guarantee achieving environmental outcomes (Gouldson & Sullivan, 2007). For example, Krut and Gleckman (1998), and Rondinelli and Vastag (2000) argue that environmental management system certification only evaluates the presence of an environmental management system, not whether it is used or has any impact on actual environmental performance. Russell and McIntosh (2011) suggest instead that supplementing technology by training and encouraging employees with regard to sustainability is indicative of a proactive organisational approach towards sustainability. In this regard, Jabbour and Santos (2008) and Zibarras and Coan (2015) propose that the success or failure of these management systems is whether or not organisations supplement these with human resource management practices. Thus, developing employees' environmental competencies is a feature of more sophisticated approaches to environmental sustainability (Hart, 1995).

Empirical evidence using organisational samples supports the importance of employee involvement in environmental activity. For example, del Brio, Fernandez and Junquera (2000) compared Spanish companies with comparable and certified environmental management systems. They found that 8-10% of environmental action-based competitive advantage could be attributed to

variation in employee inclusion in environmental practices. Similarly, Hanna, Newman, and Johnson (2000) identified a positive relationship between environmental and operational improvement in the context of a review of 349 employee involvement projects. Thus, although technology may provide the potential for substantial improvements in environmental performance, realising this potential to its utmost relies on human behaviour (Davis, Leach, & Clegg, 2011; Wehrmeyer, 1996).

To this point, I have argued that human economic activity is contributing to climatic changes, and that environmental sustainability offers a response. Organisations in particular are under pressure to address their environmental impact from regulatory, normative, and social sources. In response, organisations are financing new technology, updating processes, and looking for ways to use environmental sustainability as a strategic advantage. However, the success of such interventions relies on individual behaviour.

The Critical Role of Employee Behaviour

In September 2015, the US Environmental Protection Agency (EPA, 2015) reported that Volkswagen, the world's second largest automaker, had installed software in some diesel vehicles to deceive emissions tests. Specifically, the software would detect when the cars were being tested for emissions, and modify the engine's performance temporarily to produce overly favourable emissions results; between 10-40% lower than during normal operation (The Economist, 2015a). The consequences of this action are substantial (The Economist, 2015a; 2015b). First, approximately half a million cars in the United States are affected, with the potential fines in this market alone totalling 18 billion U.S. dollars. These potential fines account for only 5% of the cars implicated globally, however, and does not include lawsuits and reimbursements. Second, within days the CEO resigned and one third of the company's value was erased. Last, an internal investigation implicated individual employee behaviour and perceptions of organisational culture as contributing factors to the scandal (Volkswagen AG, 2015).

The Volkswagen case is an example of individual-level deviance from an organisation's environmental policy as a result of employee perceptions of the organisational context, in this case a culture that tolerated breaching rules (Volkswagen AG, 2015). It also highlights the critical role of individual behaviour as a foundation for organisational activity, whether it be setting strategy and creating policy at the leader level (Banerjee, 2002), or adhering to these structural factors at the employee level (Ramus & Steger, 2000). In this regard, Ones and Dilchert (2010) demonstrate that organisations are introducing environmental sustainability into employees' task and role requirements. Furthermore, scholars (Boiral, 2005; Ones & Dilchert, 2012a) propose that the success of organisational environmental initiatives depends on employee engagement. In response,

organisations are looking to engage employees in sustainability (SHRM, BSR, & Aurosoorya, 2011). Determining the forces governing the green behaviour of individuals is therefore critical.

Ones and Dilchert (2012a) note that, although researchers have been interested for some time in why individuals act in environmentally friendly ways in private (e.g., Hines, Hungerford, & Tomera, 1987), interest from organisational researchers is relatively recent. In this regard, both research on green human resource management (Jackson, Renwick, Jabbour, & Muller-Camen, 2011), and the psychological processes that underlie associated practices is still emerging. Thus, the developing literature is heavily influenced by research on green behaviour at home from social and environmental psychology (Lülfs & Hahn, 2014). While this literature provides valuable insights, it is somewhat limited in its ability to explain behaviour in an organisational context. In particular, there are three key limitations to this private green behaviour literature that organisational research needs to overcome: neglecting contextual factors; assuming individual behavioural autonomy; and assuming behavioural stability.

Limitation 1 – Neglecting the workplace context. The emerging acceptance of environmental sustainability as a cornerstone of organisational success in the 21st century has proven a catalyst for research on individual green behaviour (Ones & Dilchert, 2012a). Much of what is believed about how these behaviours manifest at work is, however, assumed on the basis of evidence from environmental psychology using social psychological theories. Theorists like Ajzen (1991) and Stern, Dietz, Abel, Guagnano and Kalof (1999) emphasise personal factors such as attitudes and beliefs to the neglect of contextual factors, such as the organisational culture at Volkswagen that tolerated rule breaches. The influence of factors such as individual attitude and motivation becomes weaker in the presence of strong contextual factors, such as worker requirements and leader influence (Andersson, Shivarajan & Blau, 2005; Caspi & Moffitt, 2013). In this regard, Steg and Vlek (2009) argue that popular theories of green behaviour from environmental psychology lose explanatory power in situations, such as the workplace, where behaviour is constrained.

The preference for social psychology theories within environmental psychology reveals an assumption that an individual's traits determine his or her green behaviour, irrespective of the context (see Steg & Vlek, 2009). This is also present in the literature on green human resource management (Munster & Schrader, 2011). The test of this assumption would be if individuals' green behaviour were consistent at home and at work. From a work-life balance perspective, attitudes and behaviours in the private sphere can enhance, detract from, compensate for, or spill over into the attitudes and behaviours present in the work sphere (Edwards & Rothbard, 2000; Guest, 2002; Rothbard, 2001). Munster and Schrader (2011) note that empirical research suggests that this is not the case, however. For example, Littleford, Ryley, and Firth (2014) studied

individuals' performance of the same green behaviours at home and at work. The authors observed participants' lighting and computer use at home and at work had weak correlations and concluded that there was no spillover effect, where performance in one context led to similar performance in the other. Where evidence does show a relationship, the direction is typically from the work sphere to the private sphere. For example, Berger and Kanetkar (1995) found that environmental attributes (e.g., phosphate levels in laundry detergents) had a greater influence on consumer choices among individuals with experience of successful waste management programs at work. On the basis of this evidence there may something specific about the work context that shapes an individual's green behaviour at work (McDonald, 2011).

Organisations have at their disposal numerous structural elements to facilitate green behaviour. These include environmental policies, resources, training, and incentives (Norton, Parker, Zacher, & Ashkanasy, 2015). The effects of these factors are, however, unclear. For example, Rondinelli and Vastag's (2000) case study indicates a positive effect of certified environmental management systems on employee behaviour. In contrast, Boiral (2013) claims that the behavioural effects of environmental management systems are largely ceremonial, with little practical impact. The Volkswagen case suggests that it is not simply a matter of having environmental structures in place to facilitate green behaviour, but doing so in such a way that employees perceive environmental sustainability to be a priority for the business.

Decades of research on organisational culture and climate reflect the primacy of employees' experience of context in organisational behaviour (Ashkanasy, Wilderom, & Peterson, 2011; Schneider, Ehrhart, & Macey, 2013). Together, these concepts capture the factors that constitute the organisational context and represent slightly different ways to conceptualise how employees experience the workplace (Schneider et al., 2013). Whereas Schein (1990) describes culture as reflecting the shared tacit assumptions and beliefs, Schneider and Reichers (1983) describe climate as reflecting shared perceptions of formal policies, the procedures that translate policies into tacit guidelines, and the practices that act upon them. Furthermore, James (1982) explains that climate can be operationalized at the individual level (i.e., psychological climate) or aggregated (i.e., organizational climate). In both cases, climate demonstrates utility in predicting employee behaviour. In their review, Kuenzi and Schminke (2009) note that this is especially true when climate and behaviour focus on a particular aspect of business activity. For example, climates for safety (Neal & Griffin, 2006; Zohar & Luria, 2004) and ethics (Shin, 2012) have positive effects on safety-related and ethical behaviour, respectively. Much like environmental sustainability, safety and ethics are subject to regulatory, normative, and social pressure despite not necessarily being central to core business. Thus, employee perceptions of an organisation's policies, procedures, and practices toward environmental sustainability have the potential to capture the contextual influences

on green behaviour, and are an important area for research (Jackson et al., 2011). This leads to my first research question: *To what extent do employee perceptions of the organisational context influence intentions to engage in, and perform, EGB?*

Limitation 2 - Assuming individuals' green behaviour is voluntary. The emphasis on person factors within the theories typically used to explain private green behaviour reveal an assumption that it is voluntary and motivated by values, personal norms, and self-interest (Bamberg & Möser, 2007). While these theories are appropriate with regard to private green behaviour at home, where an individual has more autonomy over his or her behaviour, Parker (2011) argues that task, role, and organisational requirements constrain workplace behaviour. Therefore, models that describe why employees voluntarily engage in green behaviours (e.g., Kim, Kim, Han, Jackson, & Ployhart, 2014) only tell half the story. On the one hand, while an individual might have strong environmental values, beliefs, and norms (Stern et al., 1999) outside of work, the tasks that they complete, the role they perform, or the organisation they work for might prevent these factors manifesting in green behaviour. On the other hand, an employee might hold ambivalent or resistant attitudes towards green behaviour, but nonetheless engages in these behaviours because their company has a strong green culture, or because the nature of the work required in their role includes environmental activity. Thus, a job performance-based conceptualisation of green behaviour that incorporates contextual factors and does not assume employees have full autonomy over their behaviour, should be more appropriate than those from environmental psychology.

Organisational citizenship behaviour is a prominent type of behaviour in the job performance literature. Organ (1988) originated the concept of organisational citizenship behaviour as a means to capture conscientious and proactive behaviours that go above and beyond organisational expectations to support the organisation. Subsequently, it is an appropriate concept for behaviours related to issues that are important, but perhaps not essential to core business activities (which would otherwise be expected of employees). For that reason, scholars (Boiral & Paillé, 2012; Lamm, Tosti-Kharas, & Williams, 2013) now use it to investigate proactive green behaviour at work. Anderrson and Bateman (2000) note that the discretionary actions of employees constitute an important contribution to sustainability by demonstrating new ways to reduce a company's environmental impact. Importantly, citizenship behaviours are sensitive to contextual influences. In a study of UK workers, Temminck, Mearns and Fruhen (2013) found that perceived organisational commitment to sustainability was a significant predictor of green citizenship behaviour. The authors propose an exchange relationship where employees channel their citizenship behaviours towards something that the organisation values. In this way, citizenship behaviours are an important component of employee-level contributions to organisational environmental sustainability.

It is important to acknowledge that up to a third of green behaviours fall under organisational expectations (Ones & Dilchert, 2010), a figure that is likely to increase as sustainability is integrated into business as usual (Ones & Dilchert, 2012a). There is a need, therefore, to use a conceptualisation of green behaviour that differentiates between both voluntary and required behaviour. To this end, Zoogah (2011) proposed a model of manager-level behaviour featuring promotive and preventative role behaviours that seek to grow and protect environmental management, respectively. Similarly, but at the employee level, Ones and Dilchert (2012b) propose the concept of employee green behaviour (EGB), which they derive from the contemporary definitions of job performance. Although not as prominent to date within the literature as green citizenship behaviour, researchers have operationalized EGB with interesting findings. Bissing-Olson, Iyer, Fielding, and Zacher (2013) adopted EGB in their research to investigate task-related and proactive behaviour, in line with Motowidlo and Van Scotter's (1994) distinction between task and context performance. Bissing-Olson and her colleagues found that a two-factor model of EGB was a better fit for the data than a single-factor model. Thus, employees distinguish between EGB that contributes to task performance, and EGB that contributes to the broader organisational environment. The authors also found that unactivated positive affect predicted task-related EGB, but that activated positive affect predicted proactive EGB. Thus, EGB offers a concept derived from theories of organisational behaviour that is germane to the work context, and includes required and voluntary behaviours. As a consequence, it should be a more appropriate construct for research on employee level contributions to organisational environmental sustainability. This leads to my second research question: *Can a job-performance perspective help to distinguish between different types of EGB?*

Limitation 3 - Assuming that EGB is stable over time. A final limitation within the environmental psychology literature is an assumption that people are consistent in their green behaviour. This may be an artefact of using stable personal traits such as environmental attitude and personal norms to explain green behaviour. Kaiser and Byrka (2011) suggest that environmentalism, which includes green behaviour, is a stable trait. The authors discount, however, the potential for situational factors to create variations in behaviour. For example, Kaiser and Byrka attribute whether or not a person engages in a green behaviour to the strength of their commitment to environmentalism. In other words, people can be thought of as either green or non-green, and exhibiting a consistent pattern of associated behaviour. This is indicative of the bias within the environmental literature toward person factors, to the neglect of context; it is not difficult to come up with examples where individuals have done or not done things in conflict with their personal attitudes or beliefs due to situational demands. Thus, while Steg and Vlek (2009) note that

individuals are inconsistent in the *types* of green behaviours they engage in, it is reasonable to assume that they also vary in the *consistency* with which they perform green behaviours.

In contrast, organisational researchers (Fisher, 2008; Dalal, Lam, Weiss, Welch, & Hulin, 2009; To, Fisher, Ashkanasy, & Rowe, 2012) acknowledge that individuals vary in their behaviour over the short term as a function of contextual factors. Johns (2006) defined context as the situational opportunities and constraints that enable or inhibit behaviour, respectively. Blumberg and Pringle (1982) identify numerous contextual factors that shape the job performance, including working conditions, leader behaviour, time, and supplies. Notably, all of these things can vary from day to day. Thus, contextual factors beyond an employee's control can potentially create variations in performance on a day-to-day basis.

Behaviour can also vary as a result of psychological reactions to contextual factors. Zoogah's (2011) model of manager-level green behaviour uses a cognitive-affective approach (Mischel & Shoda, 1995), acknowledging that the interplay of an individual employee and the features of specific situations influence behaviour. Thus, not only do contextual factors vary from day to day, but an employee's psychological response to these factors can also fluctuate. Accordingly, researchers have observed within-person variations in task, citizenship, and creative performance (Dalal et al., 2009; To et al., 2012), as well as in EGB (Bissing-Olson et al., 2013). Thus, conceptualising EGB as a type of job performance and acknowledging the contribution of contextual factors alongside person factors, instead of as an extension of private-sphere green behaviour where person factors dominate, is advantageous to discovering and explaining within-person variation.

While it is likely that, in the long term (e.g., months), EGB may appear to be stable, this may actually mask within-person variability over the shorter term (e.g., moment-to-moment, or day-to-day). Research that acknowledges the potential for an employee's behaviour to vary, and identifies the person and context factors that drive this variation would make an important contribution to the literature. In particular, understanding why employees might be green one day, but not the next, would be important for designing effective interventions to encourage employee engagement in environmental sustainability initiatives (Unsworth, Dmitrieva, & Adriasola, 2013). This limitation leads to my third research question: *To what extent do individuals vary in their intentions to engage in, and perform, EGB from moment-to-moment and day-to-day?*

My Program of Research

Organisations represent multilevel systems, thus any explanation of behaviour with an organisation must take into account factors at multiple levels (Hitt, Beamish, Jackson, & Mathieu, 2007). To understand better how organisations can encourage their employees to behave in environmentally conscious ways at work, we need to identify how organisational, individual, and

intraindividual factors contribute to employee behaviour. This thesis includes a systematic-review and a series of three studies, using mixed methodologies, a multilevel approach, and employee samples.

The systematic review conceptualises the current literature within a multilevel framework. This review uses Lewin's (1951) field theory to organise factors into person and context groups (Limitation 1), proposes a performance-based conceptualisation of EGB that includes required and voluntary behaviours (Limitation 2), and identifies a lack of research at the within-person level of analysis as a key limitation (Limitation 3). Study 1 employs a cross-sectional survey design to establish the validity of a green organizational climate construct, and empirically validate the distinction between task-related and proactive EGB. Thus, this study represents an important first step in establishing the relevance of an individual's *perception* of the organisational context (Limitation 1), as opposed to the *existence* of specific factors within the context, for EGB, and the appropriateness of conceptualising EGB using from a job performance perspective (Limitation 2).

Studies 2 and 3 both adopt a within-person approach to investigate intraindividual variations in intentions to engage in behaviour (Study 3), and behaviour itself (Study 2). In doing so, I sought in these studies to address Limitation 3. Along the lines of Bissing-Olson and her colleagues (2013), Study 2 uses a daily diary methodology to explore changes in the relationship between intentions on one day and behaviour the next over a period of two work weeks. Study 3 uses an experimental vignette methodology and manipulated the features of specific EGBs to determine how features of the behaviours themselves inform intentions to engage in task-related and proactive EGBs (Limitation 2). For this experimental study, I ran two pilot studies to determine a list of EGBs recognised by raters as important ways to help the environment and typical of modern offices (addressing Limitation 1). Participants responded to a series of realistic scenarios involving these EGBs and designed based on the recommendations of researchers (Marcus, MacDonald, & Sulsky, 2015; Rotundo & Sackett, 2002) utilising a policy capturing methodology. This experimental approach enables me to identify causal relationships between the features of ease and enjoyment at the within-person level, different types of motivations towards the environment at the between-person level, multilevel interactions between these, and intentions to engage in task-related and proactive EGBs. In summary, throughout this program of research I sought to address the following research questions:

1. To what extent do employee perceptions of the organisational context influence intentions to engage in, and perform, EGB? (Systematic Review, Study 1, 2, & 3)
2. Can a job-performance perspective distinguish between different types of EGB? (Systematic Review, Study 1 & 3)

3. To what extent do individuals vary in their intentions to engage in, and perform, EGB from moment-to-moment and day-to-day? (Systematic Review, Study 2 & 3)

This thesis consists of a systematic review and three empirical studies that address the research questions outlined above. These pieces of work are reported in manuscripts that comprise four chapters of the thesis. A brief summary of each manuscript that describes the purpose, design, and main findings is provided at the start of each chapter.

Chapter 2: Systematic Review

Employee Green Behavior: A Theoretical Framework, Multilevel Review, and Future Research Agenda

Citation – Norton, T. A., Parker, S. L., Zacher, H., & Ashkanasy, N. M. (2015). Employee green behavior: A theoretical framework, multilevel review, and future research agenda. *Organization & Environment*, *28*, 103-125. doi:10.1177/1086026615575773

Purpose – To review the literature on employee green behaviours and derive a multi-level theoretical framework to inform future research.

Design – Multilevel systematic review of studies that investigate employee green behaviour (*N* = 69).

Main Findings – Research to date focuses mainly on the between-person level, conceptualising green behaviours as a voluntary form of behaviour (e.g., organisational citizenship behaviour towards the environment). However, there appears to be meaningful differences between the factors that contribute to required (i.e., task-related) and voluntary (i.e., proactive) EGBs, which highlights the importance of making a conceptual distinction between these two forms of EGB. While the literature reports the role of factors at higher levels (e.g., leader level, organisational level), it lacks multilevel research on the processes by which factors at such levels influence employee-level behaviour. Finally, the outcomes of EGB have not attracted significant research attention, despite being an important requirement to validate the role of employee behaviour in contributing to organisational goals.

Abstract

We propose a conceptual model based on person-environment interaction, job performance, and motivational theories to structure a multilevel review of the employee green behavior (EGB) literature and agenda for future research. We differentiate between required EGB prescribed by the organization and voluntary EGB performed at the employees' discretion. The review investigates institutional-, organizational-, leader-, team-, and employee-level antecedents and outcomes of EGB and factors that mediate and moderate these relationships. We offer suggestions to facilitate the development of the field, and call for future research to adopt a multilevel perspective and to investigate the outcomes of EGB.

Chapter 2 – Systematic Review

Employee Green Behavior: A Theoretical Framework, Multilevel Review, and Future Research Agenda

Environmental sustainability is emerging as a critical facet of corporate existence in the 21st century (Starik & Marcus, 2000). In this review, we examine the factors that contribute to employee green behavior (EGB): a workplace-specific form of proenvironmental behavior. Ones and Dilchert (2012a) moreover define EGB as any measureable individual behavior that contributes to or detracts from environmental sustainability goals in the work context. Ones and Dilchert (2012b) argue that EGB are an essential component of organizational environmental sustainability (see also Andersson, Jackson, & Russell, 2013).

We structure our article in three parts. In the first part, we introduce key concepts and propose an integrative conceptual framework (Figure 2.1) based on person-environment (Lewin, 1951), job performance (Blumberg & Pringle, 1982), and motivational (Deci & Ryan, 1985) theories. In the second part, we systematically review previous empirical research on the nature of and factors associated with both required EGB and voluntary EGB across multiple levels of analysis. Lastly, we discuss what is known and unknown about EGBs and outline an agenda for future research based on our proposed model.

We seek in particular to extend previous reviews of workplace environmental behavior (see Lo, Peters, & Kok, 2012a; Lülfs & Hahn, 2014; Young et al., 2013) in four key ways. First, we distinguish between behaviors required as part of an employee's role from behaviors that are voluntary. Recent empirical research has supported such a distinction (Bissing-Olson, Fielding, Iyer, & Zacher, 2013; Norton, Zacher, & Ashkanasy, 2014). Second, we investigate how factors that are conceptualized at the institutional, organizational, team, leader, and employee levels influence different types of EGB, and examine how EGBs in turn influence outcomes at these levels. Multilevel theories and methods have become increasingly popular in the organizational literature since their introduction fifteen years ago to the mainstream organizational literature by Hofmann, Griffin, and Gavin (2000) and Kozlowski and Klein (2000), yet multilevel research on EGB seems to be still in its infancy (e.g., Bissing-Olson, Zacher, Fielding, & Iyer, 2012; Bissing-Olson, Fielding & Iyer, 2015; Kim, Kim, Han, Jackson, & Ployhart, 2014; Norton, Zacher, & Ashkanasy, 2012). Third, a comprehensive investigation of EGB requires a detailed description of its nomological net, and in particular the direction of relationships with other relevant factors. To this end, we review the antecedents and consequences of EGB, the mediating mechanisms that might help us to explain these relationships, and the moderating conditions that affect the existence and strength of these relationships (see Aguinis & Glavas, 2012, for a similar approach to corporate social responsibility). Fourth, we propose a theory-based conceptual framework (Figure 2.1) based

on person-environment (Lewin, 1951), job performance (Blumberg & Pringle, 1982), and motivational (Deci & Ryan, 1985) theories. We also propose a research agenda to guide the next phase of research in this area (Table 2.2). In sum, we aim to provide a comprehensive perspective on required and voluntary EGB.

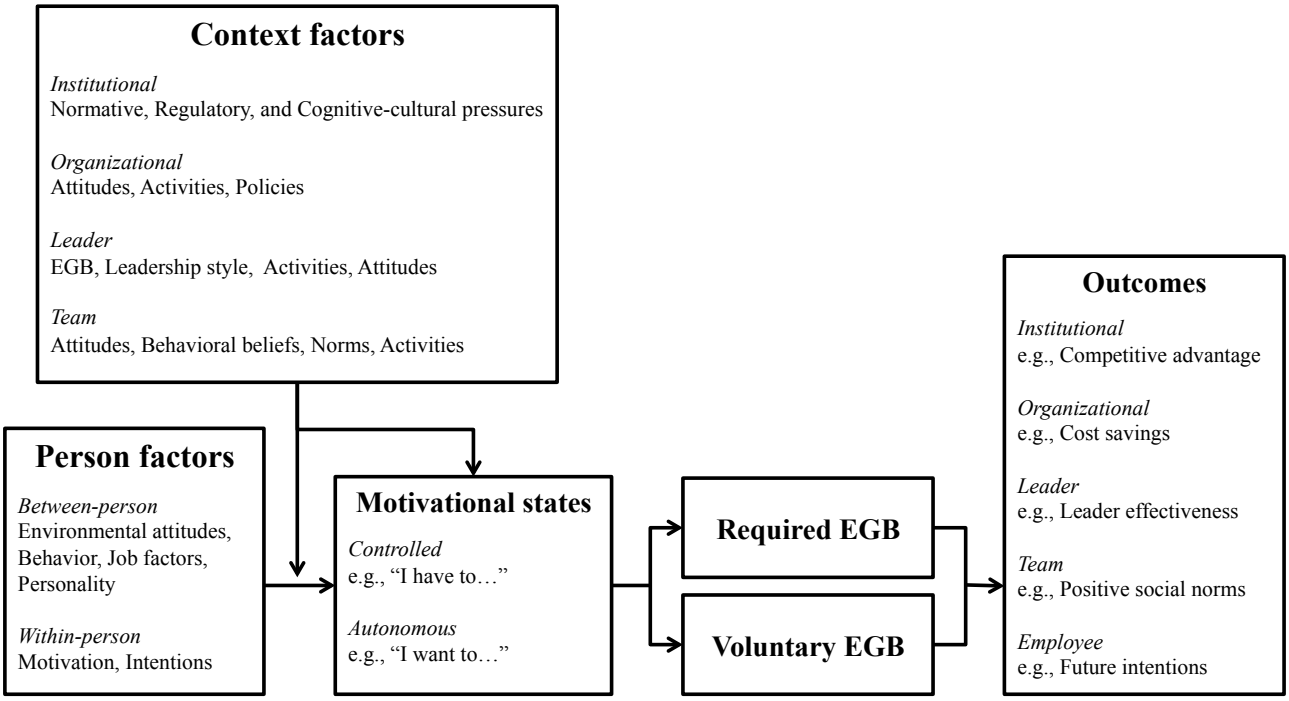

Figure 2.1. Integrated multilevel model for employee green behaviors.

Conceptualization of Green Behavior in the Workplace

Research on green behavior in the workplace (see Paillé & Boiral, 2013; Ramus & Steger, 2000) and at home (see Steg & Vlek, 2009) has typically conceptualized it as *voluntary* behavior. Organizational psychologists recognize however that not all EGB is discretionary (Ones & Dilchert, 2012b). In this regard, Ones and Dilchert (2012a) offer a job performance-based taxonomy of EGB with five categories: (1) working sustainably, (2) conserving resources, (3) influencing others, (4) taking initiative, and (5) avoiding harm. While this taxonomy implicitly accepts the presence of required as well as voluntary behavior, the categories themselves are not mutually exclusive, thus allowing for a behavior to belong to more than one group.

In this review, we adopt a simpler, though (we argue) a potentially more useful, taxonomy with mutually exclusive groups based on the concepts of task and contextual (or citizenship) performance (Borman & Motowidlo, 1993; Organ, 1997; Rotundo & Sackett, 2002). Specifically, we make a distinction between behavior that is *required* and contributes to core business goals, and behavior that is *voluntary* and contributes instead to the organizational, social, and psychological environment that provides the context for task performance (cf. Borman & Motowildo, 1993). Such a classification allows for the distinction between green behavior in the workplace and private-sphere green behavior. These two types of EGB can be found to the right of Figure 2.1.

Required EGB. As Schmit, Fegley, Esen, Schramm, and Tomassetti (2012) point out, companies are seeking to improve their environmental performance by introducing green jobs and duties. Ones and Dilchert (2012b) report that between 13-29% of EGBs identified in US and European samples are required by the organization or part of an employee's job duties. We define *required EGB* as green behavior performed within the context of employees' required job duties (see also the Bissing-Olson et al., 2013, concept of *task-related* EGB). This includes adhering to organizational policies, changing methods of work including choosing responsible alternatives, and creating sustainable products and processes. The concept of required EGB is similar to task performance (Borman & Motowidlo, 1993), which refers to behavior required of employees by their employer, and contributes either directly or indirectly to core business.

Voluntary EGB. Employees can also choose to exceed what is required by the organization with regard to the environment. We define *voluntary EGB* as green behavior involving personal initiative that exceeds organizational expectations. This includes prioritizing environmental interests, initiating environmental programs and policies, lobbying and activism, and encouraging others. The concept of voluntary (non-task) EGB aligns closely with the notions of contextual performance and organizational citizenship behavior, which refer to behaviors that support the social and psychological environment in which task performance takes place (Borman & Motowidlo, 1993; Organ, 1997). Notably, it is this notion of discretionary green behavior that has tended to dominate the literature to date (Norton, Zacher, & Ashkanasy, 2015).

Antecedents, Moderators, Mediators, and Outcomes

As we noted earlier, we also review factors presented as antecedents, moderators, mediators, and outcomes related to EGB. In this section, we present several major theoretical frameworks explaining EGB. Our intention is to introduce the key factors used to explain the emergence of EGB. We also deal with the outcomes of EGBs. This is in contrast to theories of EGB that have traditionally only focused on antecedents, mediators, and moderators, and have tended to neglect outcomes. Outcomes are presented on the far right of Figure 2.1.

Organizational sustainability theorists (e.g., see Ramus & Killmer, 2007; Stern, 2000; Young et al., 2013) typically propose alternative explanations for how and why EGBs manifest. In this review, we identify four distinct theoretical approaches to this study: (1) attitudinal; (2) normative; (3) exchange, and; (4) motivational.

Attitudinal theories are based in the idea that individuals are likely to pursue activities that correspond with favorable internal attitudes towards, in this case, the natural environment. For example, a central tenet of Ajzen's (1991) theory of planned behavior is a positive relationship between attitudes and behavior. In Ajzen's theory, attitudes are regarded as necessary but insufficient, requiring that individuals must also possess beliefs surrounding behavioral control and

be aware of social norms in order to perform a behavior. The theory of planned behavior is one of the most prominent frameworks for explaining environmental behavior in both the private (Bamberg & Möser, 2007) and work (Unsworth, Dmitrieva, & Adriasola, 2013) contexts. Attitudes may also act as a moderator of relationships between EGB and factors at other levels. For example, Bissing-Olson and colleagues (2013) demonstrate that proenvironmental attitudes moderate the effect of positive affect on EGB, such that there is a stronger relationship between positive affect and EGB for individuals who possess more negative environmental attitudes.

Normative theories focus on the extent to which a behavior is seen to be socially acceptable. For example, in the theory of normative conduct, Cialdini, Reno, and Kallgren (1990) propose that norms guide behavior by emphasizing the social consequences of participating (or not participating) in particular activities. Sustainability research based in this theory has mostly focused on green behavior in the private sphere (e.g., see Cialdini et al., 1990). In a recent exception, Norton et al. (2014) examined employee perceptions of what an organization approves of (i.e., injunctive norms) and what employees actually do (i.e., descriptive norms) to explain EGB.

Exchange theories also focus on the role of interactions, namely reciprocity between the individual and some other entity, such as leaders or groups (Cropanzano & Mitchell, 2005). Within this perspective, behavior is assumed to be driven by obligations engendered via interdependent relationships, such as those between leaders and followers (Emerson, 1976). These obligations in turn are driven by "rules of exchange" (Cropanzano & Mitchell, 2005, p. 875), which include reciprocity (payback), negotiated outcomes (*quid pro quo*), altruism, and group goals. Social exchange theory has recently been applied to explain the nature of environmental citizenship behavior (Paillé & Boiral, 2013; Paillé, Boiral, & Chen, 2013; Paillé, Mejía-Morelos, Marché-Paillé, Chen, & Chen, 2015). Temminck, Mearns, and Fruhen (2013) used this perspective to hypothesize that reciprocity between employees and the organization may mediate the effect of environmental attitudes on environmental citizenship behavior.

Motivation theories are structured around the factors that drive the decision to engage in particular behavior, the intensity of effort demonstrated, and persistence. For example, in self-determination theory, Deci and Ryan (1985) posit that behavior is the result of autonomous and controlled motivations. In Deci and Ryan's view, an employee is motivated towards engaging in EGB if they detract personal satisfaction from doing so (autonomous motivation), or if they believe the company will reward them (controlled motivation). Graves, Sarkis, and Zhu (2013) used self-determination theory to explain EGB as encompassing autonomous motivators such as attitudes and values, as well as controlled motivators such as environmental management systems and rewards. In sum, the literature appears to have adopted a broad range of theoretical perspectives to explain EGB.

Our Conceptual Model of Employee Green Behavior

In this section, we describe the key components of the conceptual framework in Figure 2.1. First, our model is based on the well-established perspective that performance is the function of a person and their environment (or context, see Lewin, 1951). More specifically, within this view, behavior is a product of an actor's capacity and general willingness to perform, together with contextual factors outside of the actor's control (Blumberg & Pringle, 1982).

Second, job performance includes required (i.e., task) and voluntary (i.e., citizenship) behaviors. Empirical evidence demonstrates that these types of performance have different patterns of association with antecedents, and make unique contributions to overall job performance (Motowidlo, & Van Scotter, 1994). By using a job performance-based approach, we conceptualize EGB as a *specific type of job performance* that aligns with environmental sustainability, and not as proenvironmental behavior when it happens to be performed in the workplace. Central to our approach is an appreciation of the role factors beyond an individual actor's control play in behavior, particularly in contexts where the actor may have less control over her or his actions, such as in the workplace.

Third, we propose that motivational states constitute the mechanism through which context and person factors influence behavior. According to Deci and Ryan (1985; 1987), the motivation to engage in a behavior can be autonomous or controlled. On the one hand, autonomous motivation features a sense of autonomy and the experience of choice (Deci & Ryan, 2000). Thus, subsequent behavior is likely to be borne out of a sense that the actor actually *wants to* engage in the behavior. Autonomous motivation is linked with prosocial behavior and is likely to promote citizenship performance (Gagné & Deci, 2005). On the other hand, behaviors that are not interesting or intrinsically motivating require external regulation. The enactment of dull or boring tasks, such as those that might be required as part of an employee's role, depends upon the perception that a desired outcome (e.g., obtaining a reward, avoiding punishment) is contingent upon performance (Gagné & Deci, 2005). Thus, controlled motivation features a sense of pressure and the experience of obligation (Deci & Ryan, 2000). Thus, subsequent behavior is likely to be driven by a sense that the actor *has to* behave a particular way.

We posit that required and voluntary EGB may differ with regard to the motivational states that precede performance. Specifically, we see required behavior to be driven by controlled motivation, whereas voluntary behavior is activated by autonomous motivation. In this approach, we would expect that the interaction of strong proenvironmental attitudes (a personal factor) and green transformational leadership (a contextual factor) to produce an autonomous motivational state where an employee wants to do something for the environment, which would then result in the performance of voluntary EGB. Accordingly, we would expect the interaction of beliefs towards

organizational environmental policies (another personal factor) and transactional leadership (another contextual factor) to produce a controlled motivational state whereby an employee might feel s/he has to do something for the environment, which would then result in the performance of required EGB.

Finally, we argue that a multilevel approach is vital to enhance our understanding of environmental sustainability in organizational contexts (Bissing-Olson et al., 2015; Starik & Rands, 1995). Consequently, we categorize the factors associated with EGB into institutional, organizational, leader, team, and employee levels of analysis (cf. Ashkanasy, 2003). Differentiating these levels provides a more detailed view of relevant predictors and outcomes within a company, alongside more distal predictors (e.g., institutional forces) or outcomes external to everyday organizational life. Additionally, a multilevel perspective allows us to illustrate how different organizational stakeholders (e.g., policy makers, leaders, and coworkers) can influence EGB.

Figure 2.1 organizes variables into different hierarchical levels of analysis. Contextual factors include variables at the institutional, organizational, leader, and team levels. Contextual factors at the institutional level include factors present in the broader environment within which the organization exists, such as regulatory (e.g., government), normative (e.g., competitors), and cultural-cognitive (i.e., social) pressure, per institution theory (Scott, 1995). At the organizational level are internal and formalized factors that influence employees, such as policies, incentives, and human resource practices. At the leader level are factors that relate to the influence of a senior figure over a subordinate. At the team level are factors that relate to groups of employees, such as collective self-efficacy and group goal setting. In sum, factors at these levels lie outside of an actor's control, and constitute the context. Personal factors, motivational states, and EGBs exist at the employee level. This level can be thought of as comprising between-person (i.e., factors that are relatively stable and vary between individuals, such as environmental attitude) and within-person (i.e., less stable factors that can vary within an individual, such as motivational states and affect) sub-levels.

Method

To conduct our review, we collated literature that discusses EGB using an iterative multi-stage approach. First, we searched the reference list of previous reviews (Bamberg & Möser, 2007; Etzion, 2007; Lo, et al., 2012a; Ones & Dilchert, 2012b; Starik & Rands, 1995; Steg & Vlek, 2009). From this step, we identified journals that publish studies in this field, and performed searches with "environmental", "proenvironmental", "green", "sustainable", "ecological", and "conservation" as keywords for behavior, and "environmental", "corporate", and "organizational" as keywords for sustainability. Next, we conducted three waves of searching reference lists for new articles; collecting the articles, and identifying additional articles in the reference lists. In order to find recent

research, we next conducted database searches using the same keywords. The databases were EBSCOhost, ProQuest, PsycINFO, and Web of Science. We then checked our sample for authors with two or more papers represented, and searched their respective bibliographies for additional publications. In total, this resulted in the identification of 486 potentially relevant publications.

In the next step, we excluded articles using three criteria. First, we excluded publications that were not on the topic of environmental sustainability (i.e., those that looked at other components of broader sustainability, such as economic sustainability). Second, we removed studies that did not discuss employee-level green behavior. Third, we omitted papers that were not about behavior in a work context. This resulted in a final sample of 69 publications. Table 2.1 shows the number of articles from each journal included in the final review.

Table 2.1

Journals Represented in the Final Sample

Journal	Number of Articles
Academy of Management Journal	3
American Journal of Community Psychology	1
Applied Energy	1
Applied Psychology: An International Review	1
Architectural Science Review	1
Automation in Construction	1
Building Research and Information	1
Business Strategy and the Environment	8
Construction Management and Economics	1
Ecological Economics	1
Energy Policy	2
Environment and Behavior	3
Going Green: The Psychology of Sustainability in the Workplace	2
Group & Organization Management	1
International Journal of Human Resource Management	2
Journal of Applied Behavior Analysis	3
Journal of Applied Psychology	1
Journal of Applied Social Psychology	1
Journal of Business Ethics	7
Journal of Cleaner Production	3
Journal of Economic Psychology	1
Journal of Environmental Psychology	9
Journal of Experimental Social Psychology	1
Journal of Management	1
Journal of Organizational Behavior	2
Journal of Supply Chain Management	1
Landscape and Urban Planning	1
Local Environment: The International Journal of Justice and Sustainability	1
Perceptual and Motor Skills	1
PLOS One	1
Resources, Conservation and Recycling	1
Social Indicators Research	1
Tourism Management	1
Transportation Research Part A: Policy and Practice	1
Waste Management & Research	2

From the final set of articles, we extracted data pertaining to sample and sample size, level of

analysis (institutional, organizational, leader, team, employee), study type (cross-sectional, diary, experimental, quasi-experimental, longitudinal), measurement (self-report, observed, objective), the theories used, and the type of behavior measured (e.g., recycling, energy conservation). We also identified the antecedents, moderators, mediators, and outcomes of the behavior, and results reported by the authors. The final sample comprised 54 quantitative and 15 qualitative studies. For a list of all studies used in this review, including summaries of the studies, please see online supplementary material at http://www2.psy.uq.edu.au/~uqspark8/Norton_et_al_Multilevel_Review_Supplementary_Materials.xlsx.

Employee Green Behavior

We used a taxonomy of EGB to organize employee-level behaviors into collectively exhaustive categories (i.e., required vs. voluntary). We classified behaviors that fell within the boundaries of an employee's core job tasks (e.g., purchasing water-saving devices for farmers), or that were explicitly required by their employer (e.g., participating in environmental management practices) as required EGB. Accordingly, we classified behaviors that fell outside of an employee's core job tasks (e.g., citizenship behavior for the environment) or that required initiative (e.g., "I took initiative to act in environmentally friendly ways at work") as voluntary EGB. In the end, we identified 24 studies that measured required behaviors and 47 that measured voluntary behaviors (5 studies measured both).

Categorization

In order to compare and also to provide an overall perspective on the studies, we created categories (with subcategories) of factors based on the findings reported (and informed by the theoretical frameworks describes earlier) for the purpose of organizing the antecedents, moderators, mediators, and outcomes. In the following section, we describe these categories.

At the *institutional level*, we created three categories that refer to the external pressures from regulatory (e.g., laws and regulations), normative (e.g., industrial standards, market demand), and cognitive-cultural sources (e.g., community expectations). At the *organizational level*, we created four categories that include attitudes (with subcategories for attitudes towards business, such as strategy; and attitudes toward the environment, such as the importance of environmental sustainability); policy; activities (with subcategories for incentives, such as rewards; resources, such as facilities; and organizational-level behavior, such as complying with regulations); and norms.

At the *leader level*, we created two categories, one for leader activities (with subcategories for support behavior, such as encouraging employees; giving feedback, such as environmental performance; and own EGB), and one for leadership style (e.g., environmental transformational leadership). At the *team level*, we created three categories that refer to group attitudes (e.g.,

perceived colleague support) behavior (e.g., goal setting), and norms (e.g., green group climate).

Finally, at the *employee level* we organized between- and within-person variables into eight categories. The between-person categories refer to attitudes towards the environment (e.g., environmental concern), behavior (e.g., perceived behavioral control, habits, private green behavior), norms (e.g., personal), motivation (e.g., intrinsic), job factors (e.g., task control), and personality (e.g., conscientiousness). The within-person categories refer to positive affect and behavioral intentions.

Results

In this section, we describe the factors that contribute to or are a consequence of required and voluntary EGB at the category level (see online supplementary material). Specifically, we discuss the categories of variables at the institutional, organizational, leader, and team levels (contextual factors in Figure 2.1) and employee level (personal factors in Figure 2.1) that antecede, moderate, mediate, and are outcomes of required and voluntary EGB.

Institutional Level. We identified six studies that included contextual variables at the institutional level. The research demonstrates that such factors are important for both required and voluntary EGB. For example, Marshall, Cordano and Silverman (2005) described how the presence of regulatory, normative, and cognitive-cultural pressures are forcing winemakers to implement sustainable practices (i.e., required EGBs) into their core business. The anticipation of how these pressures might change and influence future activity is driving more voluntary measures taken in the manufacturing (Michael, Echols, & Bukowski, 2010) and print industries (Masurel, 2007).

Only one study measured an institutional-level outcome of EGB: Del Brio, Fernandez and Junquera (2007) reported a significant positive relationship between employee engagement in required behaviors and factories' competitive advantage.

Organizational level. Context factors conceptualized at the organizational level have to date received a greater share of research attention than variables at other levels above the employee. We identified 31 studies measuring context variables at this level including sub-categories of attitude, activities, policies, and norms input categories, and cost savings, environmental performance, and energy use output categories. Organizational-level attitudes towards the environment are important for both types of EGB. For example, Cantor, Morrow and Montabon (2012) report a significant positive relationship between perceived organizational support for the environment and participation in environmental management (i.e., required EGB) as well as promoting initiatives and innovative environmental behaviors (i.e., voluntary EGB). Interestingly, Zhang, Wang and Zhou (2013) found that an organization's environmental attitude negatively moderates the influence of personal environmental norms on voluntary EGB such that, when attitude is low, the impact of personal norms on conserving is weaker.

Attitudes towards business-related issues were also important for both types of EGB. Cost savings and improving work conditions for staff are reported to be important for required (Marshall et al., 2005) and voluntary (Masurel, 2007) EGB. Policies for environmental sustainability were also shown to be similarly important for required and voluntary EGB (Ramus & Steger, 2000). Norton et al. (2014) report however that the effect of policy on required and voluntary EGB is fully mediated by organizational and team norms, respectively. Finally, the important contributions of incentives (e.g., Graves et al., 2013), resources (e.g., Cantor et al., 2012), and organizational-level behavior (e.g., modifying processes; Cordano & Frieze, 2000) for required and voluntary EGBs are all present in the literature. Graves et al. (2013) also found that financial and non-financial incentives mediate relationships between environmental transformational leadership and both types of EGB.

We found evidence of the role social norms at the organizational level for required EGB only. Research (Lo, van Breukelen, Peters, & Kok, 2013; Siero, Boon, Kok, & Siero, 1989) demonstrates significant positive relationships with required EGB among Dutch workers and in a study of office workers (Norton et al., 2014). Several studies demonstrate the effect of required EGBs on cost savings, however. For example, Chen, Li, and Wong (2002) and Tam and Tam (2008) found that large cost savings are directly linked with improved work practices in the construction industry.

Several studies investigated organizational-level outcomes of EGB. Organizational environmental performance was found to change as a result of required (Chen, Tang, Jin, Li, & Paillé, 2014) and voluntary (Paillé, Chen, Boiral, & Jin, 2013) EGB in Chinese manufacturing firms; and voluntary EGB in Canadian manufacturing firms (Boiral, Talbot & Paillé, 2013). However, we found evidence of a relationship between reductions in energy consumption for voluntary EGB only. Carrico and Riemer (2011) demonstrated that education and feedback interventions result in a significant decrease in objective energy consumption. In another study, Van Houten, Nau, and Merrigan (1981) reported that, by increasing the time required to travel between floors, elevator use reduces by as much as one third. Moreover, longitudinal assessments demonstrate that employees continue to use alternative means even as the delay is gradually removed.

Leader level. Contextual factors researched at the leader level included sub-categories of leadership style, activities (i.e., supervisory behavior), environmental attitudes, and EGB (i.e., leader's own behavior) categories. We were unable to find any leader-level outcomes referred to in the literature. Recent research, however does demonstrate that leadership style is relevant for both types of EGB. For example, Graves and colleagues (2013) demonstrated a positive direct effect of leadership style on subordinates' required and voluntary EGB. These researchers also found that the effect of external motivation is greater when leaders demonstrated higher levels of environmental

transformational leadership. Robertson and Barling (2013) reported that leaders' environmental transformational leadership style also has a positive indirect effect on employees' voluntary EGB via the leader's own EGB and employees' harmonious environmental passion.

Leader activities are important context factors for both types of EGB. For example, Ramus and Steger (2000) reported on a range of supervisor support behaviors and their effects on voluntary EGB. These authors demonstrated that behaviors that support innovation, rewards and recognition, and the management of goals and responsibility (both in general and specific to environmental sustainability) had significant influences on the willingness to promote eco-initiatives. Other support behaviors, namely competence building and communication, were only effective when they focused on environmental sustainability. Daamen, Staats, Wilke, and Engelen (2001) found that garage mangers providing feedback on environmental performance to employees have a positive effect on EGB after three months. Interestingly, Paillé and colleagues (2013) reported a significant but negative relationship between general (i.e., not related to EGB) supervisor support and voluntary EGB.

We were only able to find support for an effect of a leader's own attitudes towards the natural environment on subordinates' required EGB. Marshall and colleagues (2005) reported that the attitudes of leaders within wineries towards land stewardship are acknowledged as a key determinant of whether environmental practices (e.g., barrel recycling) are introduced.

The research we found demonstrates that the extent to which leaders themselves participate in EGB is important for subordinate's voluntary EGB. In this regard, Robertson and Barling (2013) reported that leaders' environmental behavior have a direct and positive influence on subordinates' EGB, as well as a positive indirect effect via subordinates' environmental passion.

Team level. Contextual factors researched at the team level included sub-categories of attitudes, norms and behavior. As was the case with the leader level, we were unable to locate outcome variables measured at this level within the literature. Perceived colleague support was nonetheless found to have a positive indirect effect on eco-helping behavior, mediated by job satisfaction, commitment to colleagues, and intentions to help (Paillé et al., 2015). Social norms, which includes group-level climate, are reported to have positive influence on members' required (Siero, Boon, Kok, & Siero, 1989) and voluntary (Kim et al., 2014) EGB. In all of these studies, norms were also found to mediate other relationships.

Team level behavior and beliefs are important contextual factors for EGB. On the one hand, group goal setting has been shown to have positive outcomes for required EGB on construction sites (Lingard, Gilbert, & Graham, 2001). On the other hand, Carrico and Reimer (2011) report that collective beliefs about the group's ability to perform and action and achieve a desired outcome have a positive effect on members' voluntary EGB.

Employee level. We found that most of the variables measured within the literature were at the employee level and constitute the personal factors illustrated in Figure 2.1. This included sub-categories of environmental attitudes, behavior, job factors, norms, motivation, affect, and intentions. In all, 21 of the 41 studies we identified at this level measured employees' environmental attitudes. In this regard, the literature demonstrates a typically positive effect of environmental attitudes on EGB. Nonetheless, using a sample of supervisors, Andersson, Shivarajan, and Blau (2005) reported no effect of personal environmental beliefs on voluntary EGB.

Behavioral beliefs and habits are also important for both types of EGB. As an example of several studies on behavioral control, Greaves, Zibarras and Stride (2013) reported a positive effect of perceived behavioral control on required and voluntary EGB. Marans and Lee (1993) also provided an example of how habits, in this case recycling behavior at home, have a positive influence on voluntary recycling at work.

Personal norms have also been researched with regard to EGB. For example, Flannery and May (2000) demonstrated a positive relationship between subjective norms and required EGB. Similarly, Scherbaum, Popovich, and Finlinson (2008) found a positive effect of personal norms on voluntary EGB. We found only one study (Zhang, Wang & Zhou, 2014) that reported no effect of norms on EGB.

Several studies have demonstrated a positive effect of employee motivation on EGB. For example, using a broad conceptualization that included required and voluntary behavior, Graves and colleagues (2013) found that external (i.e., controlled) motivation, specifically beliefs around rewards and payment, encourages EGB. These authors also reported a positive influence of autonomous motivation.

We also found that job factors appear to be important for both types of EGB. For example, Siero et al. (1989) demonstrated that providing employees with more autonomy over task assignments has a positive effect on the energy-saving driving behavior of Dutch postal workers. With regard to employees' work-related attitudes, affective commitment to the organization (Lamm, Tosti-Kharas & Williams, 2013) and colleagues (Paillé et al., 2015) were both shown to mediate effects of perceived support on citizenship-type behaviors towards the environment. Paillé and colleagues also report a negative effect of job satisfaction on eco-helping behavior (i.e., helping coworkers to be environmentally friendly).

Affect has only recently begun to attract research attention. Bissing-Olson and colleagues (2013) reported that positive affect has an important role to play for EGB at the within-person level. Specifically, these authors found that low-arousal positive affect has a positive effect on required but not voluntary EGB, and that high-arousal positive affect has a positive effect on voluntary EGB only when environmental attitude is less positive.

An intention to engage in future EGB has also been reported as an outcome of EGB. Osbaldiston and Sheldon (2003) reported that required EGB stemming from internalized motivation results in intentions to meet environmental goals in the future. Similarly, Murtagh and colleagues (2013) reported that voluntary EGB has a positive effect on intentions to monitor future energy consumption.

We were only able to find evidence of a relationship between behavioral intentions and voluntary EGB. For example, after asking some participants to develop intentions by planning when, where, and how they could recycle at work, Holland, Aarts and Langendam (2006) reported a difference in recycling behavior. Specifically, participants that developed intentions recycled significantly more materials than those that did not. Similarly, Paillé and colleagues (2015) demonstrated a direct positive effect of intentions to help coworkers on eco-helping behavior.

The literature only provides evidence of intrinsic satisfaction as an outcome of voluntary EGB. In this respect, Lee and De Young (1994) compared two models. In the first, intrinsic satisfaction is seen to predict recycling behavior; in the other, recycling behavior is considered to predict intrinsic satisfaction. Although these authors concluded that intrinsic satisfaction is an outcome of, rather than a predictor of, voluntary EGB, they did not provide statistics to demonstrate the significance of the relationships they found, however.

Discussion

In this review, we sought not only to summarize the state of EGB research, but also to integrate the research systematically, based on theoretical considerations, and to provide an agenda to direct the next phase of research. To accomplish this, we distinguished between person and contextual influences on EGB to present a theoretical model (Figure 2.1) based on an existing model of job performance (Blumberg & Pringle, 1982) and Lewin's (1951) person-environment interaction perspective on behavior. We categorized the behaviors studied as either being required by the organization or representing voluntary efforts on behalf of employees, building on the important distinction between task and contextual performance (Borman & Motowidlo, 1993). In addition, we ordered factors with regard to their respective conceptual levels to provide a multilevel perspective (Kozlowski & Klein, 2000). Importantly, this perspective includes both top-down and emergent (i.e., within-person) cross-level relationships (Kozlowski, Chao, Grand, Braun, & Kuljanin, 2013). Finally, in order to create a similar overview to an existing perspective on corporate social responsibility (Aguinis & Glavas, 2012), we distinguished between three classes of variable: (1) factors that antecede EGB; (2) factors that moderate and mediate relationships between antecedents and EGB; and (3) factors that are outcomes of EGB.

What We Know and What We Don't (Yet)

Based on the literature we reviewed, we found evidence in support of our distinction between required and voluntary EGBs, and also for our contention that these behaviors are analogous to task and citizenship performance, respectively. For example, conscientiousness and organizational commitment are established predictors of organizational citizenship behavior (LePine, Erez, & Johnson, 2002). Consistent with this evidence, we found in our review evidence for a relationship between these factors and voluntary EGB only. Similarly, the relationship between participative goal setting and required EGB that we identified is consistent with Mento, Steel, and Karren's (1987) meta-analytic identification of a relationship between participative goal setting and general task performance.

Thus, there are indications that required and voluntary EGB constitute types of job performance that align with task and citizenship performance, respectively. Nonetheless, we also acknowledge that additional empirical evidence needs to be gathered before we can be sure of the accuracy of this summation. We therefore encourage researchers to explore the relationships between these general and green types of workplace behaviors. In order to achieve this, researchers should adopt the concepts of required and voluntary EGB. Alternatively, if the research is conducted in the field with specific behaviors (e.g., recycling), researchers should report whether or not the behavior is required by the organization or not.

In general, the most significant shortcomings of the literature appears to be a lack of research into the mechanisms through which various personal and contextual antecedents influence EGB, the conditions under which the antecedents are particularly influential, and how EGB influences important outcomes for employees, coworkers and teams, leaders, and the broader organization (Figure 2.1). Additionally, there is a lack of multilevel research, particularly research that investigates the cross-level processes through which high-level antecedents influence employee-level behavior. Addressing these deficiencies would seem to be vital for this field going forward. To this end, we call for research that investigates factors that moderate and mediate established relationships between antecedents and EGB. Furthermore, we call for researchers to include outcomes of EGB in their studies. In their review of corporate social responsibility, of which environmental sustainability constitutes one of three pillars, Aguinis and Glavas (2012) present outcomes across institutional, organizational, and individual levels that are equally applicable to EGBs.

Our review illustrates the foci of research to date, and highlights that EGB research has focused mainly on antecedents at the employee level of analysis (i.e., personal factors). Accordingly, our findings also point to areas where researchers are yet to make significant inroads. In particular, research towards contextual factors at the institutional, organizational, leader, and

team levels of analyses that moderate, mediate, and are outcomes of EGB is lacking. Table 2.2 presents additional areas of research and associated research questions. Below, we summarize the strengths and weaknesses of the research at each of these levels.

Table 2.2

Agenda for Future Research

Research Domain	Illustrative Research Questions
Return on investment	• What are the specific outcomes of EGB at each level of analyses?
	• What types of EGB have the greatest impact (e.g., on a company's environmental performance)?
	• What are the reciprocal effects of the outcomes of EGB?
Interventions	• What makes non-green people do green things?
	• Does addressing the context rather than the person represent the path of least resistance?
	• Is it more effective to target the employee, team, leader or organization level?
Organizational culture	• How can EGBs be imbedded into an organization's culture?
	• Are different types of organizations more effective than others at imbedding EGBs into the organizational culture?
	• Do employees internalize organizational attitudes towards the environment, or simply follow instructions?
	• Do group attitudes and values towards environmental sustainability have implications for individuals' identification with the group?
	• How do institutional pressures trickle down to drive EGB?
Between-person variability	• What personality factors (e.g., conscientiousness) are relevant for EGB?
	• What is the relationship between EGB and job satisfaction?
	• How do job factors (e.g., task control, constraints) influence EGB?
Within-person variability	• To what extent does EGB vary within-person from day-to-day?
	• What are the personal, contextual, and motivational factors that drive within-person variability?
	• Does the factor structures for between- and within-person EGB performance differ?
Motivational states	• Do different motivation states determine what type of EGB an employee is likely to engage in?
	• What are the factors that might contribute to different motivational states?
	• Are certain leadership styles better or worse for engendering autonomous or controlled motivation for EGB?

Factors at the Institutional level. At the institutional level, we know that organizations are under pressure from several sources to engage with environmental sustainability (e.g., Masurel, 2007). The effects of such pressures are manifest at the organizational level in the form of attitudes towards business and the environment. These attitudes are realized in the form of formal environmental policies and activities such as providing resources, incentives for EGB, and organizational-level behavior. However, there has been little work to describe the processes through which factors at this level trickle down to influence EGB. The fact that this level receives scant research attention is perhaps attributable to the conceptual distance between it and employee behavior. As a result, our review features a very broad conceptualization of factors at this level. At the same time, however, since regulatory, normative, and cognitive-cultural pressures promote the issue of environmental sustainability to senior executives (Accenture, 2013), it would seem to be an imperative to understand how decisions and activities at higher organizational levels translate to employee behavior, potentially through the behavior of senior leaders.

A practical avenue for future research at this level might be to investigate how organizations differ in their interpretations of environmental sustainability (e.g., as something to comply with, as a source of innovation, etc.; Norton, et al., 2015) and how these interpretations influence the types of EGB that emerge, as well as the subsequent impact on key business metrics. More generally, while we propose a conceptual explanation for how institutional level factors influence behavior, exactly how this process occurs has not been empirically tested. Answering questions regarding trickle down effects requires that researchers adopt a multilevel perspective and study cross-level relationships.

Factors at the Organizational level. The organizational level represents an interesting paradox. Our review seems to lead us to the apparently tautological conclusion that green organizations have green employees. As expected, research demonstrates an effect of EGB on organizational environmental performance. Although there is evidence of a considerable research effort to identify key factors and establish the efficacy of interventions at this level, our understanding of the mechanisms through which organizational-level factors influence employee behaviors is still developing. For example, positive organizational values towards the environment, and the realization of these values into cultural artifacts such as policies and practices, are consistently shown to be important antecedents for EGB. It is unclear, however, whether employees internalize organizational values, which would lead to a more autonomous motivation, or simply follow company expectations, which would lead to more controlled motivation. This leads to further questions. For example, how can organizations imbed EGBs into their culture? Similarly, are certain types of organizations, such as hybrid organizations (Haigh & Hoffman, 2014), more effective than others at imbedding EGBs? Answering these questions will have implications for the

design and implementation of EGB interventions.

Factors at the Leader level. Factors at this level are important for creating a connection between the organization and employees. Specifically, leaders can provide support to employees so that they work towards achieving their own goals, as well as the environmental goals of the organization (Ramus & Steger, 2000). Leaders' behavior also appears to set an example for employees to follow (Robertson & Barling, 2013), although this might be mediated by factors at other levels (Kim et al., 2014).

One area that seems *not* to be well understood is the effect of different leadership styles on required and voluntary EGB. Among the studies in our review, only environmental transformational leadership is measured. It is feasible that different styles of leadership might vary in their effect on different types of EGB, as is shown in other areas (Kuenzi & Schminke, 2009). According to Bass (1985, 1999), transactional leaders motivate employees to fulfill expectations regarding job performance (i.e., required behaviors), while transformational leaders motivate followers to exceed expectations (e.g., citizenship behavior). Thus, transactional leaders may be effective for motivating employees to perform required EGB, while transformational leaders might be more effective at motivating employees to engage in voluntary EGB. Similarly, another practical avenue of research might be to investigate the influence of different leadership attributes, such as charisma (Shamir, House, & Arthur, 1993), on organizational change surrounding environmental sustainability. We also note that there appears to be a lack of attention towards processes in the leadership literature; specifically how dynamic multilevel relationships might contribute to outcomes by facilitating or inhibiting leadership (Dinh, Lord, Gardner, Meuser, Liden, & Hu, 2014). Clearly, greater understanding of green leadership will have implications for the successful implementation of interventions.

Factors at the Team level. Team-level factors such as activities, behavioral beliefs, and norms are also effective for encouraging EGB. In particular, Carrico and Riemer (2011) demonstrated that belief in the team's ability to achieve goals is important for EGB, while Norton et al. (2014) showed that positive environmental norms play a role. What is yet to be determined, however, is the interdependence between individual members and the group as a whole, particularly with reference to environmental attitudes and values. For example, researchers could investigate how environmental values become shared throughout a group, and the implications of environmental group norms on individual members' identification with the group.

In this regard, Kim et al. (2014) describe a social process whereby the shared values of the group influence individual EGB. Specifically, these researchers found that the extent to which environmental issues are discussed, knowledge is shared, and behavior is encouraged within the group has a subsequent effect on member EGB. Further to this point, the question arises as to

whether enacting a green group identity by participating in EGB and achieving green goals will have consequences for employee satisfaction. These current limitations in our understanding of EGB identify areas where researchers can make valuable contributions.

Factors at the Employee level. Our review reveals that most of what we know about EGB comes from research at the employee level. Largely because of a predominance of studies using the theory of planned behavior (Ajzen, 1991), it seems to be taken for granted that participation in EGB is at least in part attitude-driven. As such, employee attitudes towards the environment, other behavior and behavioral beliefs, intrinsic motivation, and norms are important influences on behavior. Within-person factors such as positive affect may also be important (Bissing-Olson, et al., 2013). Interestingly, we were only able to find evidence for personality factors and behavioral intentions effects towards voluntary EGB in the current literature. This may suggest that the extents to which employees engage in required EGB is more dependent on perceptions of the organization and activity within it, or it may reflect an assumption that employees comply strictly with organizational requirements.

What is perhaps lacking here is a detailed understanding of how employees might come to adopt positive environmental attitudes at work if they do not already possess them. For example, by incorporating the findings on positive affect and EGB from Bissing-Olson and colleagues (2013) with affective events theory (Weiss & Cropanzano, 1996), we conclude that EGBs actually represent positive behavioral responses to affective events, such as the actions of managers. Such responses can over time influence workplace attitudes (Weiss & Beal, 2005) and perhaps, especially in the case of EGBs, environmental attitudes. As we have alluded to in earlier paragraphs, the mechanisms through with organizational, leader, and group norms influence individual employees are yet to be empirically tested. Understanding how to encourage EGB among non-green employees (i.e., those who do not possess strong proenvironmental beliefs and attitudes) represents a key challenge for practitioners.

We also note however that the evidence regarding behavioral beliefs is far from conclusive – which is surprising, especially considering the considerable amount of research that has investigated it. Other factors that are yet to receive significant research attention to warrant conclusive statements include job factors, internal motivations, knowledge of environmental issues and behaviors, and awareness of environmental impacts. Understanding how and why these factors are or are not instrumental in influencing EGB is clearly important, since they are precisely the factors that might be susceptible to interventions. Alternatively, It may be the case that interventions that address the context, and how employees perceive that context, are more effective than interventions that target the person.

One area with potential to highlight the scope for organizational research to provide value to

this literature might be personality. We were surprised to find that only one study included in this review measured aspects of employees' personality (Kim et al., 2014). This is in contrast to other aspects of job performance, where personality traits have been extensively studied both for task (Judge & Ilies, 2002) and citizenship performance (Chiaburu, Oh, Berry, Li, & Gardener, 2011). It may be particularly important to determine the boundary conditions of personality traits, however. This is because research suggests a curvilinear relationship between traits such as conscientiousness and task and citizenship performance (Le et al., 2011). Thus, there may well be additional factors, such as job complexity (Le et al., 2011), that interact with personality traits to influence performance of EGBs.

Outcomes of EGB. A clear finding of our review is that there is a lack of empirical evidence to date regarding the outcomes of EGB. Such evidence is critical for practitioners and those working within organizations to facilitate EGB in the workplace. The ability to demonstrate a range of positive outcomes from EGB at the institutional (e.g., competitive advantage), organizational (e.g., cost savings), leader (e.g., leader effectiveness), team (e.g., positive social norms), and employee (e.g., intrinsic satisfaction) levels is imperative for establishing a business case to develop required EGBs and support voluntary EGBs (Ones & Dilchert, 2012b). Meta-analytic data demonstrates that environmental management practices have a positive effect on firm financial performance (Albertini, 2013). However, the extent to which EGBs contribute is unknown. To this end, it is clearly important that researchers include financial (e.g., cost saving) and non-financial (e.g., employee motivation) outcomes for the organization in particular. As demonstrated by Michael et al. (2010), anticipated financial benefits may not be sufficient to motivate senior leaders to introduce environmentally friendly practices. Similarly, it is important to identify meaningful outcomes at the employee level (e.g., employee satisfaction) to encourage actors to engage with EGBs.

The Missing Level. In the process of conducting this review, we found a surprising lack of research at the within-person level. Ashkanasy (2003) and Fisher (2008) argue in this respect that modeling temporal or within-person variation is important to understand the dynamic nature of phenomena associated with real-time behavior. Similarly, the studies included in this review demonstrate that the effect of higher-order factors, such as policies, on EGB are often moderated and/or mediated by variability in employee level variables (e.g., Norton et al., 2014). Since individual behavior operates at the within-person level (Beal, Weiss, Barros, & MacDermid, 2005), it seem reasonable to propose therefore that the effect of between-person factors, such as attitudes, may also interact with within-person factors. Bissing-Olson and colleagues (2013) demonstrated such an effect by showing an interaction between environmental attitudes (between-person variability) and high-arousal positive affect (within-person variability). These findings suggest that

EGBs might be more complex than we currently believe we understand, and developing a more detailed perspective at the within-person level may lead to a clearer comprehension of the effect of institutional, organizational, leader, and team factors. To progress the field, researchers clearly need to develop models that include this level of analysis and account for dynamic fluctuations in EGB. From a methodological perspective, answering this weakness requires different approaches than those predominating in the literature (i.e., replacing cross-sectional designs with experience-sampling or diary designs). Table 2.2 presents several research questions targeting EGB at the within-person level. In the next section we highlight some methodological observations and suggestions to progress the literature, in particular disentangling the within- and between- person effects associated with EGB.

Methodological Observations. In reviewing this literature we noticed three methodological deficiencies. First, cross-sectional studies using self-report data make up the bulk of the research in this review. The limitations of this methodology are well documented (Podsakoff, McKenzie, & Podsakoff, 2012). Moreover, recent research suggests that the correlation between self-report and objective measures of environmental behavior is functionally small (Kormos & Gifford, 2014).

Second, while there is an encouraging trend towards longitudinal studies, which examine the impact of factors such as those nominated in this review over time, there is a clear need for more of this kind of research. Longitudinal methods also provide practitioners with a greater insight into the potential efficacy of interventions, with specific regard to the longevity of effects (Unsworth et al., 2013). Finally, longitudinal research can assist with causal interpretation by investigating how behavioral processes develop over time. Moreover, identifying the reciprocal effects of outcomes, specifically how outcomes feed back into the factors and processes that antecede EGB is vital.

Third, there is a need for more experimental intervention studies. The key advantage to this methodology is that it allows the strongest inferences regarding causality. While we did find some studies employing this method (e.g., Holland et al., 2006), they are certainly in the minority. Alternatively, quasi-experimental field studies also allow for causal inferences when methodological controls such as random assignment and manipulations are not possible (Grant & Wall, 2009). In addition, the experimental vignette methodology allows researchers to control and manipulate independent variables while presenting realistic scenarios (Aguinis & Bradley, 2014). Importantly, these designs allow for context to be operationalized and controlled, which is important when considering the context-specific nature of EGBs (Ones & Dilchert, 2012a).

To supplement these methods, and as we noted earlier, we especially call for researchers to place more emphasis in future on within-person variations in behavior, which can shed light on the factors associated with the emergence of EGB as it happens. For example, the daily diary method is an intensive longitudinal methodology, and is particularly apt for researching within-person, day-to-

day variations (Ohly, Sonnentag, Niessen & Zapf, 2010). One worthwhile area to study would be the workplace factors that facilitate or inhibit an employee's performance of EGB, whilst accounting for the impact of more stable factors such as organizational climate and personal environmental attitudes.

Researchers might also do well to investigate the experience of emotions as a result of engaging in EGBs using experience sampling (Larson & Csikszentmihalyi, 1983). Based on our findings, we encourage researchers to conduct multilevel research (and especially studies that look at within-person variability), and to look at a suite of factors (i.e. antecedents, moderators, mediators, outcomes) and types of EGB (i.e., investigating differences between required and voluntary EGB) using objective data to complement self-report data.

An Integrated Multilevel Perspective

In addition to the conceptual model in Figure 2.1, we propose that a multilevel model of organizational culture and climate is an especially useful way for researchers and practitioners to integrate the findings of this review. Such a model emphasizes factors on different levels as well as the processes that link them (Hatch, 2011). External pressures, such as regulatory, normative, and cognitive-cultural pressures, shape the assumptions that lie at the heart of an organization's culture. These assumptions guide the decisions and activities of senior organizational figures, and manifest in the company's beliefs and values. In turn, beliefs and values go through a process of realization, wherein they are expressed through tangible artifacts. Artifacts include policies, practices, and language, which also form the basis for organizational climate (Schneider, Ehrhart, & Macey, 2013). In some cases, certain artifacts will take on additional meaning, wherein they become symbols of the culture, which can reinforce assumptions through their interpretation. Norton and colleagues (2015) propose that the perception of artifacts, and the beliefs and values they are laden with, guides EGB. Specifically, the perception of policies, procedures and practices reflect social norms of what the organizational approves of and what is typically done within the company. It is at this point where contextual and personal factors interact.

An integrated multilevel framework should be of benefit for practitioners in the design and implementation of EGB interventions. Aligning environmental sustainability initiatives with existing organizational values, and understanding the interconnectedness of each level will most likely be required in order to maximize the likelihood of success (Norton et al., 2015). Last but not least, practitioners should clearly define how the success of interventions should be measured with a multilevel approach. That is, to observe the outcomes of EGB at each level. This last point is critical to developing an understanding of the implications of employee behavior for an organization's pursuit of environmental sustainability.

Within this framework, it is also important to identify how normative, exchange, and motivational theories apply. The literature we reviewed here demonstrates the strong influence of social norms on EGB. A normative perspective on EGB is particularly useful as it can accommodate cross-level effects (e.g., the effect of teams on employee behavior), which, as highlighted earlier, is presently lacking within the literature. Social norms reflect what is accepted and done in a particular context (Cialdini et al., 1990). As such, they serve as reference points for acceptable conduct. Societal norms are present in the cognitive-cultural pressure at the institutional level. Furthermore, norms within organizations shape the activities of leaders, teams, and employees. Finally, employees also have their own personal norms. Thus, norms can constitute contextual (i.e., societal, organizational, group) and personal factors that lead to motivational states required to perform EGB (Figure 2.1).

Similarly, exchange theories are also well suited to a multilevel framework as they explore the relationships between hierarchically distinct entities (e.g., between the organization and employees, between leaders and employees). Central to exchange processes is an assumption of reciprocity, whereby one party responds to a strong and positive exchange relationship with behavior that aligns with the values of the other party and is thus meaningful (Dienesch & Liden, 1986). Exchange relationships therefore represent processes through which organization, leader, and perhaps also team level factors direct employee behavior. This is particularly relevant for the proposed conceptual model in Figure 2.1, which conceptualizes EGB as a product of the interaction between an employee and contextual factors at different hierarchical levels. Song, Tsui and Law (2009) make a distinction between social and economic exchange processes. On the one hand, social exchange relationships are characterized by high levels of trust, extensive investment in the employee, long-term focus, and an emphasis on socio-emotional connections (Shore, Tetrick, Lynch, & Barksdale, 2006). One the other hand, economic exchange relationships feature low levels of trust, short-term focus, and an emphasis on economic exchanges between the employee and the organization, for example (Blau, 1964). This distinction is analogous to the differentiation of transactional and transformational leadership, which have been shown to have different relationships with meeting requirements and going above and beyond what is expected (e.g., required and voluntary behavior; Bass, 1999). We posit that types of exchange processes may lead to different motivational states and, subsequently, different types of EGB.

Despite their utility, normative and exchange theories lack the ability to account for variation at the within-person level. Here, motivational theories such as self-determination theory (Deci & Ryan, 1985; Deci & Ryan, 2000) may be appropriate, as motivation is regarded as an important within-person predictor of job performance (Dalal, Bhave, & Fiset, 2014). Considering the distinction between required and voluntary EGB, it might be particularly appropriate to investigate

whether different types of motivation can explain why employees might vary in their engagement in these two types of EGB from one day to the next, as we propose in Figure 2.1.

Conclusion

In this review, we proposed a theory-based conceptual model based on person-environment interaction, job performance taxonomies, and self-determination theory to structure our review of the EGB literature and subsequent research agenda. Our findings suggest that there appear to be disparities between required and voluntary EGBs with regard to the contextual and personal factors they are associated with that warrant a conceptual distinction between the two. In effect, we add to a growing literature that demonstrates that EGBs can, in fact, come in different shades of green. The results of our review points to a bias towards studying the antecedents of EGB and, with the notable exception of behavioral intention, there is little research that explains the mechanisms driving EGBs.

Furthermore, while research on EGBs is conducted across all organizational levels, there has been little work to describe the processes through which, for example, factors at the institutional level trickle down to influence an employee's participation in various types of EGB via organizational policies and activities. Overall, we believe EGB – and environmental sustainability in general – represents an important area for organizational research and practice into the 21st Century. We encourage researchers and practitioners to make multilevel contributions grounded in organizational theories, using a detailed behavioral perspective, and investigating context and person factors.

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Chapter 3: Study 1

Organisational sustainability policies and employee green behaviour: The mediating role of work climate perceptions

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Extension – This study was conducted prior to, and included as part of, the review in Chapter 2. It relates to two key findings of that review in that it investigates the psychological process through which the presence of an organisational policy towards environmental sustainability contributes employee green behaviour. Furthermore, this study tests distinct paths for task-related and proactive behaviour.

Purpose – Thus, the purpose of this study is to investigate if work climate perceptions mediate the relationship between the perceived existence of an organisational policy for environmental sustainability and employee green behaviour. Furthermore, this study argues that work climate for environmental sustainability comprises perceptions of injunctive norms regarding what the organisation espouses, and descriptive norms of what other employees do, and tests whether these perceptions have different effects for task-related and proactive behaviour.

Design – A cross-sectional questionnaire study with office workers (n = 168).

Main Findings – Results revealed that the direct effects of perceived organisational policy for environmental sustainability on self-report task-related and proactive EGB were fully mediated by perceptions of injunctive and descriptive workplace norms, respectively. The effect of perceived policy on task-related EGB was contingent upon the perception that the organisation valued the environment. Perceptions of whether other employees were being environmentally friendly at work had no effect on this relationship. The effect of perceived policy on proactive EGB was explained by the perception that other employees were being environmentally friendly at work. Perceptions of whether the organisation valued the natural environment had no effect on this relationship.

Abstract

Organisations are increasingly introducing sustainability policies to encourage environmentally friendly behaviours. Employees' green work climate perceptions (i.e., how they perceive their organisations' and co-workers' orientations towards environmental sustainability) may constitute psychological mechanisms that link such policies with behaviour. We present findings of a study on relationships among the perceived presence of organisational sustainability policies, green work climate perceptions and employee reports of their green behaviour (EGB). We hypothesised that green work climate perceptions mediate the positive relationship between employees' perceptions of the presence of a sustainability policy and EGB. Results based on data from 168 employees supported our hypotheses. Green work climate perceptions of the organisation and of co-workers differentially mediated the effects of the perceived presence of a sustainability policy on task-related and proactive EGB. These findings extend research on the efficacy of sustainability policies by shedding new light on the psychological mechanisms that link them with EGB.

Organisational sustainability policies and employee green behaviour: The mediating role of work climate perceptions

Researchers interested in the topic of corporate environmental sustainability have recently highlighted the need to encourage proenvironmental behaviour in the workplace (Ones & Dilchert, 2012; Paillé & Boiral, 2013). The aim of the present study was to investigate whether employees' green work climate perceptions can explain the relationship between the perceived presence of an organisational sustainability policy and employee green behaviour (EGB). Previous research has shown that there is not necessarily a positive relationship between organisational policies and employee behaviour (Ramus & Steger, 2000; Whitmarsh, 2009). We argue that these inconsistent findings may be due to a neglect of the psychological mechanisms that underlie the link between policies and behaviour. To this end, we develop and test a conceptual model that explains how two types of employee green work climate perceptions differentially mediate the relationship between employees' perceptions of the presence of an organisational sustainability policy and their task-related and proactive environmental behaviours (Figure 3.1).

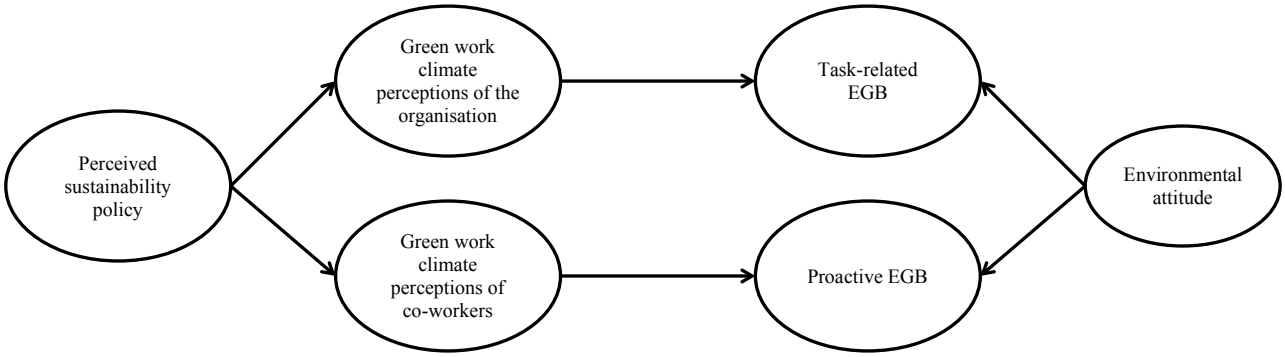

Figure 3.1. Conceptual model.

We base our model on the theory of normative conduct (TNC), which attributes behaviour to social norms (Cialdini, Reno & Kallgren, 1990). For example, social norms indicating that most people do not litter can influence behaviour by suggesting that littering has negative social consequences (Cialdini et al., 1990; Keizer, Lindenberg, & Steg, 2008; Smith et al., 2012). Specifically, TNC differentiates injunctive norms representing that which is *approved of* from descriptive norms representing that which is *typically observed*. We argue that social norms within organisations are created via employees' perceptions of work climate, which is defined as the perceptions of formal organisational policies, the procedures that translate these policies into tacit guidelines, the practices that are rewarded and supported, as well as what is typically observed among co-workers (Schneider, Ehrhart & Macey, 2013). Employees' perceptions of work climate reflect individual value-based schemas used to interpret workplace information (James et al., 2008), as well as espoused values and behavioural norms (Ashkanasy, 2007; Schneider & Reichers, 1983).

Research has shown that work climate is reliably associated with employee attitude and behaviour (Kuenzi & Schminke, 2009). In this regard, Norton, Zacher and Ashkanasy (2012) suggested that work climate is important to investigate in order to understand and facilitate EGB. These authors proposed that green work climate captures employee perceptions regarding the organisational attributes and behavioural norms within a company that pertain to environmental sustainability. Based on TNC, we distinguish between climate perceptions of the organisation, which are similar to injunctive norms, and climate perceptions of co-workers, which are related to descriptive norms. Specifically, if an employee perceives her organisation to have a positive orientation towards environmental sustainability, then the injunctive norm would be that the company approves of behaviour that benefits the environment. This is in line with research that operationalised injunctive norms as an official statement regarding the environment (Cialdini et al., 1990) and an organisation's involvement in environmental policies or action (Lo, Peters, & Kok, 2012). If an employee perceives her co-workers to be environmentally friendly at work, then the descriptive norm would be that employees of that organisation typically behave positively towards the environment. This is in line with research that operationalised descriptive norms as observations of others' proenvironmental behaviour (Cialdini et al., 1990; Goldstein, Cialdini & Griskevicius, 2008).

We first propose that employees' perceptions of the presence of an organisational sustainability policy are positively related to their EGB (Figure 3.1). Consistent with Bissing-Olson, Iyer, Fielding and Zacher (2013), we distinguish between task-related and proactive EGB. *Task-related EGB* is proenvironmental behaviour performed within the context of assigned work tasks, including behaviours such as conserving water, energy, and other resources (e.g., printing double-sided). *Proactive EGB* is behaviour that involves personal initiative and exceeds expectations with regard to environmental sustainability. Research has shown that policies are precursors to behaviour by communicating accepted standards of conduct (Ramus & Steger, 2000). We argue that the perceived presence of sustainability policies facilitates both types of EGB by emphasising what the organisation and its members value and expect from employees.

Hypothesis 1: Positive relationships exist between the perceived presence of an organisational sustainability policy and (a) task-related EGB and (b) proactive EGB.

We further argue that, consistent with TNC (Cialdini et al., 1990) and related findings regarding the distinct behavioural outcomes of injunctive and descriptive norms (Smith et al., 2012), green work climate perceptions differentially mediate the relationship between the perceived presence of an organisational sustainability policy and EGB (Figure 3.1). Specifically, we propose that green work climate perceptions of the organisation reflect the organisation's injunctive norms and that these perceptions mediate the relationship between the perceived presence of an

organisational sustainability policy and task-related EGB, because injunctive norms should be most salient when employees are engaged in tasks set by the organisation. In contrast, we expect that green work climate perceptions of co-workers, which reflect the descriptive norms of the workplace, will mediate the relationship between the perceived presence of an organisational sustainability policy and proactive EGB. Injunctive norms should have less salience when employees are not engaged in tasks set by the organisation. In these situations, the descriptive norms of what is typically observed of co-workers should be dominant and influence more discretionary types of EGB.

Hypothesis 2: The relationship between the perceived presence of an organisational sustainability policy and (a) task-related EGB and (b) proactive EGB will be mediated by climate perceptions of the organisation and of co-workers, respectively.

Method

Participants and Procedure

Participants comprised 168 full-time employees. For the purposes of this study, we were interested only in collecting data from full-time employees. Thus, we screened initial respondents (N = 436) based on their employment status. This screening process identified 187 participants who did not identify as full-time workers. Of the remaining 249 participants, we excluded participants who responded with "unsure" as to the perceived presence of a sustainability policy in their company. This screening excluded a further 81 participants, resulting in the final sample of 168 employees. Of the final sample, the majority (61.9%) were male. Participants' ages ranged from 18 to 59 years (M = 29.50, SD = 9.62). Participants were employed in a wide range of industries and the majority had worked in their current organisation for between one and six years.

We employed a survey methodology using members of an online survey panel (Amazon's Mechanical Turk). Participants were offered financial compensation of $0.25 or $0.50 in return for completing the short survey. Buhrmester, Kwang and Gosling (2011) noted that Mechanical Turk offers researchers access to a large and diverse population that is more representative than undergraduate students and provides high quality data unaffected by compensation rates.

Measures

Employee perceptions of the presence of an organisational sustainability policy. We utilised a single item to determine whether employees perceived the presence of an organisational sustainability policy, with participants asked to respond using 'Yes' (n = 100), 'No' (n = 68), or 'Unsure' (n = 81). The inclusion of an 'unsure' response option has been previously employed by Ramus and Steger (2000), and prevents participants from having to make a forced-choice response. Only participants who provided a conclusive answer were retained (however, see Footnote 1 for additional analyses with 'unsure' respondents). Table 3.1 shows results of a series of independent

sample t-tests conducted to examine differences between participants who responded differently to the policy item. For parsimony, this variable is labelled "perceived sustainability policy" in tables and figures.

Table 3.1

Mean Scores and Differences for all Perceived Sustainability Policy Response Groups

	Mean scores			Difference		
	Yes (n = 100)	No (n = 68)	Unsure (n = 81)	Yes - No	Yes - Unsure	No - Unsure
Perceptions of the organisation	3.75	2.61	3.15	1.14***	0.60***	-0.54***
Perceptions of co-workers	3.47	2.79	3.06	0.68***	0.41***	-0.27
Task-related EGB	4.06	3.49	3.66	0.57***	0.40***	-0.17
Proactive EGB	3.52	3.24	3.08	0.28	0.44***	0.16
Environmental attitude	3.82	3.75	3.78	0.07	0.04	-0.03

Note. EGB = employee green behaviour.

*** $p < .001$.

Green work climate perceptions. We developed an 8-item scale based on suggestions by Norton et al. (2012) to measure green work climate perceptions. Participants reported their perceptions of policies, procedures and practices (i.e., work climate) relating to environmental sustainability and demonstrated by their employing organisation and co-workers. Items for perceptions of the organisation were "Our company is worried about its environmental impact", "Our company is interested in supporting environmental causes", "Our company believes it is important to protect the environment" and "Our company is concerned with becoming more environmentally friendly". Items for perceptions of co-workers were "In our company, employees pay attention to environmental issues", "In our company, employees are concerned about acting in environmentally friendly ways", "In our company, employees try to minimise harm to the environment" and "In our company, employees care about the environment". Responses were made using a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Cronbach's alphas for the organisation and co-worker subscales were .93 and .92, respectively.

Employee green behaviour. We used two 3-item scales adapted from Bissing-Olson et al. (2013) to measure self-report task-related and proactive employee green behaviour. Example items include: "I fulfil responsibilities specified in my job description in environmentally friendly ways" for task-related behaviour and "I take initiative to act in environmentally friendly ways at work" for proactive behaviour. Responses were made using a 5-point scale ranging from 1 (*never*) to 5 (*always*). Cronbach's alphas for the task-related and proactive subscales were .92 and .84 respectively. In support of their validity, both subscales have previously been demonstrated to correlate positively with environmental attitude (Bissing-Olson et al.).

Environmental attitude. We controlled for participants' general environmental attitude in this study, as it has been shown to positively predict proenvironmental intentions and behaviour (Bamberg & Möser, 2007). We measured environmental attitude using Bamberg's (2003) 8-item scale. Example items include "Limits to economic growth have been crossed or will be reached very soon," "Newspaper articles or TV-reports concerning environmental problems make me angry," and "For the benefit of the environment we should be ready to restrict our momentary style of living". Responses were recorded on a 5-point scale ranging from 1 *(strongly disagree)* to 5 *(strongly agree)*. Cronbach's alpha was .84.

Statistical Analyses

We tested our hypotheses using structural equation modelling (SEM) procedures in AMOS (Version 20.0; Arbuckle, 2011). SEM was chosen on the basis of its ability to provide unbiased estimates of mediation effects (Cheung & Lau, 2008) and the presence of latent constructs in the model (green work climate perceptions, EGB). We employed maximum likelihood estimation to test our hypotheses and included environmental attitude as a covariate. Following Anderson and Gerbing's (1988) recommendation, we validated the measurement model before testing the structural model. We tested mediation (i.e. indirect) effects using bootstrapping (Hayes, 2009; Preacher & Hayes, 2004). Advantages of this approach include high statistical power, no assumption of normality and no requirement to estimate the error of the indirect effect. Additionally, by using the bootstrapping technique, we were able to test the influence of all mediators individually, control for collinearity and apply a method that is less vulnerable to Type I error (Preacher & Hayes, 2008).

We evaluated the goodness of fit for all models based on results of a chi-square test; comparative fit index (CFI) and Tucker-Lewis index (TLI) equal or greater than .95; and standard root mean residual (SRMR) and root mean square error of approximation (RMSEA) lower than .06 (Hu & Bentler, 1999). We performed confirmatory factor analyses including all five scales as well as with each scale separately to test the measurement model. Table 3.2 provides a summary of the factor structures of the latent constructs in the conceptual model. As can be seen in Table 3.2, our results supported a unidimensional conceptualisation of environmental attitude, a two-factor structure of task-related and proactive EGB, and a two-factor structure for the green work climate scales (i.e., perceptions of the organisation and perceptions of co-workers). A 5-factor model fit the data significantly better than a single factor model in which all items loaded on one latent factor ($\Delta\chi^2 = 1137.43$, $df = 10$, $p < .001$).

Table 3.2

Results of Confirmatory Factor Analyses

Model / Measure	*n* factors	χ^2	*df*	CFI	TLI	RMSEA	SRMR	$\Delta\chi^2$
Five-factor measurement model	5	242.69	199	0.98	0.98	0.04	0.05	
Single-factor measurement model	1	1380.12	209	0.49	0.43	0.18	0.17	1137.43***
Method effects measurement model	6	242.69	198	0.98	0.98	0.04	0.05	< 0.001
Environmental attitude	1	26.58	20	0.98	0.98	0.04	0.04	
Employee green behaviours (EGB)	2	5.58	8	1.00	1.07	0.00	0.02	
Task-related EGB	1	0.26	1	1.00	1.00	0.00	0.00	
Proactive EGB	1	1.42	1	1.00	0.99	0.05	0.01	
Green work climate	2	31.54	19	0.99	0.98	0.06	0.03	
Perceptions of the organisation	1	5.68	2	0.99	0.98	0.11	0.02	
Perceptions of co-workers	1	0.39	2	1.00	1.01	0.00	0.00	

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; SRMR = square root mean residual. $\Delta\chi^2$ = difference in chi-square compared to the five-factor model.

*** $p < .001$.

To control for the potential impact of common method variance, we examined a method effects model, in which all items loaded equally on an additional sixth factor (Podsakoff, Mackenzie, & Podsakoff, 2012). The method effects model did not fit the data better than the 5-factor model ($\Delta\chi^2 < 0.001$, $df = 1$, $p = 1.00$), which suggests that common method bias did not constitute a significant problem in our study.

Results

Descriptive statistics and correlations of variables are provided in Table 3.3. Fit indices and chi-square change for the models estimated can be found in Table 3.4. After confirming the measurement model, we estimated the hypothesised structural model depicted in Figure 3.2. As can be seen in Table 3.4, fit indices based on variance-covariance matrices and residuals indicated that the model provided a good account of the actual relationships in the data. We next estimated a nested model, with additional paths from green climate perceptions of the organisation to proactive EGB and from green climate perceptions of co-workers to task-related EGB. A non-significant change in chi-square (Table 3.4) demonstrated that this model (Model 2) did not provide a significantly better fit than the hypothesised model. Moreover, both additional paths were non-significant. Model 1 was therefore retained because it was more parsimonious. Figure 3.3 reports the standardised path coefficients from this model.

Table 3.3

Means (M), Standard Deviations (SD), and Correlations of Study Variables

Scale	*M*	*SD*	1	2	3	4	5	6
1. Perceived sustainability policy	0.60	0.49	--					
2. Environmental attitude	3.79	0.66	.05	(.84)				
3. Task-related EGB	3.76	0.80	.32***	.31***	(.92)			
4. Proactive EGB	3.41	0.98	.14	.43***	.53***	(.84)		
5. Perceptions of the organisation	3.35	0.94	.59***	.13	.47***	.22**	(.93)	
6. Perceptions of co-workers	3.20	0.83	.40***	.18*	.41***	.29***	.67***	(.92)

Note. Internal reliability estimates (Cronbach's alphas), where available, appear in parentheses along the diagonal.

EGB = employee green behaviour.

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

Table 3.4

Fit Indices for Structural Models

	Model 1 Structural Model	Model 2 Nested Model	Comparison of Models 1 and 2 $\Delta \chi^2$
χ^2	271.53, $df = 221$; $p < .05$	270.28, $df = 219$; $p < .05$	1.25, $df = 2$; $p = .535$
CFI	.98	.98	
TLI	.98	.97	
RMSEA	.04	.04	
SRMR	.05	.05	

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; SRMR = square root mean residual.

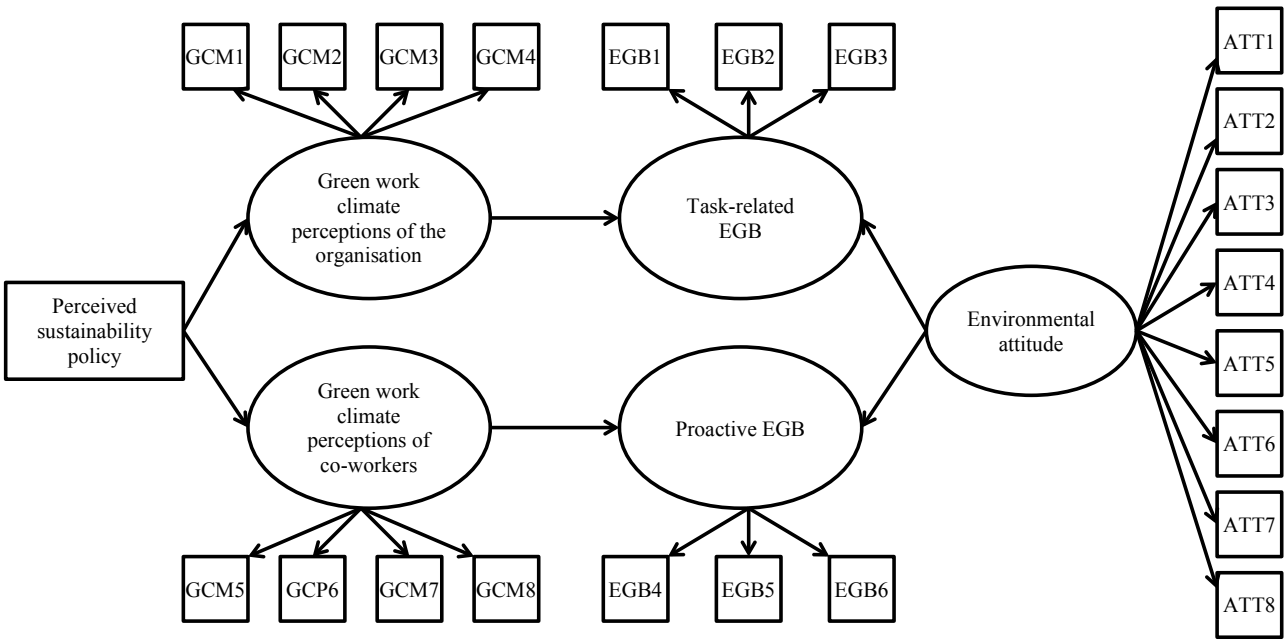

Figure 3.2. Measurement model.

GCM = green climate measure item; EGB = employee green behaviour item; ATT = environmental attitude item.

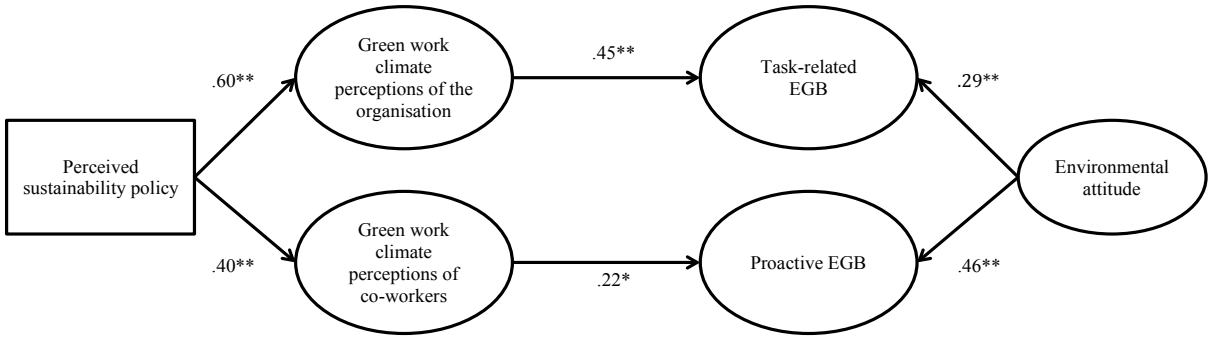

Figure 3.3. Structural model with standardised regression weights.

EGB = employee green behaviour

* p < .05, ** p < .01

Test of Direct and Indirect Effects

We hypothesised a positive direct effect of employees' perceptions of the presence of an organisational sustainability policy on EGB. Consistent with Hypothesis 1a, employees' perceptions of the presence of an organisational sustainability policy positively predicted task-related EGB (standardised direct effect = .31, $p < .001$). In support of Hypothesis 1b, employees' perceptions of the presence of an organisational sustainability policy also positively predicted proactive EGB (standardised direct effect = .17, $p < .05$).

We further hypothesised that employees' perceptions of the presence of an organisational sustainability policy would have a significant indirect effect on task-related EGB via green work climate perceptions of the organisation (Hypothesis 2a) and on proactive EGB via green work climate perceptions of co-workers (Hypothesis 2b). Five thousand bootstrap samples were

generated to estimate bias-corrected 95% confidence intervals for the indirect effects. Indirect effects are considered significant at $p < .05$ if zero is not included in the 95% confidence interval (CI; Cheung & Lau, 2008). The results of the bootstrap procedure supported our hypotheses.

Specifically, in support of Hypothesis 2a, the relationship between employees' perceptions of the presence of an organisational sustainability policy and task-related EGB was mediated by green work climate perceptions of the organisation (standardised indirect effect = .27, $p < .001$, 95% CI = .17; .38). Consistent with Hypothesis 2b, the relationship between employees' perceptions of the presence of an organisational sustainability policy and proactive EGB was mediated by green work perceptions of co-workers (standardised indirect effect = .09, $p < .01$, 95% CI = .03; .17).

Discussion

Our goal in this research was to investigate green work climate perceptions as mediators of the relationships between the perceived presence of an organisational sustainability policy and two forms of EGB. Consistent with expectations, we found positive relationships between the perceived presence of an organisational sustainability policy and self-report task-related and proactive EGB (Hypotheses 1a and 1b), and confirmed that these relationships were fully mediated by green work climate perceptions of the organisation and of co-workers, respectively (Hypotheses 2a and 2b). Specifically, we found green work climate perceptions of the organisation to be positively associated with task-related EGB only, and green work climate perceptions of co-workers to be positively related to proactive EGB only. Our results are consistent with research showing that these two types of EGB are conceptually distinct and have unique antecedents (Bissing-Olson et al., 2013).

Theoretical Contribution

The work climate literature proposes that employee perceptions of organisational attributes influence behaviour by establishing behavioural norms (e.g. see Zohar & Luria, 2005). Using the TNC (Cialdini et al., 1990) as our guiding theoretical framework, we proposed differential effects of green work climate perceptions on EGB; that employees' injunctive norms (i.e., what the organisation approves of) are positively related to task-related EGB and that descriptive norms (i.e., what is typical among co-workers) are associated with proactive EGB. Our findings thus support and extend earlier research (e.g., Cialdini et al., 1990; Robertson & Barling, 2012) that has evinced that injunctive and descriptive norms operate, at least to some extent, independently to inform EGB.

In particular, we extend earlier findings by showing that different green work climate perceptions are associated with different types of EGB depending on the specific content of both constructs. That is, green work climate perceptions of the organisation were only associated with EGB when employees engage in tasks assigned by the organisation, whereas green work climate

perceptions of co-workers were only associated with a more discretionary type of EGB that is not prescribed by the organisation.

Overall, our findings contribute to the literature by highlighting the contribution of previously neglected psychological mechanisms underlying the association between organisational policies and behaviour (Ramus & Steger, 2000; Whitmarsh, 2009). While extant research has yielded inconsistent results, the test of our conceptual model suggests that the pathways between employee perceptions of the presence of an organisational sustainability policy and different types of EGB are more complex than previously assumed.

Limitations and Future Research

We acknowledge that our research has limitations that need to be addressed in future research. The first is our exclusive reliance on self-report data provided by employees. The use of such data can skew results due to common method bias (Podsakoff et al., 2012), which creates artificially inflated correlations among constructs reported by the same source. However, we ran statistical analyses that suggested that common method bias was not a major issue in the current study. Nevertheless, future research should collect multi-source information and objective measures of policies, green work climate, and EGB.

Another concern is that we evaluated employee perceptions of the presence of an organisational sustainability policy using a single self-report item. As Wanous, Reichers, and Hudy (1997) point out, however, the use of single-item measures is justified to measure relatively objective constructs such as the perceived presence of an organisational policy. A follow-up analysis of $n = 39$ of the initial participants using a more comprehensive 13-item measure of corporate policy (Ramus & Steger, 2000) demonstrated that their initial responses to the single-item measure correlated moderately with responses to the larger scale ($r = .407$, $p < .05$), which ameliorates some concern regarding this single item.

Finally, we examined only two forms of EGB – task-related and proactive – while recently other forms of EGB have been proposed (Ones & Dilchert, 2012; Paillé & Boiral, 2013). Future studies should investigate workplace-specific behaviours, including organisational citizenship behaviours directed toward the environment (Paillé & Boiral), as well as workplace behaviours that are harmful to the environment. It might also be pertinent to examine what could be considered counterproductive behaviour, or behaviour that benefits the environment to the detriment of task completion. In short, the findings from this initial research should encourage further research on a range of conceptualisations of EGB.

Practical Contributions

The practical contributions of the present study highlight the important normative role of employee workplace perceptions in facilitating the success of organisational sustainability policies

on EGB. The differential effects reported, however, suggest that organisations seeking to encourage task-related and proactive EGBs need to address employee perceptions of descriptive as well as injunctive norms. One approach would be to supplement formal policies with appropriate procedures and practices to communicate a clear and consistent message regarding the injunctive norms of the organisation to reduce ambiguity and enhance the efficacy of those policies. James and colleagues (2008) highlight consistent communication as a key factor in reducing ambiguity regarding an organisation's priorities and creating a strong climate. Organisational leaders could also play a key role in the communication of sustainability policies (Robertson & Barling, 2012).

In conclusion, the differential effect of the two types of perceived green work climates on the two types of EGB suggests that organisations need to be aware of which social norms, injunctive or descriptive, are likely to be effective for desired behaviours. Organisations could then use this understanding to activate the appropriate norm in the appropriate context to encourage a particular behaviour or set of behaviours.

Footnote

[1] We performed additional analyses to compare participants who responded either 'yes' or 'unsure' to the policy item (Table 3.1). Independent samples t-tests revealed that participants who responded 'yes' reported significantly higher task-related and proactive EGB, and stronger green work climate perceptions of the organisation and of co-workers. There was no significant difference between the two groups for environmental attitude.

Green work climate perceptions of the organisation significantly mediated the direct relationship between a newly created policy variable (with 0 = *unsure* and 1 = *yes*) and task-related EGB (standardised indirect effect = 0.14, $p < .001$, 95% CI = .06; .23). Similarly, green work climate perceptions of co-workers significantly mediated the direct relationship between this policy variable and proactive EGB (standardised indirect effect = 0.05, $p < .05$ 95% CI = .01; .12).

We also compared participants who responded 'no' or 'unsure'. Independent samples t-tests revealed no significant differences between the two groups for task-related and proactive EGB, perceptions of co-workers, nor environmental attitude. However, participants who responded 'unsure' also reported significantly higher scores for green work climate perceptions of the organisation.

Green work climate perceptions of the organisation significantly mediated the direct relationship between a newly created policy variable (0 = *no* and 1 = *unsure*) and task-related EGB (standardised indirect effect = 0.11, $p < .001$, 95% CI = .05; .20). Conversely, perceptions of co-workers did not mediate the direct relationship between this policy variable and proactive EGB (standardised indirect effect = 0.03, $p = .058$, 95% CI = -.00; .08)

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Chapter 4: Study 2

Bridging the gap between intentions and employee green behavior: The role of psychological climate

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Extension – In the previous study we find evidence to suggest that employee green work climate perceptions (i.e., green psychological climate) are a mechanism through which organisational factors (e.g., policy) influence behaviour. This is consistent with the framework provided in Chapter 2, where climate perceptions are described as a nexus where context and person factors intersect. By focussing on EGB at the between-person level, the previous study implicitly assumes that this behaviour is stable. In line with the research agenda outlined in the meta review presented as Chapter 2, Study 2 investigated EGB at the within-person level to determine whether (1) employees varied in their performance of EGB, (2) whether this could be predicted by intentions to engage in EGB made the previous day, and (3) whether employees' green climate perceptions moderated the strength of the relationship between intentions and next-day behaviour.

Purpose – Thus, the purpose of this study is to investigate whether green psychological climate perceptions (between-person) moderate a within-person relationship between behavioural intentions and EGB, from day to day.

Design – A daily diary study of office workers (n = 79). Participants completed daily surveys for a period of two working weeks (10 days). We lagged intentions to engage in EGB tomorrow to test the relationships between these and self-report EGB of the following day. Data regarding variables at the between-person level, including climate perceptions, was collected at the start of the research period and linked with daily surveys via participants' unique codes.

Main Findings – Results revealed no direct effect of intentions on next-day EGB. Findings showed a significant interaction of intentions and green psychological climate perceptions, however. Analysis of simple slopes reveals that intentions predicted next-day EGB only for employees who perceived a more positive green psychological climate.

Abstract

To what extent does the workplace context influence whether or not behavioral intentions are enacted? We examined whether employees' perceptions of a proenvironmental or "green" organizational climate moderate the relationship between their intentions to work in a green way on one day and then to enact green behavior on the following day. To test our hypotheses, we collected daily diary survey data from 75 employees across two work weeks. Results showed that the association between intentions and next-day green behavior was positive only when employees perceived a positive green organizational climate. We discuss the implications of our findings for future research on intentions as predictors of behavior, as well as for organizational managers who are interested in maximizing their employees' green behavior.

Bridging The Gap Between Intentions And Employee Green Behavior: The Role of Organizational Climate

Ones and Dilchert (2012a) argue that organizational scholars need to pay more attention to employee behaviors that contribute to environmental sustainability and also to the forces that drive them. This impetus can be attributed to growing environmental concern at the executive level (Accenture, 2013; Starik & Marcus, 2000), acceptance that "being green" makes good business sense (Holme & Watts, 2002), and realization that the success of organizational initiatives for environmental sustainability hinges upon individual employees' behavior (Bartlett, 2011; Norton, Zacher, & Ashkanasy, 2014). Crucially, researchers (Kim, Kim, Han, Jackson, & Ployhart, 2014; Norton, Parker, Zacher, & Ashkanasy, 2015) emphasize that there is a need to understand the personal and contextual factors that influence employee green behavior (EGB) from a multilevel perspective.

In contrast to other workplace behaviors such as task performance, citizenship behavior, or creativity (Dalal, Lam, Weiss, Welch, & Hulin, 2009; To, Fisher, Ashkanasy, & Rowe, 2012), little research to date has examined within-person predictors of EGB and boundary conditions of these within-person relationships (for an exception, see Bissing-Olson, Iyer, Fielding, & Zacher, 2013). We make two contributions in this article. First, we seek to extend the emerging literature on the dynamic nature of EGB by investigating variables at the between- and within-person levels. Specifically, we consider perceptions of green organizational climate at the between-person level, and daily intentions and EGB at the within-person level. Second, we propose that employee perceptions of their company's position on environmental sustainability (i.e., green organizational climate) may be a useful contextual variable to explain the strength of the relationship between employees' intentions on one day and behavior on the next. To this end, we conducted a quantitative daily diary study with a view to contributing to the growing field of research on organizations and the natural environment (Etzion, 2007).

Based on the foregoing, we propose to test the model illustrated in Figure 4.1, which suggests the means by which green behavioral intentions are translated into next-day EGB. The model we propose is contextually situated insofar as employees' perceptions of green organizational climate have both a direct effect on EGB as well as a moderating effect on the intention-EGB link. In the following paragraphs, we elaborate on the key variables in our model, and outline the three propositions that underlie the present study.

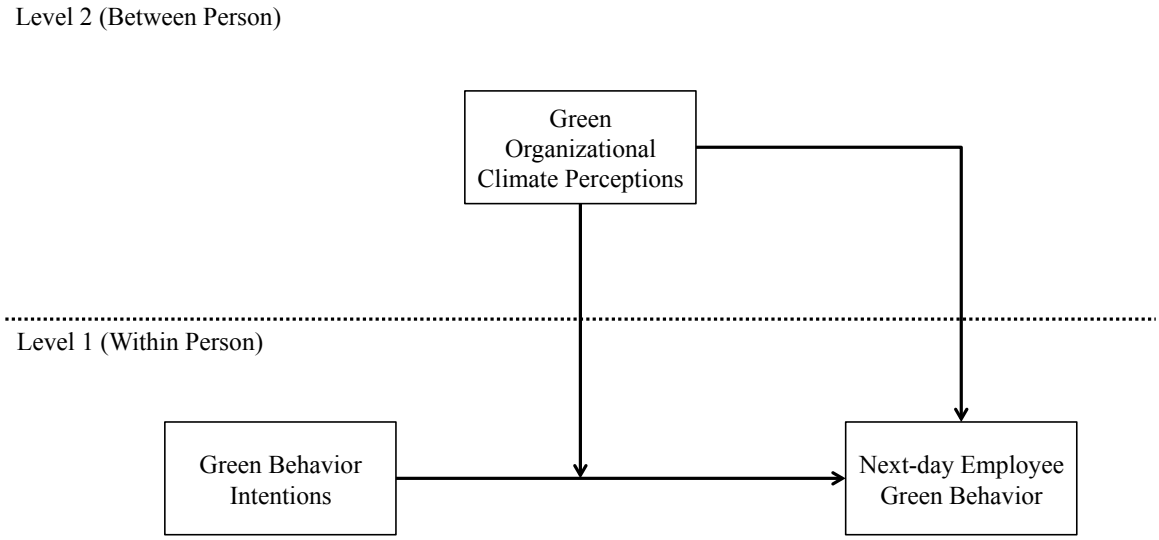

Figure 4.1. Conceptual model.

Theoretical Background and Hypothesis Development

Employee Green Behavior (EGB)

Ones and Dilchert (2012b) define EGB as a context-specific form of environmental behavior performed by employees in the workplace that contributes to or detracts from environmental sustainability. Although scholars have studied environmentally responsible behavior and its antecedents for several decades (e.g., Hines, Hungerford, & Tomera, 1987), interest in investigating such behavior in the context of the workplace is relatively recent (Andersson, Jackson, & Russell, 2013; Norton et al., 2015; Ones & Dilchert, 2012b). At the core of this growing interest lies an acknowledgement that the workplace represents a context where individual behavior is, to varying degrees, constrained by organizational requirements, expectations, and norms (Parker, 2011). This is in contrast to the non-work context, where individuals have more control over their behavior (Littleford, Ryley, & Firth, 2014). Thus, there is a need to consider factors unique to the workplace to gain a thorough understanding of EGB.

Given the nature of EGB, researchers working in this field (e.g., Robertson & Barling, 2013; Kim et al., 2014) have tended to focus on the role of organizational factors such as leadership, employee commitment to sustainability (Andersson, Shivarajan, & Blau, 2005), and incentives (Graves, Sarkis and Zhu, 2013). In this research, we acknowledge that the antecedents of EGB are distinct from those associated with private (i.e., at home) green behaviors. We further acknowledge that the workplace is a context where an individual's engagement in particular types of behavior can vary from day to day (Beal, 2011). In this study, therefore, we include person and context variables to investigate EGB measured on a day-by-day basis.

A Dynamic Perspective on EGB

From meta-analyses of general green behavior (Bamberg & Möser, 2007; Lo, Peters, & Kok, 2012) it is evident that researchers in this field had tended to emphasize temporally stable predictors

such as attitudes and social norms and therefore to neglect dynamic factors. Thus, while there is some longitudinal evidence that green behavior can be relatively stable (Kaiser & Byrka, 2011; Milfont, 2012), the more recent literature tells us that such data may be missing the effects of short-term variability in EGBs. For example, Bissing-Olson and her colleagues (2013) found that 29-34% of the variance in employees' daily engagement in EGB resides at the within-person level, and that this fluctuation can be predicted by daily positive affect. This research is consistent with other studies showing day-to-day variation in employee behaviors such as task performance (Fisher & Noble, 2004), organizational citizenship behavior (Ilies, Scott, & Judge, 2006), and creativity (Ohly & Fritz, 2010; To et al., 2012). In this study, we therefore sought to investigate the contribution of environmental behavioral intentions at the within-person level in predicting daily variation in EGB.

Intentions versus Enacted EGB

A particular issue in the green behavior literature concerns the nexus of behavioral intentions and subsequent behavior. In this regard, Triandis (1980) defines intentions as "instructions that people give to themselves to behave in certain ways" (p. 203). Moreover, because of their conceptual proximity with behavior, researchers often use intentions as a proxy for actual behavior (Greaves, Zibarras, & Stride, 2013). In the EGB literature for example, use of intentions as a proxy for behavior can be found in studies by Cordano and Frieze (2000) and Greaves et al. (2013), which were both based in Ajzen's (1991) theory of planned behavior. Sheeran (2002) argues however that this practice is not always appropriate in view of the evidence that intentions are more often than not associated only weakly with enacted behavior. Indeed, Bosco, Aguinis, Singh, Field, and Pierce (2015) reported a weighted correlational effect size for intentions and workplace behavior of as low as $\rho = .16$.

When applied to *private* environmental behavior, on the other hand, the intentions-behavior relationship appears to be stronger. Two meta-analyses in the environmental psychology literature estimated the correlation to be between $\rho = .49$ and .52 (Bamberg & Möser, 2007; Hines et al., 1987). These researchers examined effects of intentions on private behavior, however, where individuals may have more control over their behavior and are not subject to the same requirements and constraints as in the workplace (Parker, 2011). How intentions affect EGB in the workplace, where EGB is usually prescribed to some extent (Ones & Dilchert, 2012a), is yet to be determined.

Looking specifically at research conducted in workplace settings, we find mixed evidence. On the one hand, Holland, Aarts, and Langendam (2006) found that intentions have significant positive effects over time on recycling behaviors in an office setting (*r*s between .48 and .64). On the other hand, Tudor, Barr, and Gilg (2007) reported a standardized effect of intentions on recycling behavior in a hospital of only $\beta = .07$. Despite the statistical significance of this effect, the authors stated that there was little relation between employee intentions and actual behavior (i.e., reuse,

conservation, or recycling of materials). Moreover, in a recent systematic review of research on EGB at work, Norton and his associates (2015) reported that intentions seem only to have been measured for *voluntary* EGBs.

Clearly, reports of such weak and inconsistent relationships between intentions and behavior represent a persistent problem for researchers and practitioners. For example, Webb and Sheeran (2006) found that intention-change interventions have only a small to medium effect on subsequent behavior. Therefore, it would seem logical to conclude that improving our understanding of the conditions under which this relationship is strengthened is imperative for behavioral interventions. To this end, we argue here that it is critical to look at the nature of the intentions themselves as well as the context that surrounds them.

Holland et al. (2006) suggest further that studies designed to investigate intentions in additional detail are likely to enlighten this conundrum. In this regard, Holland and his co-authors found that intentions can be elaborated by including when, where, and/or how the intention is to be fulfilled. In support of this idea, Gollwitzer and Sheeran (2009) reported in a review of this literature that elaborated intentions can have a medium to large effect on behavior. Gollwitzer and Sheeran argue in particular that one way to reduce the intentions-behavior gap for EGBs may be to make intentions more specific, such as by creating intentions to perform a behavior tomorrow. Accordingly, we expect that employees who have intentions to perform EGB the next day will be more likely to report engaging in EGB the following day. Thus:

Hypothesis 1: Intentions to perform EGB the next day are positively related to next-day EGB.

Perceived Green Organizational Climate

In his well-known field theory, Lewin (1951) proposes that behavior is a function of an individual's personal characteristics and her or his environment. Thus, beyond the nature of the intentions, it is also important to consider employees' perceptions of the organizational context that surrounds them (Bamberger, 2008; Galvin, 2014). In this regard, contextual factors beyond the control of the employee can create variations in the strength and direction of performance (Dalal, Bhave, & Fiset, 2014; Johns, 2006; Kane, 1993; Meyer, Dalal, & Hermida, 2010). Moreover, and as Sheeran (2002) pointed out, the extent to which individuals have control over their behavior is an important determinant of whether or not their intentions will ultimately lead to subsequent action.

Indeed, stemming from the work of Kaiser, Wölfing, and Fuhrer (1999), researchers in this area have long known that individuals can vary in their performance of environmental behavior depending on the given context they find themselves in. For example, Littleford and colleagues (2014) found that individuals who perform green behaviors at home do not necessarily engage in green behaviors at work. Thus, despite the potential for green behaviors to spillover from one

context to another (Muster & Schrader, 2011), Davis and Challenger (2011) point out that the evidence suggests that this is rarely observed.

In this research, we focus on the role of perceived organizational climate, which Schneider, Ehrhart, and Macey (2011) argue is a critical variable in the field of industrial and organizational psychology. More recently, Norton and colleagues (2015) contend more specifically that employee perceptions of organizational climate constitute a crucial intersection of personal and contextual factors. Examples of research at this intersection include studies of safety behavior (Neal & Griffin, 2006), citizenship performance (Shin, 2012), and customer service (Schneider, White, & Paul, 1998).

Norton, Zacher, and Ashkanasy (2012) propose concomitantly that an organizational climate applied to environmental sustainability could therefore be used to capture employee perceptions of a company's environmental policies, practices, and procedures. These authors found in particular that employee perceptions of green organizational climate mediated the relationship between the perceived existence of a company environmental policy and EGB (Norton et al., 2014). We therefore expect that participants who perceive more positive green organizational climates will engage in more EGB and hypothesize:

Hypothesis 2: Employees' green climate perceptions are positively related to their daily EGB.

In addition to being a mechanism through which other organization-level factors influence employee behavior, climate has also been implicated as a condition that moderates the strength of predictor-outcome relationships (Liao & Chaung, 2004; Smith-Crowe, Burke, & Landis, 2003). Strategic or facet-specific climates are defined as having a particular referent, such as service, safety, ethics, justice (Ashkanasy, 2007; Schneider, Ehrhart, & Macey, 2013), and environmental sustainability (Norton et al., 2012). Strategic climates thus provide contextual cues for behavior that align strategically with the organization's values (Smith-Crowe et al., 2003).

Therefore, it appears that intentions to behave may not be fulfilled if the context is not also supportive (Cox, 1997). A simple analogy is that of a painter who intends to begin painting a house on a particular day but cannot do so because of the weather. Based on the assumption that individuals behave in a way that matches their environment (Schneider, 1975), we thus expect to find that green climate perceptions moderate the relationship between intentions and *next-day* green behavior. Specifically, we expect that the effect of intentions on next-day behavior is likely to be stronger for employees who perceive a more a more positive green organizational climate. In contrast, the association between intentions and behavior should be weaker when perceptions of green organizational climate are less positive.

Hypothesis 3: Employees' green organizational climate perceptions moderate the positive relationship between daily green behavioral intentions and next-day EGB, such the

strength of the relationship increases with concomitant increases in perceived green climate strength.

Method

Participants

Participants comprised 75 full-time employees in Australia, who were recruited through the authors' personal and professional networks. The sample included 62.2% females; the mean age of participants was 28.11 years (*SD* = 7.48); and 87.8% held an undergraduate degree or higher. We identified participants' industries using the Australian Bureau of Statistics' (ABS; 2006) industrial classification codes. Industry groups represented by at least 10% of the sample included education and training (16.2%), health and social assistance (16.2%), and professional, scientific, and technical services (10.8%). A further fifteen participants (20.3%) indicated "other services" as their industry. A comparison with ABS (2012) industry statistics shows the composition of our sample with regard to industry is similar to the Australian workforce. Participants had been in the workforce for an average of 10.04 years (*SD* = 8.11), had worked for their current organization on average for 3.51 years (*SD* = 4.46), and worked an average of 42.55 hours (*SD* = 4.66) per week. Non-parametric Kruskall-Wallis tests showed there were no significant differences between participants from different industries for intentions, $\chi^2 = 15.15$, $df = 13$, $p = .298$, nor for behavior, $\chi^2 = 14.53$, $df = 13$, $p = .338$, aggregated to the person level.

Procedure

Taking our lead from Bissing-Olson, Fielding, and Iyer (2015), we conducted a daily diary study to test our hypotheses. We first provided interested participants with a link to a general survey that included demographic questions and scales to measure the between-person variables. One week later, we sent participants the first of the daily surveys, which included scales to measure the within-person variables. Links to the daily surveys were emailed every afternoon for two work weeks (10 days). By way of remuneration, participants could either choose to receive a $10 coffee voucher or we would donate the same amount to a charity on their behalf. Of the original sample of 121, we excluded data from ten participants who did not complete the general survey and thirty-six who did not complete a minimum of three consecutive daily entries (out of ten possible daily surveys). In the end, 75 working employees completed a total of 560 daily surveys, representing a mean completion rate of 7.51 per participant (*SD* = 1.88).

Measures

EGB. As specific EGB may vary across jobs and organizations, we created a set of three relatively broad self-report items as indicators of participants' green behavior at work based on previous measures used in the organizational literature (Bissing-Olson et al., 2013; Boiral & Paillé, 2012; Paillé & Boiral, 2013; Robertson & Barling, 2013). The statement "Thinking about your

work today, to what extent did you …" preceded the items, which were (1) "…act in environmentally friendly ways", (2) "…carry out environmentally friendly behaviors at work", and (3) "…perform pro-environmental behaviors while you worked". Participants responded to each item on a 5-point scale ranging from 1 (*never*) to 5 (*a great deal*). Cronbach's alpha for these items across measurement days was .90. A pilot study using Amazon's Mechanical Turk (n = 194) showed that our short measure (adapted to a non-daily context), correlated strongly and positively with longer measures of organizational citizenship behavior towards the environment (r = .70, p < .001; Boiral & Paillé, 2012) and workplace environmentally friendly behaviors (r = .74, p < .001; Robertson & Barling, 2013). Moreover, meta-analytic evidence suggests a positive association between self-report and objective green behavior (Kormos & Gifford, 2014).

Green behavioral intentions. To measure this variable, we modified the three green behavior items. Thus, the three EGB items were preceded by the statement, "Tomorrow, I intend to …" Respondents were again asked to respond on 5-point scales ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Alpha for these items across measurement days was .84.

Green organizational climate perceptions. We used five items from Norton et al. (2014) to measure employee perceptions of green organizational climate. Example items are "This company believes it is important to protect the environment" and "This company would like to be seen as environmentally friendly". As with the other measures, we asked participants to respond using 5-point scales ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Norton et al. showed that this scale correlated significantly with a measure of corporate environmental policy (r = .59, p < .001). Alpha was .92.

Environmental attitude. We controlled for participants' environmental attitude using an 8-item scale developed by Preisendörfer (1998), which has previously been correlated with objectively measured green behavior in non-work contexts (Bamberg, 2003). An example item is "Limits to economic growth have been crossed or will be reached very soon." Responses were recorded on a 5-point scale ranging from 1 *(strongly disagree)* to 5 *(strongly agree)*. This scale has previously been used in the work context, where it related significantly to EGBs (Norton et al., 2014). Alpha was .81.

Analysis

Since this was a daily diary study, our data included measures taken at within- and between-person levels of analyses – which necessitated a multi-level modeling approach. We therefore tested our hypotheses using multilevel random coefficient modeling procedures in HLM (Version 7.0; Raudenbush, Bryk, & Congdon, 2010). HLM allows for the variance in the dependent variable to be explained by the within- and between-person levels simultaneously.

Before conducting our hypothesis tests, however, we first evaluated the factor structure of variables along with the goodness-of fit for two models (Table 4.1). We parceled the environmental attitude scale using item-to-construct balancing (Little, Cunningham, Shahar, & Widaman, 2002). In this regard, Little et al. (2002) point out the appropriateness of parceling items of unidimensional scales. We confirmed that all factor loadings were .52 or higher. Results of a multilevel confirmatory factor analysis using MPlus (Version 7.3; Muthén & Muthén, 2012) showed that a model with two factors at both the between-person (attitude and climate) and within-person (intentions and behavior) levels had a good fit to the data, $\chi^2 = 115.54$, $df = 69$, $p < .001$; TLI = .94; CFI = .96; RMSEA = .03; $SRMR_{between} = .04$; $SRMR_{within} = .09$, which was better than a comparison model with one factor at each level only (Table 4.1).

Table 4.1

Results of Multilevel Confirmatory Factor Analyses

Model	*n* factors	χ^2	*df*	CFI	TLI	RMSEA	$SRMR_{within}$	$SRMR_{between}$	$\Delta\chi^2$
Multilevel full-factor	4	115.54**	69	.98	.94	.03	.04	.09	
Multilevel single factors	2	555.98**	74	.55	.45	.09	.15	.21	440.44**

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; SRMR = square root mean residual. $\Delta\chi^2$ = difference in chi-square compared to the multilevel full-factor model.

** $p < .01$.

We also calculated the intraclass correlation coefficient to determine whether there was sufficient between-person variance to warrant HLM analysis (Hofmann, Griffin, & Gavin, 2000). The process for this required dividing the between-person variance component (τ_{00}) of the null model (i.e., the model with no predictors at Level 1 or at Level 2) by the sum of τ_{00} and the within-person variance component (σ^2) of the null model. The result is the percentage of the between-person variance compared with the total variance.

To test our hypotheses using HLM, we first cantered the between-person variables at the grand mean, and the within-person variables at each participant's mean (Hofmann et al., 2000). We next calculated the within-person correlation between intentions and next-day EGB. To accomplish this, we transposed daily EGB data into the previous day as "next-day EGB." This produced 406 same-day-next-day dyads. Between-person random effects variables were green organizational climate perceptions as a moderator, and environmental attitude as a control.

Results

As can be seen in Table 4.2, our results indicate a high correlation between green behavioral intentions and (next-day) EGB at the between-person level, and a low correlation at the within-person level. The intraclass correlation coefficient for EGB indicated that 68% of the variance

resided at the between-person level ($\tau_{00} = 0.52$, $p < .001$, $\sigma^2 = 0.25$). Thus, there was a sufficient between-person variation to warrant HLM analyses.

Table 4.2

Mean (M), Standard Deviation (SD), and Correlations of Study Variables

Variable	*M*	*SD*	1	2	3	4
Within-Person ($n = 406$)						
1. Next-day employee green behavior	3.22	0.75	(.94)	.08		
2. Green behavior intentions	3.72	0.64	.71**	(.90)		
Between-Person ($n = 75$)						
3. Environmental attitude	3.51	0.62	.24*	.46**	(.81)	
4. Green organizational climate perceptions	3.46	0.80	.20	.26*	.02	(.92)

Note: Correlations below the diagonal are between-person (Level 2) correlations (we averaged within-person data to compute these correlations). Correlations above the diagonal are within-person (Level 1) correlations. Within-person variables Cronbach's alpha values are mean internal consistencies averaged over all measurement days.

* $p < .05$. ** $p < .01$.

As can be seen in Table 4.3 (the HLM results), neither green behavioral intentions (Hypothesis 1) nor green climate perceptions (Hypothesis 2) had significant effects on next-day EGB in the main effects model. The control variable environmental attitude had a significant positive effect on EGB.

Table 4.3

HLM Results For Models Predicting Next-Day Employee Green Behavior

	Null Model		Main Effects Model		Moderated Model	
Predictor	γ	SE_γ	γ	SE_γ	γ	SE_γ
Intercept	3.23**	.09	3.25**	.09	3.25**	.09
Level 1						
Green behavioral intentions			.11	.09	.17*	.08
Level 2						
Environmental attitude			.30*	.14	.30*	.14
Organizational green climate perceptions			.15	.12	.15	.12
Cross-level interaction						
Intentions × green climate perceptions					.27*	.12
-2 Log likelihood			$\chi^2 = 157.43$, $df = 3$, $p < .001$		$\chi^2 = 7.77$, $df = 2$, $p = .020$	

Note: HLM = Hierarchical Linear Modeling; γ = Unstandardized Coefficient; SE_γ = Standard Error of γ.

* $p < .05$. ** $p < .01$.

Despite our failure to support the main effects predicted in Hypotheses 1 and 2, we did find support for the interaction predicted in Hypothesis 3 (see Figure 4.2). Specifically, we found that the positive relationship between green behavioral intentions and next-day EGB was significantly stronger among participants who had more positive green organizational climate perceptions. Cross-level simple slope tests (Preacher, Curran, & Bauer, 2006) showed that the simple slope for participants who perceived a more positive green organizational climate (i.e., one standard deviation above the mean) was positive and significant, $\beta = 0.38$, $SE = 0.15$, $t = 2.64$, $p = .009$. In contrast, the simple slope for participants who perceived a less positive green organizational climate (i.e., one standard deviation below the mean) was not significant, $\beta = -0.05$, $SE = 0.11$, $t = -0.43$, $p = .671$.

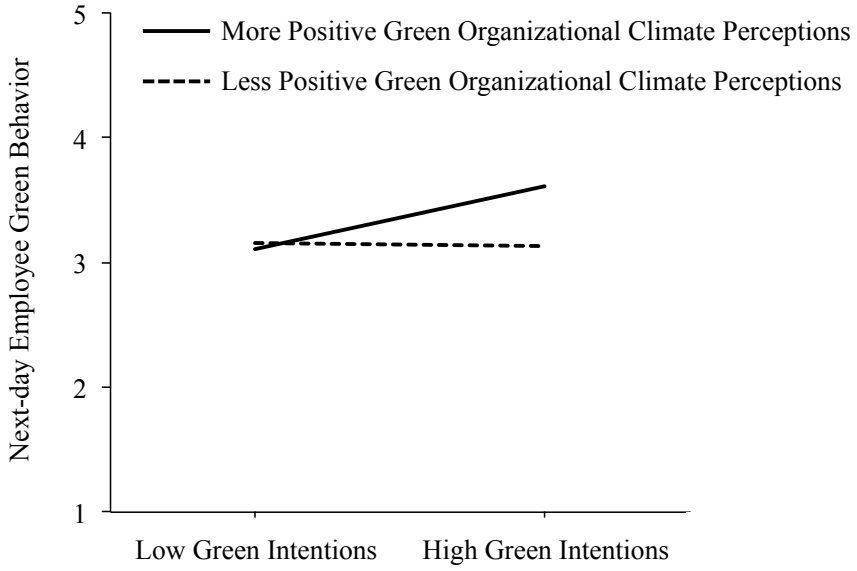

Figure 4.2. Relationship between green behavioral intentions and next-day employee green behavior moderated by perceived green organizational climate.

Discussion

Although behavioral intentions are often used to proxy actual behavior in studies of applied psychology, empirical evidence (Bosco et al., 2015) suggests that the relationship between the two is usually weak. In the present research, we sought to investigate if this gap can be explained, at least in part, by differences in employees' perceptions of the workplace environment. Specifically, we tested whether perceptions of a green organizational climate could close the gap between green behavioral intentions and enacted employee green behavior.

As expected, we found that intentions predicted next-day EGB only when participants perceived a more positive green organizational climate. This finding is in line with other studies demonstrating that climate moderates the effects of antecedents on workplace behavior (Liao & Chaung, 2004). Examined in their entirety, our findings suggest that, while green behavioral intentions and green organizational climate perceptions may be necessary components in the

prediction of EGB, they must be considered in concert to predict EGB measures the following day. It may be that the relationship between green behavioral intentions and EGB is stronger in companies that foster more positive green organizational climate perceptions due to the role of policies, procedures, and practices (i.e., the components of organizational climate) as cues for desired behavior (Smith-Crowe et al., 2003).

Theoretical Contribution

We argue that our findings contribute to the workplace environmental behavior literate in two important ways. First, our findings demonstrate that the performance of EGB is determined by factors at multiple levels. Whereas much of the literature on green behavior at home is focused on predictors at the between-person level, the EGB literature includes predictors on the team, leader, organization, and institutional levels (Norton et al., 2015). Importantly, the extent to which an employee's predisposition towards engaging in EGB is realized may be facilitated or constrained by contextual factors at levels beyond their control (Norton et al., 2015). This is emerging as a key distinction between EGB and green behaviors at home, and should be investigated further.

Second, we demonstrate that considering the perceived context within which behavior takes place can reduce the apparent gap between intentions and enacted behavior. A failure to consider context perceptions may explain why previous research has only demonstrated at best weak relationships between intentions and workplace behavior (e.g., see Bosco et al., 2015). Workplace behavior models using intentions-based theories, such as the theory of planned behavior (Ajzen, 1991), may benefit by including perceived organizational climate as a moderator of the effect of intentions on actual behavior.

Limitations and Future Research

We acknowledge that, as with all research, our study is subject to limitations. We identify three potential shortcomings in this regard. First, all our behavioral measures were self-report, as opposed to more objective supervisor- or peer-rating methods. Self-report measures can be compromised when participants exaggerate their responses to be more socially desirable (Podsakoff & Organ, 1986). Kormos and Gifford (2014) recently found in a meta-analysis, however, that self-reported and objective green behavior are moderately and positively correlated (ρ = .46). This suggests that individuals are moderately accurate when providing ratings of their own green behavior. Use of self-report measures in diary studies is also justified for several reasons (Beal & Weiss, 2003; Bolger, Davis, & Rafaeli, 2003). Although more objective behavioral measures may be seen as advantageous, they are likely to increase the burden on participants, particularly for studies conducted over consecutive days and weeks, and inflate dropout rates (Beal & Weiss, 2003). Moreover, while peers may provide more objective data, they are also likely to be distracted by

their own work tasks (Spector, 2006). Thus, employees are likely to be the best authorities on their own behavior through the day, and a valid source for data (Bissing-Olson et al., 2013).

Second, our data were from a convenience sample, which could limit the extent to which the findings we discuss generalize to other workers. Following Ebers and Oerlemans (2013), we compared our sample with industry statistics. We found that, in terms of industries represented, our sample was representative of the Australian workforce. Although the mean age of our sample sits comfortably within the working age range in Australia (15-64 years), it does underrepresent older workers. Nonetheless, evidence (Wiernik, Ones, & Dilchert, 2013) suggests that green behavior is more common among more senior workers. Thus, the role green behavioral intentions and green organizational climate perceptions play with regard to EGB may be more salient to younger workers. Norton and colleagues (2015) highlight the need to understand how to encourage EGB in people who are not predisposed to engage in environmental activity. Therefore, we do not see this as a threat to the validity of our findings.

Third, we used a broad measure of EGB. Recently, there has been a trend towards more detailed conceptualizations of the construct. Findings (see Bissing-Olson et al., 2013; Norton et al., 2014) demonstrate that task-related and proactive forms of EGB, although highly interrelated, respond differently to various antecedents. Based on the literature, we might expect climate perceptions of the organization to have a greater influence over EGB directly linked to an employees required tasks (i.e., task-related EGB), as opposed to more proactive or citizenship type behaviors.

Practical Implications

Lewin (1951) proposed that behavior comes about as a product of a person interacting with her or his environment. With this in mind, the findings of our study suggest that interventions that focus on boosting intentions are likely to be more effective when other relevant factors within the work environment are also addressed. Importantly, organizations need to communicate policies, procedures, and practices in such a way that employees perceive them to constitute a general attitude towards a particular area of interest (James et al., 2008), such as environmental sustainability. Nonetheless, having policies, procedures, and practices may not be sufficient. Companies may require additional provisions, such as resources (Cantor, Morrow, & Montabon, 2012), incentives (Graves et al., 2013), and goals (Osbaldiston & Sheldon, 2003). Such organizational resources are indicative of a supportive environment, and provide cues to encourage particular behaviors when employees perceive them to represent the values of the organization.

Our findings also demonstrate that including extra information in addition to behavioral intentions can make them effective across time. In our study, we collected data each afternoon, with participants indicating their intentions to engage in EGB the next day. Intentions interacted with

green work climate perceptions such that they were effective from one day to the next. Behavioral interventions might therefore benefit from requiring employees to make specific intentions, which remain effective overnight. It is likely that intentions made at the start of the working day may be even more effective, given the closer temporal proximity (Sheeran & Orbell, 1998).

Conclusion

In conclusion, EGB is a dynamic phenomenon that varies between and within people. This variation is also shaped by contextual factors. Using a daily diary study, we demonstrated that the relationship between green behavioral intentions on one day and EGB on the next day is strengthened when employees perceive their organization to be more environmentally friendly. Thus, the extent to which employees perceive a positive green climate at work, and the behavioral cues that reside within climate (Smith-Crowe et al., 2003), can facilitate the realization of intentions into behavior.

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Chapter 5: Study 3

Intentions to engage in employee green behavior: The influence of behavioral features and types of motivation

Citation – Norton, T. A., Parker, S. L., Zacher, H., & Ashkanasy, N. M. (under review). Intentions to engage in employee green behavior: The influence of behavioural features and types of motivation. *Journal of Experimental Psychology: Applied*.

Extension – In Chapter 4, we report that green psychological climate perceptions strengthen the relationship between intentions and EGB. This study was limited by the use of a general measure of EGB, and correlational data. In this study, we address both limitations by manipulating specific examples of office-based EGBs. To this end, we manipulate behavioural features (i.e., how easy and/or enjoyable a behaviour is) to enable causal inferences regarding employee intentions to engage in specific types of proactive and required EGBs. Furthermore, in line with our theoretical framework presented in Chapter 1, we suggest that motivation may also contribute to intentions for EGB. To this end, we consider that different types of motivation towards the environment may have differential effects for different types of EGB, depending on the behavioural features.

Purpose – To investigate whether or not the features of specific EGBs shape behavioural intentions, and whether these features interact with types of motivation for both task-related and proactive EGB.

Design – A full factorial policy capturing methodology was used. Participants (n = 107) responded to 32 behavioural scenarios. Based on pilot data (n = 154), we created scenarios that manipulated behaviors as task-related or proactive, easy or difficult, and enjoyable or boring.

Main Findings –Participants showed stronger intentions to engage in behaviours that were embedded in required work tasks (i.e., task-related EGB) than in proactive EGBs. The relative ease and enjoyment of the behaviours had positive effects on both task-related and proactive EGB intentions. The effect of enjoyment on proactive EGB intentions was strongest when external regulation was high. The effect of ease on proactive EGB intentions was strongest when (1) identified regulation was high; and (2) when intrinsic motivation was low. We conclude that not all EGBs are equivalent and that the features of individual behaviours are important. Furthermore, individuals' motivation towards the environment can shape how these features influence intentions to engage in EGB.

Abstract

Office workers in today's businesses increasingly acknowledge the value of environmental sustainability and are therefore changing their behavior commensurably. By focusing on individual difference factors such as environmental attitude and subjective norms, however, business sustainability researchers may have neglected the effects of features of environmental behavior on behavioral intentions. To address this shortcoming, and based in resource- and motivation perspectives, we propose that the degree to which behaviors are seen as easy and enjoyable largely determines intentions to engage in employee green behaviors (EGBs) that are embedded in required tasks (i.e., task-related) as well as voluntary EGBs that demonstrate employee initiative (i.e., proactive). We also investigate what role motivation towards the environment plays, and if this varies across different types of EGB. We used a policy-capturing design to manipulate typical office-based task-related and proactive EGBs in terms of ease and enjoyment across 32 scenarios (n = 107). Our data revealed higher intentions to engage in task-related than proactive EGB. Results of multilevel random coefficient modeling showed main effects of features for both types of EGBs, with participants' intentions to engage strongest for easy and enjoyable EGBs. Motivation toward the environment revealed a complex pattern of main and interactive effects on EGB intentions, with different types of motivations being more or less influential for different types of EGBs.

INTENTIONS TO ENGAGE IN EMPLOYEE GREEN BEHAVIOR: THE INFLUENCE OF BEHAVIORAL FEATURES AND TYPES OF MOTIVATION

Why do people vary in their performance of environmentally friendly or "green" behaviors when they are at work? Although Kaiser and Byrka (2011) and Milfont (2012) found that people's green behavior at home is relatively stable, it appears that such behavior varies from day to day in workplace settings (Bissing-Olson, Iyer, Fielding, & Zacher, 2013). Moreover, even though many green behaviors can generally be performed at home and at work, findings suggest that individuals' behavior differs across the two contexts (Littleford, Ryley, & Firth, 2014). To resolve this conundrum, we argue that perspectives from organizational research, such as considering green behaviour as a type of job performance, which include factors specific to the workplace, might be better suited than environmental psychology to explain green behavior at work.

Two reasons underline the importance of understanding green behavior in the specific context of the workplace. First, there is increasing pressure from social, normative, and regulatory sources for organizations to respond to environmental concerns and to be sustainable (Engel, Enkvist, & Henderson, 2015; Norton, Parker, Zacher, & Ashkanasy, 2015). Second, evidence shows that the success or failure of environmental interventions depends on employee behavior (Bartlett, 2011; Jabbour & Santos, 2008). To address these issues, we seek to make three contributions in this research.

First, we consider whether green behaviors embedded in a required work task (i.e., task-related) or entirely volitional (i.e., proactive) are easy or difficult to perform; and enjoyable or boring to perform. By distinguishing different types of green behaviors in terms of these features, we seek to provide greater clarity than can be found in other typological distinctions (e.g., Ones & Dilchert, 2012).

Second, we answer recent calls (e.g., see Aguinis & Glavas, 2012; Norton, Parker et al., 2015) for methodological rigor by using an experimental vignette methodology to capture the mental policies participants use to form their behavioral intentions. In the specific instance of employee green behavior, Norton and his colleagues (2015) commented on the dearth of experimental research (that can be used to infer causal relationships, see Aguinis & Bradley, 2014).

Third, we use a within-person approach to determine the relative contribution of situational and personal factors to behavioral intentions on a moment-to-moment basis (Aiman-Smith, Scullen, & Barr, 2002; Karren & Barringer, 2002). Explaining intra-individual variation in individuals' intentions requires a within-person approach (e.g., Bissing-Olson et al., 2013), where decision-making is observed *in situ* and in real time (Fisher, 2008). In this regard, repeated measures provide a more reliable assessment of individuals' decision-making policies than one-time measures, while being sensitive to slight variations among similar stimuli (Everitt, 1995).

Theoretical Background and Hypothesis Development

The theoretical model underlying our research is illustrated in Figure 5.1. We propose that (1) behavioral features directly affect intentions to engage in task-related and proactive employee green behavior; (2) the effects of different types of motivation on behavioral intentions depend on whether the behavior is task-related or proactive, and (3) different types of motivation moderate the effects of behavioral features on green behavioral intentions. In the following sections, we develop four theoretical assertions that provide the structure for the present study and underlie our hypotheses.

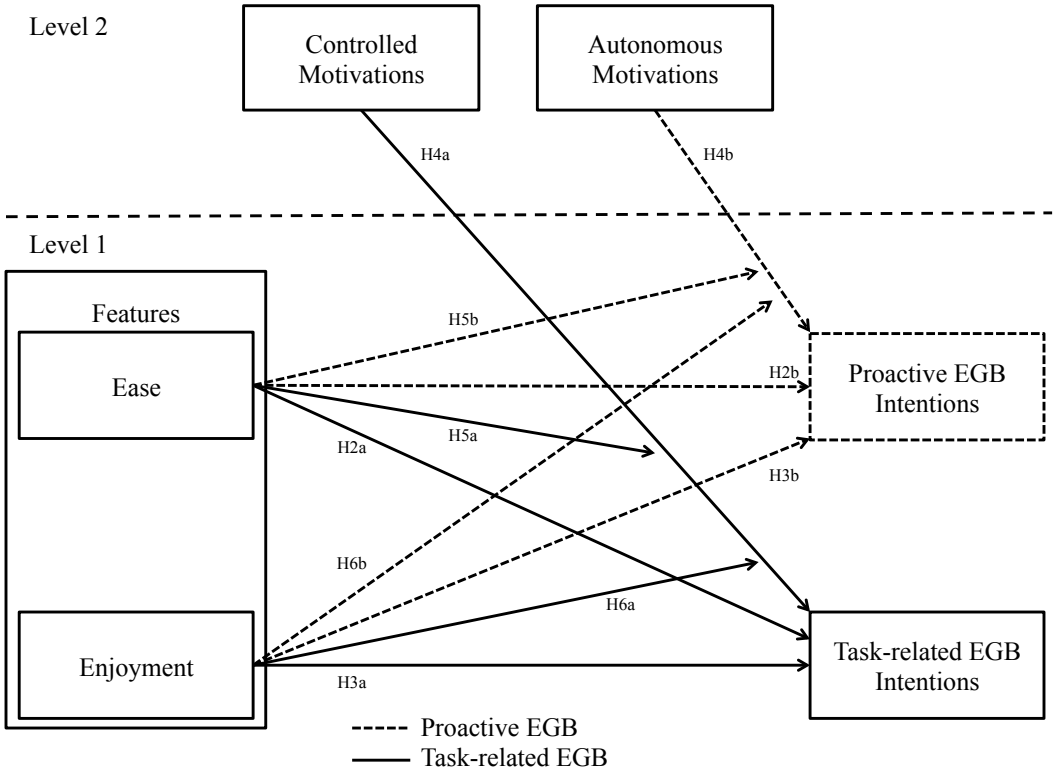

Figure 5.1. Conceptual model.

Note. EGB = Employee Green Behavior

Categories of Employee Green Behaviors

As identified in recent reviews (e.g., see Lülfs & Hahn, 2012; Norton, Parker et al., 2015), researchers typically operationalize workplace green behavior in one of three ways: (a) environmental behavior that happens to be performed at work (e.g., Tudor, Barr, & Gilg, 2007); (b) a form of organizational citizenship behavior (e.g., Paillé & Boiral, 2013); or (c) a type of work performance that can be voluntary or required by the organization (e.g., Ones & Dilchert, 2012). We assert that, while these conceptualizations are not mutually exclusive, there are important distinctions between them; namely, whether they take the organizational context into account or whether they include behaviors that are not necessarily volitional. Conceptualizations that acknowledge that green behaviors are not always volitional are preferable because, as Ones and

Dilchert (2012) note, up to one third of green behaviors are required of employees by the organization.

Thus, and accepting the existence of voluntary and required behaviors, we use the concept of employee green behaviors (EGB) to describe individual behavior performed at work that contributes positively to an organization's environmental performance. In this regard, EGBs can either be behaviors embedded in required work tasks that organizations might recommend, endorse, or expect (Bissing-Olson et al., 2013), or proactive behaviors that require employees to use their initiative to improve a situation (Parker, Williams, & Turner, 2006). From this perspective, two typologies of EGB exist, both drawing from a job performance perspective, which we discuss next.

Ones and Dilchert (2012) proposed one of the earliest EGB typologies, in which they identified five categories: (1) working sustainably, (2) conserving resources, (3) influencing others, (4) taking initiative, and (5) avoiding harm. To the best of our knowledge, however, this typology has only been applied conceptually in reviews and theoretical papers, and is yet to be used in empirical research.

A particular limitation of the Ones and Dilchert (2012) model is that there is likely to be overlap among categories (Norton, Parker et al., 2015). For example, providing a colleague with a recycling bin would constitute an act of conserving resources, influencing others, and taking initiative. Such a lack of conceptual clarity makes it difficult to demonstrate empirically whether there are any meaningful distinctions between the categories.

An alternative, simpler way to operationalize EGB is to use *mutually exclusive* categories (e.g., Bissing-Olson et al., 2013) based in concepts of task and contextual or citizenship performance (Borman & Motowidlo, 1993). The distinction between these types of performance is both conceptually and empirically valid (Motowidlo & Van Scotter, 1994; Organ, 1997). Conceptually, task performance contributes to the core function of an organization, whereas citizenship performance contributes instead to the broader context within which task performance occurs (Borman & Motowidlo, 1993). Empirically, there is evidence that managers seem to place more weight on task performance when determining overall performance ratings (Griffin, Neal, & Neale, 2000; Rotundo & Sackett, 2002) and allocating formal rewards (Kiker & Motowidlo, 1999). This is because task performance is recognized within an organization's formal reward system, whilst citizenship performance is not (Bergeron, 2007).

According to this typology, EGBs constitute task performance when they are embedded in required work tasks (i.e., task-related) and citizenship performance when they involve using initiative (i.e., proactive) and exceed expectations (Bissing-Olson et al., 2013). Essentially, therefore, task-related EGB can be thought of as completing required work tasks in a more environmentally friendly way; for example using teleconferencing instead of travelling to meetings.

In contrast, proactive EGBs involve employees using their initiative to be environmentally friendly in a way that does not necessarily contribute to the completion of required tasks; for example, starting a green committee in the office to organize environmental activities.

Empirical evidence from employee samples demonstrates that the extent to which employees engage in task-related and proactive EGBs is dependent on distinct predictor variables, suggesting that distinguishing between these different types of behavior is valid and useful. Specifically, research shows differences between task-related and proactive EGBs in terms of their relationships with similar yet distinct antecedents. For example, Bissing-Olson and colleagues (2013) found that unactivated positive affect predicted task-related EGB only, while activated positive affect predicted proactive EGB only. Similarly, Norton and colleagues (2014) demonstrated relationships between injunctive organizational norms and task-related EGB only, and descriptive organizational norms and proactive EGB only. It therefore appears that, even with slight variations in psychological antecedents, task-related and proactive EGBs operate independently. Our first theoretical assertion is that task-related and proactive EGBs are distinct types of behavior. Consequently, we expect some distinct patterns of effects for task-related and proactive EGB in the present study.

To address this issue, we refer to the work of Bergeron (2007), who proposed a resource-based view of performance in which employees have to decide on the allocation of personal resources between task and citizenship performance. This perspective describes a zero-sum relationship, whereby allocating resources to increase task performance comes at the expense of citizenship performance. In this regard, Eatough, Chang, Miloslavic, and Johnson (2011) found in a meta-analysis that employees are more likely to prioritize task-related behaviors over citizenship behaviors when faced with role conflict that requires them to allocate resources such as time and effort effectively. Thus, because employees need to allocate finite resources effectively, and task-related behavior is likely to be more important for performance evaluations and rewards (Rotundo & Sackett, 2002), we first hypothesize:

Hypothesis 1: Employees' intentions to engage in task-related EGBs are stronger than their intentions to engage in proactive EGBs.

The Primacy of Behavioral Features

Our next theoretical assertion is that employees differentiate between particular features of EGBs. In other words: Are there some types of task-related or proactive EGBs that might be more appealing than others? To date, the literature provides little insight in this regard. To the best of our knowledge, only one study (Green-Demers, Pelletier, & Ménard, 1997) has considered the possibility that the features of green behaviors might influence employees' performance. Green-Demers and her associates found that individuals with higher self-determined motivation engaged in

more private green behaviour, especially as the perceived difficulty of the behavior increases. This study notwithstanding, the lack of attention within the literature toward the features (e.g., difficulty) of behaviors is troubling, especially in view of the fundamental importance of individual behaviors as contributors to broader organizational initiatives (Andersson, Jackson, & Russell, 2013). In particular, and as Unsworth, Dmitrieva, and Adriasola (2013) observed, understanding whether particular behavioral features make certain EGBs more or less appealing to employees constitutes an important part of the puzzle for practitioners hoping to initiate engagement in sustainability initiatives.

The notion that behavioral features influence an individual's intention to engage in a particular behavior makes intuitive sense. In this regard, it is easy to think of examples where the intention to perform a behavior changes because of a subtle variation in its features. For instance, it makes sense for someone to have stronger intentions to read a book by an author whose work they find enjoyable than one written by an author they have been told is boring. Alternatively, an amateur guitarist can be expected to have stronger intentions to learn a short, simple song rather than a long, complex song because the simple song is easier to perform. Thus, it is likely that certain features of behavior influence the intention to engage in it. As such, our second assertion is that the features of EGBs are important factors influencing individuals' behavioral intentions. Specifically, we propose two such features: whether EGBs are (1) easy or difficult to perform; and/or (2) enjoyable or boring to perform.

Easy vs. difficult behavior. From the perspective of resource allocation, individuals should prefer easy behaviors over difficult behaviors. In this regard, Hobfoll (1989) proposed that individuals seek to preserve resources such as effort when they experience demanding work. As such, they might then be able to use these resources later to achieve pleasure and/or success. As behaviors become more difficult, they require more effort to perform (Brehm & Self, 1989). From this perspective, employees should have stronger intentions to engage in easy behaviors that require less effort than difficult behaviors so as to conserve energy. In line with Hypothesis 1, while we expect the direction of this effect to be the same for task-related and proactive EGBs, overall intentions should be stronger for task-related EGB. Thus:

Hypothesis 2a: Employees' intentions to engage in easy task-related EGBs are stronger than their intentions to engage in difficult task-related EGBs.

Hypothesis 2b: Employees' intentions to engage in easy proactive EGBs are stronger than their intentions to engage in difficult proactive EGBs.

Enjoyable vs. boring behavior. The degree to which a behavior is enjoyable to perform might be another determinant of behavioral intentions. From a motivational perspective, individuals should be more likely to engage in behaviors that are enjoyable rather than boring (Deci & Ryan,

1987). Enjoyable activities provide intrinsic motivation, whereby individuals want to engage in them in order to derive pleasure or satisfaction (Gagné & Deci, 2005). In contrast, behaviors that provide no enjoyment can be described as boring; that is, they are amotivating and/or are more reliant on external forces to motivate performance (e.g., rewards and penalties; Koestner & Losier, 2002). Thus, we next hypothesize:

Hypothesis 2c: Employees' intentions to engage in enjoyable task-related EGBs are stronger than their intentions to engage in boring task-related EGBs.

Hypothesis 2d: Employees' intentions to engage in enjoyable proactive EGBs are stronger than their intentions to engage in boring proactive EGBs.

The Role of Individuals' Motivations toward the Environment

Our third assertion is based in Lewin's (1951) proposition that performance is a function of factors external to the individual (i.e., features of available behaviors) and internal to the individual (i.e., individual differences in attitude and motivation). Of these internal factors, we propose that motivation is a more appropriate construct to consider for behavioral intentions. Our reason for this is that, whereas attitudes reflect cognitive, affective, and intentional *evaluations* of a target (e.g., the natural environment; Kaiser, Wölfing, & Fuhrer, 1999), motivation reflects *willingness* to exert effort to initiate and persist with behavior (Neal & Griffin, 2006). Considering the conceptual link with behavior, motivations should therefore be a proximal predictor of intentions (Osbaldiston & Sheldon, 2003). In this respect, the theory of planned behavior (Ajzen, 1991), which researchers often use in studies on green behavior, describes intentions and motivation as synonymous. According to this theory, attitudes, norms and perceived behavioral control contribute to the strength of intentions (i.e., intensity of motivation).

Whereas motivation in the theory of planned behavior can only be described in term of intensity, self-determination theory (SDT; Deci & Ryan, 1985a; 2000) considers the intensity and form of motivation invoking a multi-dimensional model of motivation. Deci and Ryan (1985b) proposed that individuals have general orientations towards the initiation and regulation of their behaviour. An autonomy-oriented person interprets social contexts as autonomy supportive and behaves in order to pursue self-interests, whereas a control-oriented person interprets social contexts as controlling and behaves according to these controls or directives (Gagné & Deci, 2005). According to Vallerand's (1997) hierarchy, causality orientation (i.e., autonomous vs controlled) is the most general distinction with regard to motivation, with more varied types of motivation being organised beneath these two broad categories.

In SDT, specific types of motivation can be distinguished by the extent to which they are regulated by external factors or are internalized. Controlled types of motivation are reliant on external regulations, such as rewards (i.e., external regulation), and can also be somewhat

internalized by the individual (e.g., feelings of guilt; introjected regulation) to a limited extent. In contrast, autonomous types of motivation rely on an individual identifying a link between the value of an activity and their own values and goals (Gagné & Deci, 2005), such as the perception that the target activity is important (i.e., identified regulation), and in the extreme the target activity is inherently enjoyable (i.e., intrinsic motivation). In this way, autonomous motivation relies upon the experience of choice, not upon rewards or punishments, or feelings of guilt (Deci & Ryan, 1985a).

In addition to capturing the intensity of different types of motivation along a controlled-autonomous continuum, SDT can be applied to various *contextual* types of motivation. In this regard, Pelletier and his colleagues (1998) propose an SDT-based conceptualization that captures different types of motivation for why an individual might engage in activities that benefit the natural environment. Despite this imperative, however, to date no studies have applied this concept to green behavior in the workplace. Given that research showing that controlled and autonomous motivations have distinct effects on different types of job performance (Gagné & Deci, 2005), it would seem to be appropriate to use in contexts (such as the workplace), where different types of performance exist (e.g., task and citizenship performance; Motowidlo & Van Scotter, 1994). Based in this background, we argue that Pelletier and colleagues' concept should form an appropriate platform for the present research.

Earlier, we defined task-related EGB on the basis that it contributes to required work tasks and is recognized in terms of formal rewards systems. According to Deci and Ryan (1985a), behavioral constraints in SDT (such as task requirements) establish expectations for how employees should perform at work. Deviating from these expectations could have implications for how other judge an employee, thus they constitute introjected regulation. Similarly, providing rewards or penalties for performance constitutes external regulation. In this instance, more controlled forms of motivation (i.e., external and introjected regulation) can be expected to motivate higher intentions to engage in task-related EGB. Despite this, however, behavioral constraints and extrinsic rewards can undermine more autonomous types of motivation (Ryan & Deci, 2002). Therefore, SDT would seem to suggest that controlled, but not autonomous, forms of motivation would influence intentions for behaviors constrained by expectations or requirements (i.e., task-related).

Although we are not aware of any empirical evidence to support the foregoing effect specific to EGB, there is some related evidence from safety research. For example, using proxies of controlled and autonomous motivation, Zohar, Huang, Lee, and Robertson (2015) found that safety climate (controlled motivation) has a stronger effect on driving behavior, a form of task performance, than engagement (autonomous motivation). Based in the foregoing arguments, we expect controlled types of motivation to be better predictors of task-related EGB than proactive EGB, leading us to hypothesize:

Hypothesis 3a: Employee intentions to engage in task-related EGB will be strongest when controlled motivations (external regulation, introjected regulation) are high.

In contrast to task-related EGB, managers of formal reward systems do not recognize proactive EGB, which rely on personal initiative. Accordingly, SDT would suggest that autonomous, rather than controlled types of motivation create the conditions necessary for individuals to engage in proactive behavior (Gagné & Deci, 2005; Parker, Bindl, & Strauss, 2010). In fact, the literature demonstrates that controlled forms of motivation can be quite ineffective for behaviors where individuals need to go above and beyond expectations (see Gagné & Deci, 2005). In this way, an individual's intention to engage in behavior that is neither required nor rewarded (i.e., proactive behavior) could reflect the extent to which they find the behavior to be important (i.e., introjected regulation) or inherently enjoyable (i.e., intrinsic motivation). Thus, as proactive behaviors require more autonomous forms of motivation, we hypothesize:

Hypothesis 3b: Employee intentions to engage in proactive EGBs will be strongest when autonomous motivations (identified regulation, intrinsic motivation) are high.

The Interaction of Individual Motivations with Behavioral Features

Our final assertion is that, in addition to having a direct effect on intentions to engage in EGB, motivations toward the environment should also interact with the features of ease and enjoyment. The underlying tenet of this assertion is that motivation protects against barriers such as how difficult or boring a behavior is (Cooke, Fielding, & Louis, 2015). It seems reasonable therefore to suppose that highly motivated individuals are more likely to contribute the resources (e.g., effort) required to perform difficult or boring behaviors than those with weak motivations (Gagné & Deci, 2005; Pelletier et al., 1998). Therefore, intentions to engage in difficult or boring EGBs on the one hand should be weakest when motivations are low, and strongest when motivations are high. On the other hand, when the behavior itself is easy, differences in individuals' motivational intensity are less important (Green-Demers et al., 1997). The same might be true for when behaviors are inherently enjoyable, whereby the effect of individuals' motivation is limited by a ceiling effect. Thus, highly motivated individuals should report similar intentions for difficult and easy behaviors, as compared with boring and enjoyable behaviors respectively. Moreover, the intentions of those with weak motivations should be more vulnerable to differences in the relative ease and enjoyment of the behavior. Therefore, the positive effects of ease and enjoyment on intentions should be weakest when motivations are high.

So far, we have argued that task-related EGBs should be more receptive to controlled types of motivation, whilst proactive EGBs should be more responsive to autonomous types of motivation toward the environment. In line with this idea, the effect of ease and enjoyment on intentions to engage in task-related EGBs should be weakest for individuals with high controlled motivation.

Accordingly, the effect of ease and enjoyment on intentions to engage in proactive EGBs should be weakest among individuals with high autonomous motivation. Thus, our final hypothesis set is:

Hypothesis 4a: Controlled (external regulation, introjected regulation) types of motivation moderate the positive main effects of ease and enjoyment on intentions to engage in task-related EGB (Hypothesis 3a), such that the effect is weaker when controlled motivations are high.

Hypothesis 4b: Autonomous (identified regulation, intrinsic) types of motivation moderate the positive main effects of ease and enjoyment on intentions to engage in proactive EGBs (Hypothesis 3b), such that the effect is weaker when autonomous motivations are high.

Method

Scenario Design and Pilot Testing

To test our hypotheses, we used a policy-capturing approach, which is an experimental vignette methodology with repeated presentations of behavioral scenarios. In line with Rotundo and Sackett (2002), we designed these scenarios in multiple steps. First, we compiled a list of 105 office-based EGBs from the available literature (e.g., Cooke et al., 2015; Zibarras & Ballinger, 2011) as well as from industry (ANZ, 2013; BC Hydro, 2013) and government (Department of Education and Training, 2013) reports and guides. Second, we recruited a sample of 294 office workers via an online survey panel (Amazon Mechanical Turk; Buhrmester, Kwang, & Gosling, 2011) to pilot test these EGBs. Participants categorized each EGB as either something "…done while completing required work tasks" (i.e., task-related) or something "…that goes above and beyond what is expected" (i.e., proactive). Participants also rated whether the EGB was an important way to help the environment, and to what extent they generally performed the behaviour at work using 7-point Likert-type response scales.

These data identified 34 behaviors that had good interrater agreement for task-related (42.57%) and proactive (65.08%) categories. Descriptive statistics from this pilot are presented in Table 5.1. As Aiman-Smith et al. (2002) point out, it is important in policy-capturing research to create scenarios that are representative of naturally occurring decision situations. On average, raters reported that they performed the behaviours some of the time to fairly often (M = 3.60, SD = 1.04), and that they were moderately important ways to help the environment (M = 3.94, SD = 1.52). Paired-samples t-tests revealed a non-significant difference between task-related and proactive behaviours for importance, $t(293) = 0.163$, $p = .87$, but that raters performed task-related EGBs significantly more often than proactive EGBs, $t(293) = 329.71$, $p < .001$. This is not surprising given prior research findings (Eatough et al., 2011) and is in line with our expectations (i.e.,

Hypothesis 1). On the basis of this finding, we decided to investigate task-related and proactive EGBs separately.

Table 5.1

Pilot 1 (N = 294) Employee Green Behavior Ratings

	Importance		Self-rated Performance	
	M	*SD*	*M*	*SD*
Task-related	3.94	1.53	4.25	1.12
Proactive	3.94	1.55	2.86	1.12
Total	3.94	1.52	3.60	1.04

Note: Figures reported are for behaviors reliably categorized as either task-related (*n* = 18) or proactive (*n* = 16) from the original list of 105 behaviors

We then recruited a second sample of 154 office-based workers from the same survey panel to inform our manipulations of ease and enjoyment. We asked these participants to rate each EGB on ease and enjoyment, using 7-point Likert-type scales. These data allowed us to determine which task-related and proactive EGBs were relatively easy or difficult, and enjoyable or boring. Descriptive statistics from the second pilot are presented in Table 5.2. To obtain an equal number of EGBs for both task-related and proactive sets of behaviors, we selected the eight EGBs with the highest ratings for ease and enjoyment and coded these as easy/enjoyable, while the eight EGBs with the lowest ratings were coded as difficult/boring. Thus, we identified a final list of 16 behaviors each for task-related and proactive types of EGB that provided an even distribution across the two levels of both dimensions.

Table 5.2

Pilot Study 2 (N = 154) Descriptive Statistics for Behavioral Features of Task-related and Proactive Employee Green Behaviors

		Task-related EGB (*n* = 16)		Proactive EGB (*n* = 16)	
Feature	Level	*M*	*SD*	*M*	*SD*
Ease	Difficult	5.52	1.13	3.73	1.36
	Easy	6.10	0.86	5.18	1.10
Enjoyment	Boring	3.93	1.44	3.83	1.74
	Enjoyable	4.54	1.34	4.70	1.28

Note. Items measure on 7-point scales (e.g., for ease, 1 = *very difficult/boring to perform* and 7 = *very easy/enjoyable to perform*).

We then created scenarios based around these behaviors, suitable for use in our experimental study. In creating the scenarios, we followed the example of Marcus, MacDonald, and Sulsky

(2015) and provided additional information to emphasize the salience of the type of behavior and level of each feature. Each scenario features a single EGB, prefaced by a statement as to whether it constitutes a way to complete a required task for task-related EGBs ("Your job requires you to…"), or is not required as part of the participant's job for proactive EGBs ("Although not required to in your job…"). We also provided the environmental justification for the behavior in the scenario (e.g., to save paper; to improve air quality; to reduce waste). Examples of behaviors for each type, feature, and level are provided in Table 5.3. A full list of the scenarios is provided in Appendix A. Following the scenario statement, we provided participants with feedback from a sample of 154 other employees (i.e., the pilot sample) to emphasize the features of the behavior; specifically, whether raters judged the behaviors as easy or difficult, and enjoyable or boring. An example feedback statement is "Raters considered this behavior to be difficult to do and boring".

Table 5.3

Example Employee Green Behaviors Showing Different Types and Levels

Example behavior	Type	Ease level	Enjoyment level
Use teleconferencing for meetings	Task-related	Easy	Enjoyable
Turn computer off when not in use	Task-related	Easy	Boring
Organize bulk orders of supplies to save packaging and delivery	Task-related	Difficult	Enjoyable
Dedicate a printer tray for printing drafts on scrap paper	Task-related	Difficult	Boring
Install indoor plants as natural air filters to improve air quality	Proactive	Easy	Enjoyable
Sign petitions supporting green initiatives	Proactive	Easy	Boring
Start a green committee	Proactive	Difficult	Enjoyable
Avoid using air conditioning	Proactive	Difficult	Boring

To measure the independent effects of each factor, we used a full factorial approach whereby every combination of feature and level was provided to every participant (Martocchio & Judge, 1994). Determining the number of scenarios required at the within-person level for a full factorial design is contingent upon the number of cues included and the number of levels each cue has. Aiman-Smith and colleagues (2002) recommend determining the number of scenarios required using a cue^{level} calculation. In the present study we use two cues (i.e., ease; enjoyment) each with two levels (e.g., difficult/easy; boring/enjoyable). Therefore, to provide participants with every combination we required four scenarios each for task-related and proactive EGBs. In fact, we presented participants with four examples of each of the four possible combinations (i.e., 16 scenarios) for both task-related and proactive EGBs (i.e., 32 scenarios in total). We presented scenarios in a randomized order to reduce order effects (Kristof-Brown, Jansen, & Colbert, 2002).

Participants and Procedure

We collected our data in two stages a week apart using Amazon Mechanical Turk (AMT). AMT is a reliable online survey panel (Paolacci, Chandler, & Ipeirotis, 2010) that provides samples representative of working adults (Mason & Suri, 2012). First, we advertised the initial survey that included between-person variables (demographics, environmental attitude, motivation toward the environment). The survey was open to anybody to complete and attracted 497 respondents. We took two steps to refine our sample and ensure we had a sample of high-quality respondents representative of working age adults for the second stage.

Owing to the office-based nature of the EGB scenarios, we required participants to hold office jobs at the time of responding. To determine whether participants were appropriately employed, we asked them to describe their role. In order to determine data quality we asked participants to (1) provide specific responses to six quality control items included among the measures (Meade & Craig, 2012), and (2) tell us whether we should use their data. As a result of all of these measures, we only invited n = 132 respondents to participate in the next stage.

In the second stage, we distributed an online survey featuring the 32 behavioral scenarios to the participants who qualified based on their employment and the quality of their responses to the initial survey. In the second survey, we introduced participants to a fictional organization, their role in the company, and instructed them to respond to the following scenarios as an employee of "UnitedCorp". Following this introduction, we presented the scenarios in a randomized order. Of those participants invited to participate in the second stage, 116 responded (Time 2 response rate = 87.9%). We used the same data-quality procedures as in the first stage, and omitted 9 participants from this second sample – leaving a final sample of 107 participants, which is sufficient for multilevel analysis at within- and between-person levels (Maas & Hox, 2005).

The final sample was 52.3% female, with a mean age of 35.5 years (SD = 10.03) and 73% held an undergraduate degree or higher. O*NET industry categories (Peterson et al., 2001) represented by at least 10% of the sample include professional, scientific, and technical services (22.4%), health and social assistance (11.2%), finance and insurance (10.3%), and information (10.3%). Participants had worked in their current role on average for 5.83 years (SD = 5.70), and worked an average of 42.22 hours (SD = 8.12) per week. Non-parametric Kruskall-Wallis tests showed no significant differences between participants from different industries for intentions to engage in task-related, χ^2 (16) = 16.55, p = .415, or proactive χ^2 (16) = 13.46, p = .639, EGB aggregated to the between-person level.

Measures

Manipulation checks. To check the salience of our manipulations of behavioral features, we asked participants' to rate each EGB for ease and enjoyment using 7-point scales. Response scales ranged from 1 (*very difficult/boring*) to 7 (*very easy/enjoyable*).

Employee green behavior intentions. To measure intentions to engage in the EGB in each scenario, we asked participants to use a 7-point scale – ranging from 1 (*extremely unlikely*) to 7 (*extremely likely*) – to indicate the likelihood that they would perform the behavior.

Environmental motivation. To measure participants' environmental motivation, we used four subscales from the Motivation toward the Environmental Scale (MTES; Pelletier et al., 1998): (1) external regulation, (2) identified regulation, (3) introjected regulation, and (4) intrinsic motivation. These measures require participants to use a 7-point scale, ranging from 1 (*not at all*) to 7 (*exactly*), to indicate how accurately each statement describes their motivation for behaving pro-environmentally. Example items are "Because my friends or family insist that I do" (external regulation); "Because I would feel guilty if I didn't" (introjected regulation); "Because it is a good idea to do something about the environment" (identified regulation); "Because I like the feeling(s) I have when I'm doing things for the environment" (intrinsic motivation). Prior research (see Pelletier et al., 1998; Villacorta, Koestner, & Lekes, 2003) demonstrated this scale to be a reliable and valid measure of the construct. Alphas ranged from .93 to .96.

Environmental attitude. We controlled for environmental attitude using an 8-item scale developed by Preisendörfer (1998). Previous research shows that this scale correlates with objectively measured green behavior in non-work contexts (Bamberg, 2003) and self-report EGB (Norton et al., 2014). An example item is "For the benefit of the environment we should be prepared to restrict our momentary style of living." Responses were recorded on a 5-point scale ranging from 1 *(strongly disagree)* to 5 *(strongly agree)*. Alpha was .90.

Analysis

Our policy-capturing design included measures taken at the within- and between-person levels of analyses, which necessitated a multi-level modeling approach. Thus, we tested our hypotheses using multilevel random coefficient modeling procedures in Mplus (Version 7.31, Muthén & Muthén, 2012). As with other multi-level suites, Mplus allows for the variance in the dependent variable to be explained by factors at the within- and between-person levels simultaneously.

We calculated the intraclass correlation coefficient for both task-related and proactive datasets to confirm sufficient between-person variation in behavioral intentions to warrant multilevel analysis. This involved dividing the between-person variance component (τ_{00}) of the model with no predictors (i.e., the null model) component by the sum of τ_{00} and the within-person

variance component (σ^2) of the same model. To test our hypotheses, we centered between-person level predictors at the grand mean (Hoffmann, Griffin, & Gavin, 2000). Between person variables are external regulation, introjected regulation, identified regulation, and intrinsic motivation, with environmental attitude as a control.

Results

Preliminary analyses

Table 5.4 provides the descriptive statistics and correlations for our variables. Although the between-person correlations among the MTES subscales are high, this is typical in SDT research (e.g., Gagné, Forest, Gilbert, Aubé, Morin, & Malorni, 2010), and in research using this measure in particular (Pelletier et al., 1998). Participants endorsed identified regulation the most (M = 4.87, SD = 1.36), followed by intrinsic motivation (M = 4.53, SD = 1.32), introjected regulation (M = 3.94, SD = 1.65), and external regulation (M = 2.07, SD = 1.17). Manipulation checks confirmed successful manipulation of EGB features. Participants reported EGBs that we classified as easy (M = 5.72, SD = 0.70) as easier compared with EGBs we coded as difficult to perform (M = 4.06, SD = 0.89), $F(1) = 642.31$, $p < .001$. Likewise, participants rated EGBs that we coded as enjoyable as more enjoyable to perform (M = 4.40, SD = 0.94) compared to boring EGBs (M = 3.26, SD = 1.06), $F(1) = 329.71$, $p < .001$. Participants' self-report behavior was similar to the pilot study (M = 3.43, SD = 1.82).

Table 5.4

Means (M), Standard Deviations (SD), and Correlations of Study Variables

Variable	*M*	*SD*	1	2	3	4	5	6	7
Within-Person (n = 3,424)									
1. Task-related intentions	5.63	0.78	(.94)	.08					
2. Proactive intentions	4.00	1.12	.71**	(.90)					
Between-Person (n = 107)									
3. Environmental attitude	4.97	1.14	.40**	.44**	(.90)				
4. External regulation	2.07	1.17	-.29**	.11	-.04	(.93)			
5. Introjected regulation	3.94	1.65	.28**	.45**	.58**	.15	(.96)		
6. Identified regulation	4.87	1.36	.40**	.47**	.71**	-.07	.74**	(.93)	
7. Intrinsic motivation	4.53	1.32	.38**	.46**	.69**	.03	.67**	.88**	(.95)

Note: Correlations below the diagonal are between-person (Level 2) correlations (we averaged within-person data to compute these correlations). The correlation above the diagonal is a within-person (Level 1) correlation using person-mean centered data. Cronbach's alpha values of within-person variables are mean internal consistencies averaged over all measurement scenarios.

** $p < .01$.

The intraclass correlation coefficients for intentions indicate that 22.7% of the variance in intentions for task-related EGBs resides at the between-person level ($\tau_{00} = 1.693$, $p < .001$, $\sigma^2 = 0.497$). For proactive behaviour, 28.1% of the variance resides at the between-person level ($\tau_{00} = 2.764$, $p < .001$, $\sigma^2 = 1.079$). Thus, the use of multilevel analysis was appropriate (Aguinis, Gottfredson, & Culpepper, 2013; Raudenbush & Bryk, 2002).

Test of Hypotheses

In support of Hypothesis 1, a paired-samples t-test using within-person data aggregated to the between-person level revealed significantly higher intentions to engage in task-related EGBs ($M = 5.63$, $SD = 0.78$) than in proactive EGBs ($M = 4.00$, $SD = 1.12$), $t(106) = 16.352$, $p < .001$, $r = .65$. We present a plot of this relationship in Figure 5.2. This magnitude of effect justified our decision to separate scenarios with task-related EGBs from those with proactive EGBs, as such our subsequent analyses report on the two distinct sets of scenarios.

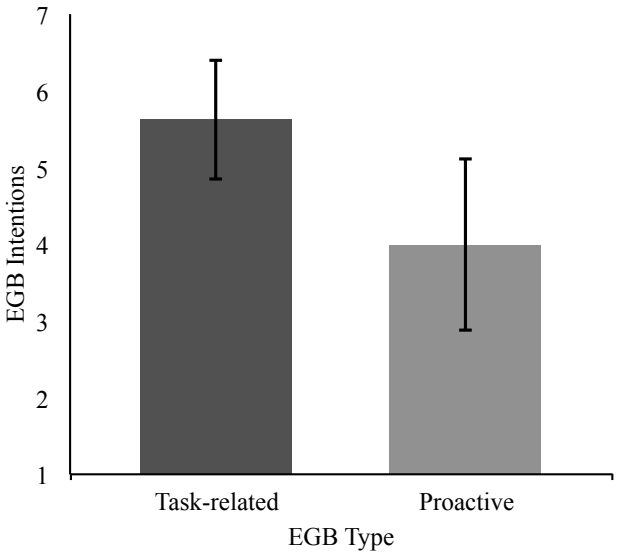

Figure 5.2. Intentions to engage in task-related vs. proactive EGBs.

Main effects. As shown in Table 5.5, ease had a significant effect on intentions to engage in task-related (Hypothesis 2a; $\gamma = .53$, $SE_\gamma = .06$, $p < .01$, $r = .67$) and proactive (Hypothesis 2b; $\gamma = 1.22$, $SE_\gamma = .08$, $p < .01$, $r = .82$) EGBs. Participants were more likely to demonstrate intentions to engage in task-related and proactive EGBs if they were relatively easy to perform. Similarly, there was a main effect of enjoyment on intentions to engage in both task-related (Hypothesis 2c; $\gamma = .14$, $SE_\gamma = .07$, $p < .05$, $r = .19$) and proactive (Hypothesis 2d; $\gamma = .36$, $SE_\gamma = .08$, $p < .01$, $r = .41$) EGBs. In both cases, participants reported stronger intentions to engage in EGBs that were relatively enjoyable. Data provide no support for Hypothesis 3a regarding the direct effect of more controlled and autonomous types of motivation toward the environment on task-related EGB. For proactive EGBs (Hypothesis 3b), we found a negative main effect of identified regulation on intentions, but no significant effect of intrinsic motivation. As identified regulation became stronger, intentions to

engage in proactive EGBs weakened, however, as we report below, this main effect is qualified by a significant interaction of ease and identified regulation on intentions. The control variable, environmental attitude, had no effect on intentions to engage in task-related or proactive EGBs.

Table 5.5

Random Coefficient Modeling

	Task-related EGB		Proactive EGB	
	γ	SE_γ	γ	SE_γ
Intercept	4.64**	0.16	1.63**	0.19
Level 1				
Enjoyment	0.14*	0.07	0.36**	0.08
Ease	0.53**	0.06	1.22**	0.08
Level 2				
Environmental attitude	0.19	0.21	-0.05	0.28
External	-0.21	0.19	0.01	0.21
Introjected	0.06	0.19	0.36	0.29
Identified	-0.08	0.30	-0.76*	0.37
Intrinsic	0.13	0.24	0.62	0.34
Cross-level interactions				
Ease × External	-0.06	0.06	-0.08	0.07
Ease × Introjected	0.02	0.06	-0.17	0.13
Ease × Identified	-0.05	0.10	0.49**	0.16
Ease × Intrinsic	0.05	0.09	-0.30*	0.14
Enjoyment × External	0.07	0.08	0.15*	0.07
Enjoyment × Introjected	-0.04	0.07	-0.01	0.06
Enjoyment × Identified	0.11	0.12	0.12	0.15

Note: γ = Unstandardized Coefficient; SE_γ = Standard Error of γ; r = Pearson's Correlation Coefficient.

* $p < .05$. ** $p < .01$.

Cross-level interactions. We found no evidence of significant interactions on intentions to engage in task-related EGBs (Hypotheses 4a), and only partial support for such interaction effects on intentions to engage in proactive EGBs (Hypothesis 4b). We used Preacher, Curran, and Bauer's (2006) recommended methodology for simple slope analysis to determine if the pattern of significant interactions was in the directions hypothesized.

First, we found a significant interaction of ease and intrinsic motivation toward the environment on intentions to engage in proactive EGBs. In line with Hypothesis 4b, simple slopes of the relationship of ease and intentions were positive and significant for those with low (i.e., one standard deviation below the mean) intrinsic motivation only ($B = 0.92$, $SE = 0.17$, $z = 5.47$, $p < .001$, $r = .39$). The non-significant slopes for average (i.e., mean; $B = 0.01$, $SE = 0.56$, $z = 0.01$, $p =$

.993, r = .11), and high (i.e., one standard deviation above the mean; B = -0.91, SE = 0.96, z = -0.94, p = .347, r = -.21) intrinsic motivation were neutral and negative, respectively. As can be seen in Figure 5.3, we found the effect of ease on intentions to engage in proactive EGB went from positive to negative as intrinsic motivation became stronger.

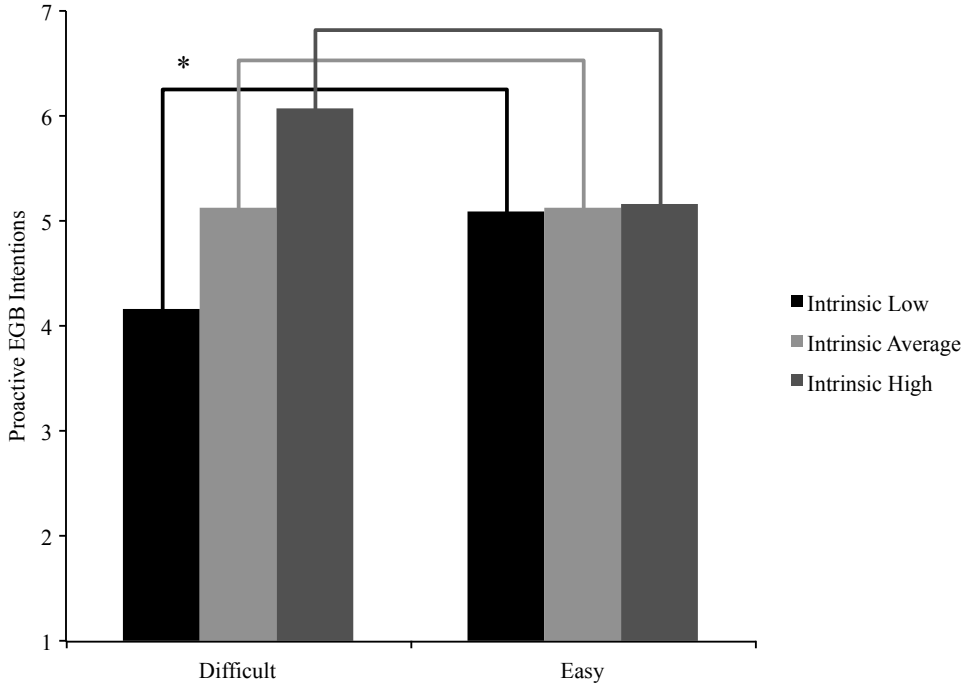

Figure 5.3. Interactive effect of intrinsic motivation and ease on intentions to engage in proactive EGBs.

Note. * p < .01.

Second, there was a significant interaction of ease and identified regulation on intentions to engage in proactive EGBs. Simple slopes of the relationship of ease and intentions were positive and significant for those with low (B = 1.71, SE = 0.19, z = 9.08, p < .001, r = .35), medium (B = 3.18, SE = 0.65, z = 4.90, p = < .001, r = .63), and high (B = 4.65, SE = 1.12, z = 4.15, p < .001, r = .78) identified regulation toward the environment. As can be seen in Figure 5.4, and contrary to Hypothesis 4b, we found the magnitude of the effect of ease on intentions became stronger as identified regulation increased in intensity. Individuals with higher identified regulation held higher intentions to engage in easy proactive EGBs and lower intentions to engage in difficult proactive EGBs.

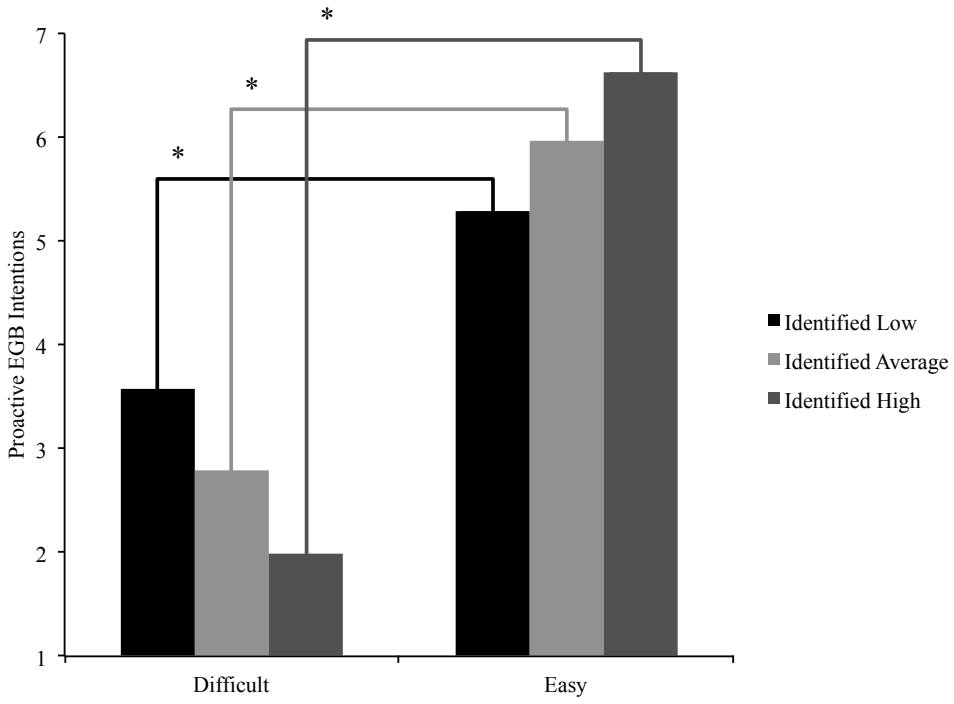

Figure 5.4. Interactive effect of identified regulation and ease on intentions to engage in proactive EGBs.

Note. * $p < .01$.

We also found a significant interaction of enjoyment and external regulation on intentions to engage in proactive EGBs, with the relationship of enjoyment and intentions being significant and positive for low ($B = 0.50$, $SE = 0.10$, $z = 4.99$, $p < .001$, $r = .24$), medium ($B = 0.94$, $SE = 0.29$, $z = 3.27$, $p < .01$, $r = .48$) and high ($B = 1.37$, $SE = 0.49$, $z = 2.78$, $p < .01$, $r = .65$) external regulation. As depicted in Figure 5.5, the magnitude of the effect of enjoyment on intentions to engage in proactive EGBs became larger as external regulation increased.

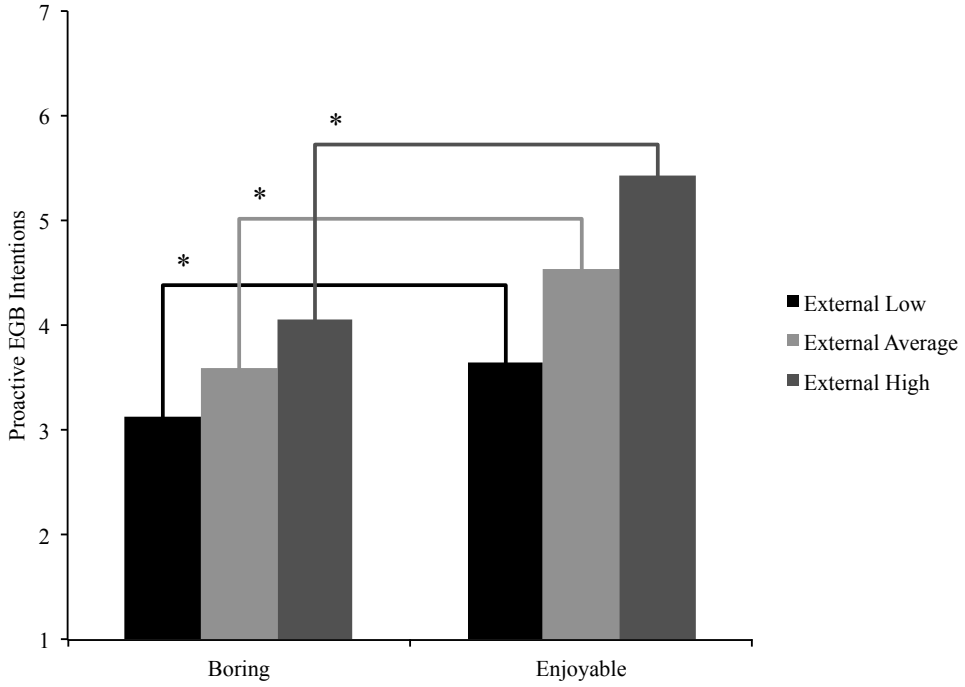

Figure 5.5. Interactive effect of external regulation and enjoyment on intentions to engage in proactive EGBs.

Note. * $p < .01$.

Discussion

In this study, we sought to determine whether behavioral features influence individuals' intentions to engage in typical office-based EGB, and in what ways motivation toward the environment might also play a role. Overall, our results supported the three main effect hypotheses, and one of the three interaction hypotheses, but we also found some effects that were counter to our hypotheses.

First, we found a significant difference in intentions to engage in task-related and proactive EGBs, in favor of the former. We interpret this as evidence of Bergeron's (2007) proposition that employees are more willing to allocate personal resources to behaviors that contribute to task performance (i.e., task-related EGB), than to behaviors that contribute instead to citizenship performance (i.e., proactive EGB). More generally, this finding supports recent arguments (see Bissing-Olson et al., 2013; Norton et al., 2014) for a distinction between these two types of EGB, and underlines the need to use conceptualizations and frameworks that consider contextual (i.e., workplace) factors.

Second, we found positive main effects for the features of ease and enjoyment on intentions to engage in both task-related and proactive EGBs. Specifically, participants demonstrated stronger intentions to engage in easy and enjoyable (rather than difficult and boring) behaviors in both task-related and proactive EGB scenarios. Consistent with Hobfoll (1989), it seems individuals consider

how much they will have to put in to (i.e., effort), and what they are likely to get out of (i.e., enjoyment) the environmental activity when determining behavioral intentions.

We failed to find support for our hypothesis regarding the effects of more controlled forms of motivation (external regulation, introjected regulation) on intentions to engage in task-related EGBs (Hypothesis 4a). A possible explanation for this lack of support is that participants did not associate the task-related EGBs with external motivators (e.g., rewards). It might then be premature to conclude that controlled forms of motivation toward the environment do not drive intentions for task-related EGBs. Alternatively, it is also probable that motivation towards work is the primary driver of intentions toward behaviors contributing to task performance (van Knippenberg, 2000), rather than a motivation to be environmentally friendly. Clearly more work is needed to investigate this effect.

Although others argue that individual difference factors are better predictors of citizenship performance than task performance (Motowidlo & Van Scotter, 1994), we also failed to support our hypothesis regarding the effect of more autonomous forms of motivation on intentions to engage in proactive EGBs (Hypothesis 4b). While we did find a significant main effect of identified regulation on intentions to engage in proactive EGBs, this was not in the direction we expected and was qualified by a significant interaction between identified regulation and ease. Looking to intrinsic motivation, we find that whether or not an individual derives pleasure from being environmentally friendly is not directly important. From this we conclude that, while some EGBs might be enjoyable relative to others, typical office-based EGBs in general might not be inherently intrinsically motivating.

We found several cross-level interactions. In support of Hypothesis 4b, we show on the one hand that the positive effect of ease on intentions for proactive EGBs was only present for those with low levels of intrinsic motivation. When intrinsic motivation was average or high, on the other hand, there was no difference in intentions between easy and difficult behaviors. This finding suggests that those with high intrinsic motivation might derive as much satisfaction from engaging in difficult behaviors as from engaging in easy behaviors. As an obstacle, the difficulty to perform a behavior seems to be less relevant as intrinsic motivation increases. In other words, those that derive satisfaction from being environmentally friendly are less deterred if a behavior happens to be difficult, and more willing to allocate the personal resources required to perform it.

Counter to our expectations, we found that the positive effect of ease on intentions to engage in proactive EGB was strongest among participants with high levels of identified regulation. In other words, these participants provided the weakest intentions to engage in difficult EGBs, and the strongest intentions to engage in easy EGBs. Slopes for those with medium and low levels of identified regulation were also positive and significant, thus this interaction does not qualify the

main effect of ease on intentions for proactive EGB. As an explanation of the interaction, we consider a study of health-related behavior where increases in autonomous regulation predicted increases in exercise frequency, but not intensity or duration (Duncan, Hall, Wilson, & Jenny, 2010). If this is so, it might be that individuals with strong identified regulation are more inclined to report intentions to engage in easy behaviors that require fewer personal resources, and to do so with greater frequency, than in difficult behaviors that are more taxing. Thus, it would appear that these individuals are strategic in allocating their personal resources across a wider range of activities, than concentrating them on a smaller number of more challenging activities.

Finally, we found that the positive effect of enjoyment on intentions to engage in proactive EGBs was strongest among participants with high levels of external regulation. From an SDT perspective, this finding suggests that enjoyable behaviors might counteract the undermining effect of controlled types of motivation on voluntary behavior (Ryan & Deci, 2002). This idea is in line with SDT, which considers the satisfaction derived from enjoyable behaviors as more motivating than the pressure exerted from external contingencies like punishments and rewards (Deci & Ryan, 2000; Vansteenkiste, Lens, & Deci, 2006).

Theoretical Contribution

Our research makes three main theoretical contributions to the literature. First, we show the nature of the behaviors themselves is a critical determinant of whether or not employees will intend to engage in them. That this effect is found to be consistent among intentions to engage in both task-related and proactive EGBs indicates that there are fundamental features of behavior that transcend the task-related/proactive dichotomy (Bissing-Olson et al., 2013; Motowidlo & Van Scotter, 1994). This would appear to provide an important theoretical extension insofar as research to date has tended to explain variations in EGB using psychological factors (Norton et al., 2015). In the present study, we hypothesized and found that, while such factors are certainly important, there is a need to consider the nature of the behaviors themselves (i.e., the behavioral features) to explain variations in performance.

In this way, our results suggest an alternative explanation to previous findings in this field. Specifically, Bissing-Olson and colleagues (2013) observed within-person variation in EGB and attributed it to variations in daily positive affect, but it might also be explained by the daily availability of easy or enjoyable EGBs. However, it is important to note that, while the present study investigated factors that contribute to intentions, Bissing-Olson et al. looked at factors that contribute to behavior. In this regard, Armitage (2008) found that affect contributes to intention stability, which Sheeran and Abraham (2003) argue mediates the intention-behavior relationship.

On a related note, research in this area often measures specific behaviors (e.g., Greaves, Zibarras, & Stride, 2013) or non-exclusive and context dependent categories of behavior (e.g., Ones

& Dilchert, 2012) that lack external validity, and limit generalizability. We focused instead on fundamental features of behaviors validated through pilot testing and the use of a fully crossed design. Subsequently, we believe our findings could also generalize to office-based behaviors across different jobs, organizations, industries, and sectors. Indeed, our findings might generalize outside the office, given the universality of ease and enjoyment as descriptors of behaviors. Our approach demonstrates a new way to conceptualize behavior that can reduce the gap between theory and practice. We encourage researchers in this field to consider using a similar policy-capturing approach, and investigate other features that might be important for intentions to engage in different types of behavior.

Second, we used an experimental vignette methodology to demonstrate the effect of behavioral features on intentions. While Norton, Parker and colleagues (2015) note the use of quasi-experimental research in this area, to the best of our knowledge the present study is among the few experimental studies into EGB (for an exception, see Holland, Aarts, & Langendam, 2006). The key benefit of using an experimental design is that it allows researchers to make causal inferences (Grant & Wall, 2009). This ability lends itself to the design of effective interventions by demonstrating the consequences of changes in one variable on another, rather than merely a correlation.

Third, we investigated within-person variation regarding intentions to engage in EGB with a multilevel approach. This approach allowed us to compare the relative contribution of within- and between- person factors toward behavioral intentions. Consequently, we suggest that the long-established role of environmental attitude on green behavior might not be as important for the workplace as it appears to be at home. We argue that the presence of unique contextual factors, such as task and role expectations, might have the effect of reducing the amount of variance that personal factors such as attitude can account for (Caspi & Moffitt, 2013; Manika, Wells, Gregory-Smith, & Gentry, 2015). These finding should encourage new theories on green behavior that shift focus away from personal factors to include more contextual factors; not only feature of EGBs, but also factors such as green organizational culture and climate (Norton, Zacher, & Ashkanasy, 2015).

When considering relevant person factors, we argue that motivations toward the environment are a more important antecedent of behavior than general environmental attitudes (Osbaldiston & Sheldon, 2003). Whereas an individual's attitude reflects their evaluation of, in this case, the environment, motivations provide insight into the extent to which a person is motivated to initiate and persist with activity (Neal & Griffin, 2006). In particular, more autonomous types of motivation (i.e., identified regulation, intrinsic motivation) appear to have particularly important roles with regard to the allocation of resources depending on the relative ease or difficulty of the behavior, which should be explored further in future research. Therefore we propose that, in general

as a between-person factor, motivation toward the environment is in a better position than environmental attitudes for explaining variations in EGB intention.

Limitations and Future Research

We note four limitations that should be taken into account when interpreting the findings we present and when designing future studies. First, although substituting intentions for behavior is common in both organizational and environmental research (e.g., Bamberg & Möser, 2007; Podsakoff, LePine, & LePine, 2007), the relationship between the two is far from perfect (Kormos & Gifford, 2014; Webb & Sheeran, 2006). We maintain nonetheless that intentions precede most, if not all, conscious behaviors, either in the moment or during the formation of habits (Ajzen, 1991; Holland et al., 2006; Triandis, 1977). Theoretically, intentions play an important role by representing the culmination of antecedents and subsequently an individual's potential for behavior (Ajzen, 1991). Methodologically, there is a distinction between experimental research that demonstrates what *can* occur, in which case intentions are appropriate, and field research that observes what *does* occur, in which case actual behavior is required (Mook, 1983). Thus, we follow the guidelines of organizational scholars who highlight the important role for experimental research to identify and isolate the essential features of employee behavior, including intention formation, in order to guide future research in the work setting (e.g., Locke, 1986). Future research using more objective measures of behavior might provide support for some of the relationships hypothesized but not supported in the present study. For example, researchers might find that motivation towards the environment is a stronger influence on habitual or automatic EGBs that do not necessarily require intention formation.

Second, our use of self-report data means we cannot reject the possibility that participants provided socially desirable responses. This is often the case for research regarding environmental behavior (Kormos & Gifford, 2014). However, if participants moderated their responses to present an overly favorable impression of their behavior in a work context (Zerbe & Paulhus, 1987), we would expect to see similarly positive intentions for task-related and proactive EGBs (or even higher ratings for proactive EGBs). In fact, and as shown in the findings regarding Hypotheses 1, participants on average reported significantly weaker intentions to engage in voluntary EGBs than in task-related EGBs. Nonetheless, future research would do well to validate our findings using more objective data. For example, researchers could observe the EGBs that employees engage in at work, and code the features of these behaviors in an observational study. This would enable the investigation of more habitual or non-conscious EGB.

A third limitation is with regard to our selection of task-related and proactive performance dimensions of EGB. In the job performance literature, there is a third dimension that refers to behavior that is harmful or counterproductive (Rotundo & Sackett, 2002). Scholars posit that this

dimension is not simply the negative pole of either task or citizenship performance, but that it is, to some extent, independent of these other dimensions (Spector & Fox, 2010). Applied to EGB, this could refer to behavior that damages either the environment or organizational initiatives to avoid such damage. We acknowledge that achieving sustainability involves both doing the right thing as well as not doing the wrong thing (Ones & Dilchert, 2012). Understanding behaviors that detract from organizational environmental sustainability is thus of critical importance. Developing a measure of harmful behavior based on counterproductive performance would be essential to research in this regard.

Finally, some of the subscales in the motivation measure we used in this research returned high internal reliability estimates, suggesting item redundancy (Boyle, 1991). Examination of items revealed, however, that they were appropriately differentiated. For example, the four items in the intrinsic motivation subscale represent four distinct facets of this motivation (experiencing positive feelings; enjoyment from contributing; enjoyment from anticipated benefits; enjoyment from learning and mastering new way to help).

Practical Implications and Conclusion

Our findings make it clear that it is important to identify and to promote EGBs that can be embedded in required work tasks that employees will see as easy and enjoyable in order to generate employee intention to engage with environmental behaviors. Environmental awareness (i.e., why employees should act green) campaigns, which enable employees to identify the importance of environmental sustainability, are more common than training courses or workshops targeting behavior specifically (i.e., how employees can act green; Zibarras & Coan, 2015). Instead, when designing awareness campaigns and other interventions, practitioners might benefit from targeting EGBs that are easy and enjoyable (and working on ways to make difficult and boring EGBs more appealing). Approaches that take behavioral features into account would have the added benefit of enhancing employees' declarative and procedural knowledge of EGBs (Abrahamse, Steg, Vlek, & Rothengatter, 2005). In a nutshell, our findings suggest motivational interventions might nonetheless be important by enhancing the effect of how easy or enjoyable an EGB is.

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Chapter 6: General Discussion

Consumers and regulators are increasingly interested in organisations' environmental performance. While technological responses, such as installing environmental management systems, can be effective, evidence shows that these rely on the behaviour of individual employees. Therefore, understanding why employees perform green behaviours in the workplace is vitally important to organisations looking to improve their environmental performance. Theoretical and empirical work in this area has relied on perspectives from social and environmental psychology, limiting the literature in three ways. Namely, researchers have (1) neglected the workplace context, (2) assumed EGB to be voluntary, and (3) assumed EGB to be stable over time. From these limitations, I identified three corresponding research questions: To what extent do employee perceptions of the organisational context influence intentions to engage in, and perform, EGB; Can a job-performance perspective distinguish between different types of EGB; To what extent do individuals vary in their intentions to engage in, and perform, EGB from moment-to-moment and day-to-day? I will discuss each of these questions in turn.

Across the systematic review and three studies that comprise this thesis, findings support a multi-level perspective on EGB that considers context and person factors. More specifically, the systematic review of 69 empirical studies in Chapter 2 (Systematic Review) revealed that predictors at multiple organisational levels drive EGB, types of which can be differentiated on the basis that they are required or voluntary to perform. Moreover, I identified employee green psychological climate perceptions as a mediator of the positive effect of perceived policy for environmental sustainability on self-report EGB (Chapter 3, Study 1), and a moderator of the relationship between behavioural intentions on one day and behaviours the next day (Chapter 4, Study 2). The findings in Chapter 3 (Study 1) revealed positive relationships between employee perceptions of what the organisation approves of (i.e., injunctive norms) with task-related EGB only, and between perceptions of what other employees did at work (i.e., descriptive norms) and proactive EGB only. The findings in Chapter 5 (Study 3) support this empirical distinction between task-related and proactive EGB by showing a significant difference in participants' intentions to engage in these types of EGB in favour of task-related behaviours. Chapter 5 (Study 3) also reported unique direct and interactive effects among behavioural features and types of motivation towards the environment for task-related and proactive EGB intentions. More specifically, I found that employees discriminate in their intentions to engage in EGB, preferring behaviours that are task-related, easy, and enjoyable to perform. As well as demonstrating that distinct types of EGB and intentions vary according to behavioural features, this body of work highlights that EGB intention is dynamic and subject to within-person variability. In Chapter 4 (Study 2), data collected over two working weeks showed that employees vary in their EGB from one day to the next. Thus, EGB is dynamic and

influenced by employees' internal psychological factors, their perceptions of contextual factors beyond their control, and interactions between these categories of variables.

Does the Organisational Context Influence Employee Green Behaviour? The first limitation identified in Chapter 1 was the neglect of the workplace context in extant research. This program of research indicates that employee perceptions of the organisational context (i.e., psychological climate) influences individual employee behaviour. Employees look for cues within the environment to guide behaviour (Schneider, 1975). In the workplace, these cues are found in the policies, procedures, and practices that stem from an organisation's beliefs and values (Schein, 1990). These provide normative information to employees as far as what the organisation approves of and what others typically do at work (Cialdini, Reno, & Kallgren, 1990; Lo, Peters, & Kok, 2012). Normative information influences behaviour by making salient the personal outcomes of engaging (or not engaging) in particular behaviours (Smith, Louis, Terry, Greenaway, Clarke, & Cheng, 2012). Thus, context influences EGB to the extent that employees' perceive the tangible artefacts of an organisation's beliefs and values towards environmental sustainability to constitute a consistent set of guidelines for normative conduct. A consistent message is important inasmuch as ambiguity can weaken its influence (James et al., 2008). For example, an employee of a company that encourages staff to be environmentally friendly, yet provides no relevant training or resources, might perceive that the company does not strongly value environmental sustainability, and therefore any consequences for failing to be green at work would probably be minor.

Context also has a less subjective effect on behaviour by identifying behaviours that are expected and/or required of employees. In my research, I found evidence to demonstrate this effect by investigating differences between EGBs that are to some extent required or expected versus those that are voluntary. In this regard, employees were more likely to engage in EGBs that contribute to required work tasks. Such behaviours reflect the workplace context in general by being linked to formal reward systems, and more specifically because what constitutes task-performance depends on the specific task, role, and organisation. Thus, this body of work concludes that employee engagement in EGB is influenced by the workplace context to the extent that certain behaviours are required or optional, and to the extent that employees' perceive the organisation to value environmental sustainability.

Are all EGBs Alike? The second limitation identified in Chapter 1 was an assumption that EGB was voluntary. In my research I consider that this is not necessarily the case by adopting perspectives from job performance to conceptualise EGB as either contributing to task performance (i.e., task-related EGB), or contributing to the organisational context (i.e., proactive EGB). This approach mirrors the literature on other types of workplace behaviour (e.g., safety behaviours; Neal & Griffin, 2006). In Chapter 2 (Systematic Review), I reviewed research findings based on whether

they focused on required (i.e., task-related) or voluntary (i.e., proactive) EGBs. This approach revealed distinctions between the two types of behaviour that are consistent with distinctions between task and citizenship performance. For example, conscientiousness (Kim et al., 2014) and affective organisational commitment (Lamm et al., 2013) predicted voluntary, but not required EGB, and participative goal setting predicted required, but not voluntary EGB (Lingard, Gilbert, & Graham, 2001).

The findings from Chapter 3 (Study 1) and Chapter 5 (Study 3) extend on earlier research and demonstrate that employees distinguish between EGBs that are expected of them or embedded in work tasks (i.e., task-related) and proactive EGBs that exceed expectations and do not contribute to completing required tasks. Furthermore, this distinction appears to have implications for employee intentions to engage in either type of EGB, and behaviour itself. In Chapter 3 (Study 1), data revealed that different types of social norms had unique effects on the two types of EGBs. Specifically, injunctive norms influence task-related EGB only, whilst descriptive norms influenced proactive EGB only. Thus, when it comes to doing what is expected of them as far as EGB, employees take their cues from what the organisation endorses. When it comes to exceeding organisational expectations and being proactive, however, employees are more receptive to what they see their colleagues doing. In Chapter 5 (Study 3) I demonstrated that participants had stronger intentions to engage in EGB when they were embedded in required work tasks than when they were proactive. Thus, employees appear to consider acting in an environmentally friendly way at work more when EGB contributes to task performance. In other words, the findings suggest employees are concerned with task performance first and foremost, and are open to EGBs to the extent that they facilitate the completion of required tasks.

Beyond the job performance-based distinction, findings suggest that EGBs can be distinguished by the extent to which they are perceived to be easy or difficult and enjoyable or boring to perform. These distinctions are meaningful in that variations regarding how easy or enjoyable an EGB is has a causal effect on behavioural intentions. Effectively, this research proposes that considering behaviours in their most basic, pragmatic form (e.g., as something that's required/optional, difficult/easy and boring/enjoyable to do) might be an effective way to explain engagement in EGB. A corollary of this is that details such as what the behaviour happens to be (e.g., recycling, limiting printing), which others have highlighted (see Ones & Dilchert, 2012b), could prove superfluous. Thus, this research concludes that there are several ways in which EGBs differ that have meaningful effects on intentions and behaviour, and that these distinctions are specific to the organisational context.

Is EGB stable or dynamic? The third limitation of research I identified in Chapter 1 was an assumption that EGB was stable. In Chapter 2 (Systematic Review), I note the paucity of studies at

the within-person level, including those exploring intraindividual variation in EGB. Although green behaviour may be stable over longer periods of time (e.g., months; Kaiser & Byrka, 2011; Milfont, 2012), the findings from this program of research contribute to the position that it appears to fluctuate over shorter periods of time. In line with Bissing-Olson and her colleagues (2013), data in Chapter 4 (Study 2) demonstrated that employees report engaging in EGB to varying extents from one day to the next. Extending upon this evidence, I investigated moment-to-moment variations in intentions to engage in EGB in Chapter 5 (Study 3). I found, using an experimental vignette methodology, that individuals' intentions to engage in EGB fluctuate depending on the features of the behaviour in question.

Bissing-Olson and her colleagues (2013) attribute within-person variation to changes in positive affect from one day to the next. The findings in Chapter 5 (Study 3), however, provided an alternative interpretation. Specifically, that EGB intention varies depending on the features of the behaviours, so whether or not an employee engages in EGB will depend on the attractiveness (i.e., easy, enjoyable) of EGBs available to an employee on a given day. In this regard, Schein (1991) proposed that behaviour is influenced by immediate events. Therefore, while an employee may encounter a defined range of EGBs as part of their role, they might not be presented with opportunities to perform each of these every day. Thus, an employee's level of EGB might be higher on Monday than Tuesday because her tasks on Monday provide the opportunity to engage in easier, more enjoyable EGB than her tasks on Tuesday.

This alternative explanation describes a novel and effective approach to EGB that focuses on universal and fundamental attributes, and complements the job performance perspective adopted throughout this thesis. From a practical perspective, determining whether a particular behaviour contributes to task or citizenship performance, is easy or difficult, and enjoyable or boring to perform might be an effective method to predict whether or not an employee will perform it. Importantly, this perspective can account for within-person variations, while being consistent with the aforementioned evidence of long-term stability, assuming that employees are exposed to the entire range of EGBs offered by their role and/or organisation over longer periods of time. Consistent with a perspective on EGB emphasising contextual factors, however, any stability could be due to employees having more opportunities over time to engage in all practical EGBs. This program of research concludes that an individual's intentions to engage in EGB are incidentally (i.e., from moment to moment) dynamic with regard to whether available EGBs are task-related or proactive, difficult or easy, and boring or enjoyable to perform. Moreover, an individual's level of EGB is temporally dynamic from one day to the next.

Summary of Unique Contributions

The body of work comprising this thesis is novel in several ways. First, I explore EGB from a position based in the concept of job performance. This is in contrast to most of the research I reviewed in Chapter 2 (Systematic Review), where green behaviour at work is regarded as an extension of private-sphere behaviour. The approach I advocate in this thesis has the advantage of considering the contextual factors that Caspi and Moffitt (2013) argue impede individuals' autonomy over their behaviour, in addition to the personal factors found in explanations of green behaviour from environmental psychology. While other researchers, such as Boiral and Paillé (2012) consider EGB as a type of citizenship performance, I take my lead from Bissing-Olson and her colleagues (2013) and also include EGBs that constitute task performance. This inclusion is significant in that it acknowledges the distinction claimed by Motowidlo and Van Scotter (1994) between task and citizenship performance, and captures behaviours that organisations require of their employees. Overall, this thesis extends upon the work by Bissing-Olson and colleagues to provide an empirical and theoretical foundation on which to build an understanding of EGB that acknowledges the primacy of the organisational context.

Second, this research provides a multilevel perspective on EGB. Hitt and colleagues (2007) argue that organisations are multilevel systems; meaning behaviour occurring within them is subject to contextual factors at the institutional, organisational, leader, and team levels. Figure 2.1 presents a conceptual framework for organising the context and person factors that drive EGB based in Lewin's (1951) theory that person and context factors work in concert to drive behaviour. In this theory, context factors have two roles. First, they moderate the effect of person factors on motivation states that precede behaviour (Smith-Crowe, Burke, & Landis, 2003). Thus, for example, clear organisational values towards sustainability might cause an employee with a strong environmental attitude to experience an elevated state of motivation to engage in EGB. Second, context factors can have a direct effect on motivational states. For example, strict environmental policies could engender a sense that employees have to engage in EGB, in such a way that their personal predisposition to EGB is irrelevant. Overall, this conceptual framework and the research supporting it provide a way of conceptualising how context and person factors at multiple levels influence individual-level EGB.

Stemming from the multilevel perspective, this program of research makes two further contributions with regard to the context and person factors. This thesis' third unique contribution is the use of green psychological climate perceptions to capture the influence of manifest objective (e.g., policies, procedures, practices) and socially constructed (e.g., injunctive and descriptive norms) contextual factors on EGB. By proposing a green organisational climate construct, and validating it at the individual level (i.e., psychological climate, Studies 1 and 2), this research brings

the EGB literature in line with research demonstrating the effectiveness of organisational climates to predict employee behaviour across a range of areas (e.g., safety; see Kuenzi & Schminke, 2009). To explain how psychological climate perceptions inform behaviour, I proposed in Chapter 3 (Study 1) that employee perceptions of what the organisation approves of and what is typically done by other employees constitute different types of norms. Scholars suggest that social norms influence behaviour by emphasising the social consequences of performing or not performing a particular type of behaviour (Cialdini, et al., 1990). This is similar to the motivational states depicted as mediating the effect of person and context factors on EGB in Chapter 2 (Systematic Review). In other words, feeling obligated to be green, or wanting to be green. The findings that descriptive and injunctive norms have unique influence for task-related and proactive EGBs respectively lend support to this proposal. Overall, this research demonstrates that a green organisational climate construct can be as useful in explaining individual level behaviour as it has done in other areas.

Fourth, the findings in Chapter 5 (Study 3) suggest that motivation towards the environment is an important antecedent of EGB. Although the multilevel framework in Chapter 2 (Systematic Review) presents motivation as a within-person variable, Vallerand (1997) proposed that motivation works at multiple levels. In Chapter 5 (Study 3) I measure motivation as a stable factor at the between-person level, rather than as a dynamic factor at the within-person level. Behavioural intentions could, however, be thought of as reflecting momentary motivation, in which case Study 3 measures motivation at both levels. Either perspective (i.e., measuring motivation at the between- or within-person level) is acceptable, and researchers (e.g., Reis, Sheldon, Gable, Roscoe, & Ryan, 2000) use types of motivation based on SDT at both levels to investigate performance at the corresponding level. Motivation operationalised at the between-person level offers an alternative to environmental attitude in explaining EGB. However, scholars regard motivation to be a more proximal predictor of behaviour, and more suitable for behavioural research (Osbaldiston & Sheldon, 2000). Moreover, motivations should be more responsive to contextual factors such as organisational norms and incentives than attitudes, which reflect instead an individual's evaluation of the natural environment and are not necessarily a prerequisite for green behaviour-change interventions (Young, et al., 2015). In this way, Figure 2.1 uses the extant EGB literature to propose that contextual factors can have a direct effect on motivation states. I provided support for this in Chapter 5 (Study 3) by showing that individuals show stronger intentions to engage in behaviours that are required or expected (i.e., task-related) by the organisation than those that are voluntary. I also demonstrate interactive effects of other contextual factors (i.e., how easy or enjoyable a behaviour is) and types of motivation on intentions to engage in proactive EGBs. This thesis suggests that motivation is at the very least a suitable alternative for attitude regarding EGB, and may have greater explanatory power for some employees.

Summary of Practical Implications

Employees' perceptions of their organisation's endorsement of environmental sustainability through policies, procedures, and practices are important. Effectively demonstrating a value towards environmental sustainability encourages employees to engage in behaviour that supports organisational initiatives (i.e., EGB). Importantly, Chapter 3 (Study 1) reveals that climate fully mediates the effect of perceived policy on EGB. This means it is important for organisations to communicate the value they place on environmental sustainability effectively (i.e., beyond establish environmental policies), with the intention that employees perceive a positive green psychological climate. The findings in Chapter 3 (Study 1) demonstrate that organisations can encourage engagement in task-related and proactive EGB in this way.

While task-related EGB may be particularly useful for organisations to meet regulatory benchmarks (Sarkis et al., 2010), researchers note that proactive EGB that exceeds expectations and exists outside of formal reward systems also makes an important contribution to organisational efforts toward sustainability (Daily et al., 2009). In this way, effectively demonstrating a value towards sustainability establishes contextual cues for behaviours that align with the organisations environmental strategy (Smith-Crowe et al., 2003). Overall, organisations should be conscious of the descriptive and injunctive norms that exist within the workplace, and aware of the implications these have for employee engagement in task-related and proactive EGBs. These norms can also influence employees' motivation towards the environment, as individuals tend to internalise the values of relevant social groups (Deci & Ryan, 2000).

The concept of green climate, whether it is at the employee level (i.e., psychological climate) or aggregated to the team or organisation level might have a role in evaluating the efficacy of environmental campaigns. As with other aspects of organisational performance, environmental performance is being quantified and measured. There are now indices of companies that focus on sustainability, such as the Dow Jones Sustainability Index and the FTSE4Good (Marcus et al., 2015). Consequently, it is in an organisation's interests to track its environmental performance. In this regard, green climate might have an important role as a metric for how effectively an organisation is communicating its environmental message and engaging with employees. Using climate in this way could also identify potential risks and avoid cases such as Volkswagen's emissions scandal described in Chapter 1. Dodsworth, Connelly, Ellet and Sharratt (2007) have proposed using climate in this way with regard to safety performance. Importantly, safety research demonstrates that the effect of safety climate on safety outcomes is mediated by behaviour (Neal & Griffin, 2006). Thus, green climate might be an important metric to evaluate the efficacy of internal environmental campaigns, identify risks, and predict future environmental performance.

With regard to behaviours themselves, it is important that organisations recognise EGB as a type of job performance, which can be integrated into existing performance appraisal systems (Renwick, Redman, & Maguire, 2013). In this regard, the current body of research demonstrates that EGBs can be distinguished on the basis of whether they constitute task or contextual performance. Similarly, the findings in Chapter 5 (Study 3) suggest that whether behaviours are easy or difficult and enjoyable or boring to perform can predict employee intentions to engage in EGB. Conceptualising behaviours along these lines allows for generalisability across roles, organisations, and industries. Overall, these findings indicate that employees are more likely to engage in behaviours that contribute to task performance (i.e., green ways to do required work), and easy and enjoyable to perform. Therefore, organisations looking to encourage EGB should identify behaviours that allow employees to satisfy task and role requirements in a more environmentally friendly way and are relatively easy and enjoyable to perform. Furthermore, rewarding and supporting employees when they engage in task-related EGBs can aid in establishing descriptive norms that provide cues for more proactive EGBs. Effectively encouraging employees to engage in EGBs is an important step in establishing an organisational culture regarding environmental sustainability (Norton, Zacher, & Ashkanasy, 2015).

When considering the person factors that drive EGB engagement, organisations should first consider motivation towards the environment as a more proximal predictor of behaviour than environmental attitude. Furthermore, employee motivation to actively engage with environmental sustainability should be more responsive than attitude to contextual factors at levels beyond the employee, but within the control of the organisation. Second, different *types* of motivation are important for different types of EGB. Organisation should consider the appropriate way to motivate employees relative to whether the behaviour contributes to task or context performance. This might involve linking controlled motivations (e.g., performance feedback, tangible rewards) for task performance with task-related EGBs, whilst encouraging employees to identify the importance of environmental sustainability (i.e., identified regulation) for proactive EGBs.

Leaders are also important providers of motivation for EGB (Ramus & Steger, 2000). Research shows that leaders' behaviour, including transformational environmental leadership behaviour, is an important influence on employees' own EGB (Ramus & Steger, 2000; Robertson & Barling, 2013). Therefore, organisations looking to create a green organisational culture should help those in leadership positions, and those in the leadership pipeline, to develop autonomous motivations towards the environment. Drawing on the findings in Chapter 5 (Study 3), more autonomous motivation stemming from a belief that being green is an important or enjoyable thing to do might be particularly important for using proactive leader green behaviours to set an example for employees. Identified regulation might also be important for task-related leader green behaviour,

for example, by encouraging leaders to provide feedback to employees on their environmental performance (Daamen, Staats, Wilke, & Engelen, 2001).

Limitations and future research

Across the body of research, a key limitation is the use of self-report measures, particularly with regard to EGB. Self-report measures are susceptible to common-method (Podsakoff, MacKenzie, & Podsakoff, 2012) and social desirability (Zerbe & Paulhus, 1987) biases that can artificially inflate relationships among variables and lead to erroneous conclusions. Despite the potential for biases, Kormos and Gifford (2014) note that recent research indicates fears that measures of green behaviour were particularly disadvantaged by self-report measures are exaggerated. This is important, as much of the research in this area uses self-report data; the majority of those reviewed in Chapter 2 (Systematic Review) fall into this category. Furthermore, Kormos and Gifford present meta-analytic data revealing a positive relationship between self-report and objective ratings of green behaviour (r = .46). Nonetheless, all three empirical studies within this program of research evaluated the potential for common-method bias within the data, and concluded that findings were unlikely to be compromised in this regard. Having said that, future research could extend on the present findings using more objective measures that include a range of data sources, including objective observation (e.g., energy and waste audits; Young et al., 2015) or supervisor ratings.

Along similar lines, although all three empirical studies used employee samples none of them could be described as in situ research. Using internet-based recruitment and data collection methods prevented direct observation and evaluation of the particular contextual factors and EGBs available to employees within a specific organisation. The samples recruited for Studies 1 and 3 comprised members of an online survey panel (Amazon Mechanical Turk; AMT). While samples of workers from diverse organisations, industries, and countries limits the types of data that can be collected (e.g., surveys), there are nonetheless several important advantages (Buhrmester, Kwang, & Gosling, 2011; Landers & Behrend, 2015). First, AMT workers provide high-quality data irrespective of the amount of compensation provided. Nonetheless, several measures were employed in Studies 1 and 3 to provide additional assurance of quality, such as embedding items in scales to evaluate participants' attentiveness, and asking participants whether they thought their data should be used without compromising remuneration. Second, the number of workers available globally allows researchers to collect substantial data samples over a short period of time. Third, research on the AMT workforce indicates that it is demographically diverse. This is particularly advantageous for the generalisability of research findings at the individual level (Mitchell, 2012). However, while using AMT workers is useful to establish constructs and guide theory, establishing the ecological validity of experimental findings requires field replication. Ideally, this would include using

samples drawn from individual organisations to allow for more fine-grained investigations of context factors (e.g., task demands, incentives) and EGBs using measures that prioritise internal validity and accuracy over external validity and generalisability.

In this research green organisational climate is operationalised in terms of employees' perceptions (i.e., psychological climate), which capture individuals' subjective experience and appraisal of organisation-level activity (i.e., policies, procedures, practices) regarding sustainability. James and colleagues (2008) note that climate can also be aggregated to the group or organisational level to measure shared perceptions. In addition to reflecting shared perceptions, aggregated forms of climate are more than the sum of their parts (i.e., psychological climate perceptions). In this regard, Schulte, Ostroff and Kinicki (2006) found aggregated climate to account for significant variance above and beyond psychological climate perceptions at the individual level with regard to job satisfaction. However, James (1982) notes that the process of aggregation can be problematic. Now that this research has provided preliminary empirical support for the green climate construct, future research should investigate the effect of aggregated climate perceptions on both individual and group-level EGB. Importantly, investigating how one employee's psychological climate perceptions (an outcome of organisational activity) contribute to group climate, and might subsequently have outcomes in terms of other employees' EGB, would be vital for building a model of how a green organisational culture could develop.

General conclusion

Environmental sustainability is becoming an entrenched part of organisational behaviour in the 21st century as the issue of climate change becomes more prominent. The effectiveness of organisational responses will hinge, to some extent, on behaviour at the individual level (i.e., EGB). Thus, EGB is likely to be a critical area for organisational research and practice in coming years. This program of research has presented a multilevel perspective on EGB that considers context and person factors. Specifically, the studies comprising this thesis highlight the importance of employees' perceptions that the organisation has a green climate in relation to EGB. Employees' green psychological climate perceptions capture organisational factors (i.e., policies, procedures, and practices) as well as social norms that inform employee behaviour. These norms are important for task-related and proactive EGBs depending on whether they reflect what the organisation approves of or what other employees typically do, respectively. Furthermore, EGBs that are less controlled by the context (i.e., proactive) are more susceptible to variations in environmental motivation. The nature of the behaviours available to employees also appears to be an important driver of employee intentions to engage in EGB. Finally, employee engagement in EGB is dynamic from day-to-day and moment-to-moment.

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Appendices

Appendix A

Employee green behaviours for Study 3 scenarios

Task-related EGBs	Ease Level	Enjoyment Level
Turn off my monitor when I'm not working at my computer	Easy	Boring
Turn my computer off or to sleep when I'm not working	Easy	Boring
Avoid printing work documents when not necessary	Easy	Boring
Print work documents double-sided	Easy	Boring
Use scrap paper for notes while working	Easy	Enjoyable
Edit work documents on screen instead of printing them out	Easy	Enjoyable
Use electronic filing for my work	Easy	Enjoyable
Use teleconferencing for meetings	Easy	Enjoyable
Print in draft mode to conserve ink	Difficult	Boring
Purchase and use recycled paper and printer cartridges	Difficult	Boring
Limit the amount of printing I do	Difficult	Boring
Dedicate a printer tray for printing drafts on scrap paper	Difficult	Boring
Use a laptop computer to do my work	Difficult	Enjoyable
Use videoconferencing for meetings	Difficult	Enjoyable
Use local suppliers/service providers instead of international	Difficult	Enjoyable
Organise bulk orders of supplies to save packaging and delivery	Difficult	Enjoyable

Proactive EGBs	Ease Level	Enjoyment Level
Avoid using air conditioning	Difficult	Boring
Perform energy audits	Difficult	Boring
Conduct an environmental risk assessment for the office	Difficult	Boring
Adapt clothing worn to work to avoid using heating or air conditioning	Difficult	Boring
Replace small bar fridges with an energy-efficient central refrigerator	Difficult	Boring
Label waste bin 'landfill' to raise awareness	Easy	Boring
Sign petitions supporting green initiatives	Easy	Boring
Install ecofriendly products in the kitchen/break area (e.g., reusable cutlery, ecofriendly dishwashing solution, etc.)	Easy	Boring
Participate in an environmental leadership program	Easy	Enjoyable

Start a green committee	Difficult	Enjoyable
Change the layout of your office to maximise natural light	Difficult	Enjoyable
Identify energy-saving opportunities	Easy	Enjoyable
Organise a collection tin to donate money to a not-for-profit environmental organisation	Easy	Enjoyable
Use a reusable water bottle	Easy	Enjoyable
Use indoor plants as natural air filters	Easy	Enjoyable
Participate in Earth Day activities (e.g., take public transport or walk to work, tree planting, etc.)	Difficult	Enjoyable