ABSTRACT

Title of Document: PRO-ENVIRONMENTAL BEHAVIORS IN THE WORKPLACE: IS CONCERN FOR THE ENVIRONMENT ENOUGH?

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Although there has been some research on corporate social responsibility and sustainable practices in organizations, individuals' pro-environmental behaviors (PEBs) in the workplace have not received much attention. A primary goal of this study was to gain a better understanding of the factors related to PEBs in the workplace and to further our understanding of the relationship between environmental attitudes and PEBs within the organizational context. Contextual factors, including psychological climate for PEBs, perceptions of leader support for PEBs, home climate for PEBs, and role overload, as well as individual differences, including individuals' norms regarding the environment and sense of guilt repair for failing to act in an environmentally responsible manner, were examined. Moreover, two types of PEBs were distinguished: PEBs easily engaged in and PEBs that require a cost to self. A commons dilemma perspective was applied to better understand the relative importance of contextual and individual difference variables in relation to the

different types of PEBs, and which factors are more likely to influence individuals' environmental attitude - PEBs relationship in the workplace. Results suggested that psychological perceptions of climate for PEBs, perceptions of home climate for PEBs, and personal norms regarding the environment were most strongly related to the extent to which individuals engaged in both types of PEBs in the workplace. Guilt repair was positively related to the extent to which individuals were willing to engage in PEBs at work despite incurring a cost. Finally, psychological perceptions of climate for PEBs and role overload adversely affected the relationship between individuals' environmental attitude and PEBs at work.

PRO-ENVIRONMENTAL BEHAVIORS IN THE WORKPLACE: IS CONCERN FOR THE ENVIRONMENT ENOUGH?

By

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Chapter 1: Introduction

Background

Concern for the environment gained prominence in the last decade after the United Nations (UN) General Assembly adopted the World Commission on Environment and Development's (WCED) report (also called the Brundtland Report) pertaining to sustainable development into its resolution (42/187) in 1987 (WCED, 1987). The resolution provided guidelines towards a broad framework for achieving sustainability and called for the active participation of all sectors of society in consulting and decision making regarding sustainable development (WCED, 1987).

According to the WCED Report, "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p. 43). One of the key notions contained within the broader concept of sustainability is acknowledgment of limitations imposed by the state of technology and by social organizations on the environment's ability to meet present and future needs (WCED, 1987). In essence, the UN called for the development and use of technology and resources, including social resources, towards achieving sustainable development.

As environmental policies were developed, and rules and regulations established, it was natural that organizations would focus on corporate sustainable development (Bansal, 2005). Organizational efforts included determining changes that needed to be made to current business practices to make their operations

sustainable, implementing these changes effectively given current constraints, and assessing the efficacy of these changes (e.g., Birkin, Polesie, & Lewis, 2009; Figge, Hahn, Schaltegger, & Wagner, 2002; Isaksson, Johansson, & Fischer, 2010).

Most research in sustainability in organizations has primarily examined the strategic, economic, and performance related implications of sustainable business practices and on stakeholder perceptions of these practices (Etzion, 2007) without much consideration of the role that individual employees might play through engaging in pro-environmental behaviors (PEBs) in the workplace. Research in environmental psychology, on the other hand, has focused on individuals' sustainable behaviors and PEBs in society at large but has not considered PEBs specific to the work context.

PEBs are considered to be behaviors that have minimal negative impact on the environment and may help support the environment (Steg & Vlek, 2009). Broadly, PEBs in society include behaviors such as recycling, conserving resources such as water and energy, environmentally friendly purchasing and commuting, organic food consumption, composting, and buying or upgrading to energy efficient appliances (Bamberg & Möser, 2007). Adapting this to the organizational context, PEBs in the workplace pertain to sustainability behaviors that may be performed within the organization. Examples include recycling, conserving water and energy, reducing waste by reusing materials, and green commuting.

The importance of studying PEBs in the workplace is evident given that independent of business practices, employees' PEBs may impact an organization's triple bottom line, i.e., organizational success based on a balance of ecological, social,

and economic criteria (Elkington, 1997). Not only are employees' PEBs ecologically and socially responsible actions, but they can also have a significant impact on the organization's economic bottom line by conserving resources and reducing waste. For example, when employees reuse items or turn off lights and equipment when not in use, these behaviors can cumulatively result in cost savings for the organization as a whole. Similarly, the organization's public reputation might be enhanced to the extent that employees engage in PEBs and help the organization become known as a pro-environmental organization. Gaining an understanding of the factors related to individuals' PEBs in the workplace could help organizations determine how to facilitate such behaviors among employees.

There is some acknowledgement in the organizational literature that to build an ecologically sustainable organization, environmentally responsible behaviors must be encouraged at the individual level (Starik & Rands, 1995). For example, research indicates that individuals in organizations may actively seek opportunities to engage in environmentally responsible behaviors and attempt to influence others to behave similarly (Andersson & Bateman, 2000). Additionally, supervisor support has been found to be related to the extent to which employees promote environmentally responsible behaviors in the workplace (Ramus & Steger, 2000). However, despite the rhetoric that it is important to study individual level environmental attitudes and behaviors in the workplace, research in organizational behavior has largely ignored individuals' PEBs at work.

Environmental psychology has extensively examined individuals' PEBs in society in general. Research in this area has been well summarized by two meta-

analyses (Bamberg and Möser, 2007; Hines, Hungerford, & Tomera 1986). Both studies indicate that attitudes towards the environment, knowledge of environmental issues, and a sense of responsibility towards the environment are strongly related to individuals' intentions to engage in PEBs, and actual PEBs (Bamberg and Möser, 2007; Hines et al., 1986). More proximal factors include moral and social norms, and guilt and attribution processes (Bamberg and Möser, 2007).

Research in environmental psychology has improved our general understanding of the relationship between individuals' environmental attitudes, their intentions to engage in PEBs, and actual PEBs, at home, in society, or in general (Bamberg and Möser, 2007; Hines et al., 1986). However, these results may not directly apply to the organizational context. PEBs relevant to an organization's sustainable practices are a specific subset of the broader spectrum of societal PEBs. The effort required, or motivations to perform this particular subset of PEBs (e.g., recycling, conserving water and energy, reusing supplies, and green commuting) might be different from that of general PEBs in society (e.g., organic food consumption, composting, buying or upgrading to energy efficient appliances, etc.). Hence, gaps still remain in our understanding of individuals' PEBs specific to the workplace.

Further, although the attitude-behavior relationship regarding PEBs is likely to be impacted by the social context within which individuals are embedded, this aspect has been largely neglected in environmental psychology research (Olli, Grendstad, & Wollebaek, 2001) and has not been studied in the organizational context. Contextual factors, i.e., situational constraints and opportunities, in the workplace affect

individuals' behaviors in many ways (Johns, 2006). Similarly, contextual factors specific to the workplace could influence individuals' PEBs at work. For example, organizational policies or practices that promote PEBs, such as incentives for green purchasing or commuting, a climate for PEBs, or leader support for PEBs, are likely to affect individuals' PEBs in the workplace.

Finally, PEBs can differ in nature such that some PEBs might require more time or effort or cause more inconvenience than others, which in turn might affect the extent to which individuals engage in particular PEBs. Past research suggests that the easier it is to perform PEBs, the more people are likely to engage in them (e.g., Best & Kneip, 2011; Diekmann, & Preisendörfer, 2003; Ewing, 2001; Guagnano, Stern, & Dietz, 1995; Schultz & Oskamp, 1996; Stern, 2000; Thøgersen, 2009). Further, situational constraints might be more relevant with respect to PEBs that are difficult to perform, and hence the relationship of these PEBs to individuals' environmental attitudes might be weaker compared to PEBs that are easier to perform (Steg & Vlek, 2009; Stern, 2000).

While studies in environmental psychology (e.g., Bamberg & Schmidt, 2003; Best & Kneip, 2011; Diekmann, & Preisendörfer, 2003; Guagnano et al., 1995; Hunecke, Blöbaum, Matthies, & Höger, 2001; Liebe, Preisendörfer, & Meyerhoff, 2011; Olli et al., 2001; Schultz & Oskamp, 1996) have examined various types of PEBs with varying levels of difficulty, ranging from recycling (easy) to willingness to donate time or money to an environmental cause (difficult), few have compared the relationships between environmental attitudes, situational constraints, and individual differences, with respect to the ease or difficulty of performing PEBs. Studying these

relationships can be helpful in understanding how to facilitate different types of PEBs within the organizational context and how to motivate employees to make an effort to be environmentally responsible in spite of the time or effort that might be involved in performing them.

To overcome these deficiencies, this study was designed to examine some factors related to PEBs in the workplace and to better understand the relationship between individuals' environmental attitudes and their PEBs at work. The primary objectives were to assess the relative importance of some contextual factors and individual differences in their relationship to PEBs in the workplace, and to better understand how these factors might affect the environmental attitude - PEBs relationship within the organizational context. It is expected that the study will further our understanding of what organizations can do to motivate employees to engage in PEBs in the workplace.

Pro-Environmental Behaviors in the Workplace

Before delineating the relationships among attitudes, contextual and individual variables, and PEBs, it is important to first define how PEBs in the workplace are conceptualized. For the purposes of this study, the definition of PEBs was based on an extensive review of the environmental psychology literature. The behaviors that comprise PEBs in society in general were evaluated, and from there, the PEBs that people could perform in the workplace were extracted. In this study, PEBs in the workplace are considered to be a specific subset of PEBs in society. PEBs in the workplace are broadly defined as environmentally responsible behaviors

that are relevant within the organizational context and can be engaged in while performing one's job. Such behaviors include recycling, conserving resources such as water and energy, reusing supplies to reduce waste, and green commuting.

Additionally, not all PEBs in society are easy to perform. Some require more time or effort, may be inconvenient, or require significant lifestyle changes (Dietz, Stern, & Guagnano, 1998; Stern, 2000). For example, it is fairly easy to recycle items because they are picked up at one's doorstep, or to conserve energy by switching off appliances. However, it is less convenient to drop off recyclable items at a recycling center, buy items in bulk to reduce packaging waste rather than in individually wrapped portions, or shop at a store a little further away because it follows environmentally friendly practices. The same is true for PEBs in the workplace. Recycling bins are easily accessible in most workplaces, making it fairly easy to recycle. On the other hand, it is more time consuming and/or inconvenient to carpool or take public transportation to work as opposed to driving, or to use reusable items that need maintenance rather than using disposable items.

In this study, the term PEBs at work is used to define behaviors that are environmentally friendly, but require relatively little time or effort to perform. The term PEBs at a cost to self denotes behaviors that are also environmentally friendly, but engaging in them requires a more substantial cost to oneself in terms of the time and effort required or inconvenience experienced. Although research has largely neglected to do so, it is important to differentiate between PEBs and PEBs at a cost to oneself, because the factors that influence the extent to which individuals engage in these two types of PEBs could differ (Dietz et al., 1998; Stern, 2000). Valid

conclusions regarding factors relevant to individuals' PEBs at work cannot be drawn unless a clear distinction is made between the two types of PEBs.

Model Overview

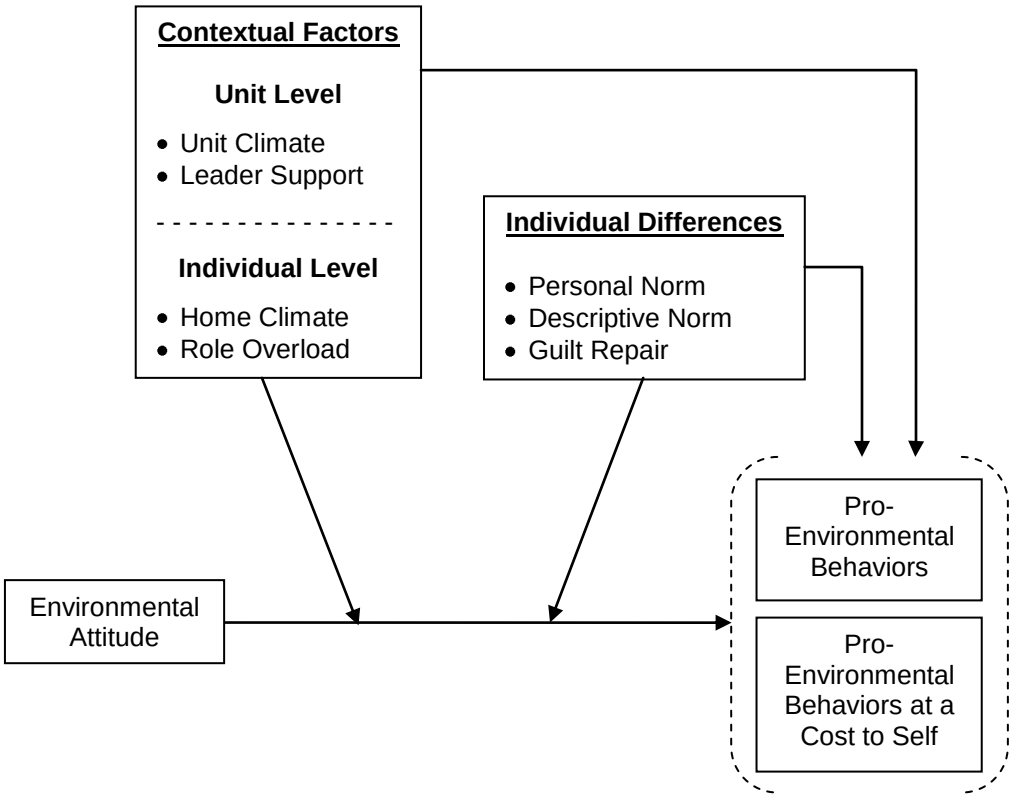

Figure 1. Pro-Environmental Behaviors in the Workplace: Conceptual Model

Figure 1 represents the key variables and relationships proposed in this study. As will be developed in later sections, based on the theory of planned behavior (Ajzen, 1985, 1991), individuals' attitudes about the environment are purported to be related to their PEBs. At the same time, the commons dilemma perspective (Hardin,

1968) implies that the attitude-behavior link for PEBs may not always be driven by attitudes as expected in the theory of planned behavior and that contextual and individual difference factors are likely to play an important role in driving PEBs.

The contextual variables proposed include unit climate for PEBs, leader support for PEBs, home climate for PEBs, and role overload. In the workplace, an important contextual factor known to be strongly related to individuals' attitudes and behaviors is climate (Carr, Schmidt, Ford, & DeShon, 2003; Parker et al., 2003). Unit climate is defined as shared perceptions of behaviors that are valued in the organization based on interpretations of the organization's policies, procedures, and practices (Ostroff, Kinicki, & Muhammed, 2012). Additionally, leader support and cues from leaders have also been shown to impact employees' behaviors at work (e.g., Amabile, Schatzel, Moneta, & Kramer, 2004; Chen, Kirkman, Kanfer, Allen, & Rosen, 2007; Chen, Sharma, Edinger, Shapiro, & Jiing-Lih, 2011; Gao, Janssen, & Shi, 2011; Kirkman, Chen, Farh, Chen, & Lowe, 2009). Hence, shared perceptions of climate for PEBs and leader support for PEBs within units (i.e., departments) are expected to be positively related to individuals' PEBs and PEBs at a cost to self at work and to strengthen the relationship between their environmental attitudes and both types of PEBs in the workplace.

Further, individuals' perceptions of climate based on cues they may encounter in their day-to-day lives outside of the workplace can affect related outcomes within the workplace (McKay & Avery, 2006). Additionally, many PEBs are a consequence of personal habit or household routine (Stern, 2000), and may spill over to the workplace. Hence, a climate for PEBs in the home is an important contextual factor

that is expected to be positively related to individuals' PEBs and PEBs at a cost to self at work and to strengthen the relationship between their environmental attitudes and both types of PEBs in the workplace.

Another important contextual factor that warrants attention is role overload. If individuals feel overwhelmed by their workload, they are likely to primarily focus on accomplishing their work-related goals rather than on tasks or behaviors that are not mandatory such as PEBs. Lack of attentiveness towards PEBs might result in a failure to perform the behaviors (Amel, Manning, & Scott, 2009). Therefore, it is expected that individuals' perceived role overload will be negatively related to their PEB outcomes at work and will negatively impact the relationship between their environmental attitudes and PEBs and PEBs at a cost to self at work.

The individual differences proposed include personal norms (individuals' feelings of personal moral obligation towards preserving the environment), descriptive norms (perceptions of the extent to which people in society generally behave in an environmentally responsible manner), and guilt repair (the tendency to take reparative action following failure in being environmentally responsible). The importance of individual differences, particularly those related to norms and feelings of moral obligation, has been highlighted through the value belief norm theory (Stern, 2000; Stern et al., 1999). Research in environmental psychology has demonstrated that individual differences such as personal and social norms and feelings of guilt are strongly related to environmental attitudes and intentions to engage in PEBs in society in general (Bamberg & Möser, 2007). Therefore, individuals' personal and descriptive social norms regarding PEBs and their propensity for guilt repair are

expected to be positively related to their PEBs and PEBs at a cost to self at work and to strengthen the relationship between their environmental attitudes and the two types of PEBs.

Finally, PEBs are distinguished based on how easy or difficult it is to perform the behaviors. PEBs at work are environmentally responsible behaviors that are easy to perform such as recycling or conserving energy by switching off appliances, whereas PEB's at a cost to self include behaviors like switching to environmentally friendly products or maintaining energy saving thermostat settings despite the inconvenience. Although individuals' environmental attitudes are expected to be positively related to both types of PEBs in the workplace, because it is generally easier to engage in PEBs that do not require much time or effort or do not cause much inconvenience (Dietz et al., 1998; Stern, 2000), it is expected that individuals' environmental attitudes will be more strongly related to their PEBs than to their PEBs at a cost to self in the workplace.

Further, it is also proposed that contextual factors and individual differences differentially impact individuals' PEBs and PEBs at a cost to self in the workplace. Research in environmental psychology suggests that when individuals internalize motivations for PEBs in society in general, they are more likely to engage in such behaviors (e.g., Osbaldiston & Sheldon, 2002, 2003; Pelletier, Baxter, & Huta, 2011; Tabernero & Hernández, 2011). However, research has not yet established whether individuals would do so at a cost to themselves. Self-determination theory of motivation (Ryan & Deci, 2000, 2006) suggests this is likely. The individual differences examined in this study (personal norms, descriptive social norms, and

guilt repair) are more internalized in an individual compared to contextual factors (unit climate for PEBs, leader support for PEBs, home climate for PEBs, and role overload), that originate from interactions with one's environment. Hence, these individual differences are expected to be more strongly related to PEBs at a cost to self than to PEBs at work while the opposite is expected to be true for the contextual factors examined in this study. The relationships proposed in the model and the rationales supporting the specific hypotheses are discussed in greater detail in later sections.

Past Research on Pro-Environmental Behaviors

Past research in the area of sustainability has been conducted primarily in two areas, environmental psychology and organizational behavior, each having a very different focus. While the focus of research in environmental psychology has been on sustainability through individuals' PEBs in society in general, the focus of research in organizational behavior has been organizational level sustainability practices. A summary of sustainability research in these two areas and an explanation of how this research has informed the current study are provided in this section. Additionally, gaps that remain in our understanding of PEBs in the workplace are highlighted.

Research on Pro-Environmental Behaviors in Environmental Psychology

Research in the area of environmental psychology has long focused on individuals' environmental attitudes and PEBs in society in general. The results of

these studies have been well-summarized by Hines et al. (1986) and Bamberg and Möser (2007). Their findings are detailed below.

Hines et al.'s (1986) meta-analysis included 315 empirical environmental behavior studies conducted between the mid 70s and mid 80s. Their results indicated that knowledge of environmental issues, knowledge of action strategies to be environmentally friendly (e.g., conserve resources, reduce waste, etc.), locus of control with regard to these actions, attitudes towards the environment, verbal commitment to PEBs, and sense of responsibility towards the environment are most strongly related to individuals' intentions to engage in PEBs, which in turn are related to their actual PEBs.

Expanding upon Hines et al.'s (1986) work, Bamberg and Möser (2007) conducted a meta-analysis, also based on studies in the area of environmental psychology, to gain a better understanding of the psychosocial determinants of individuals' PEBs in society in general. Their meta-analysis corroborated Hines et al.'s (1986) findings, and additionally determined that besides environmental attitude and perceived behavioral control, individuals' personal moral norms regarding the environment are an important predictor of their intentions to engage in PEBs. Their results also indicated that knowledge or awareness of environmental issues, albeit important, is an indirect determinant of PEB intention. Rather, moral and social norms, and guilt and attribution processes related to the environment are more proximal determinants of individuals' intentions to engage in PEBs in society in general.

In sum, research in environmental psychology highlights the importance of individuals' attitudes towards the environment as well as other individual differences such as their perceptions of social norms and feelings of guilt with regard to their PEBs in society. Attitudes and individual differences are also likely to be important for engaging in PEBs in the workplace although the extent to which the findings regarding PEBs in society generalize to a more specific work context is largely unknown. Further, the findings from environmental psychology research do not speak to the issue of whether the organizational context might impact these variables and their relationships to PEBs in the workplace.

Research on Sustainability in Organizations

The preponderance of research on environmental sustainability in organizations has focused on understanding the motivations for and effectiveness of adopting organizational level business practices that have an impact on the environment. Research indicates that some of the reasons why organizations are motivated to adopt environmentally friendly policies and practices are to abide by legislation, to be competitive, out of genuine ecological concerns, because of media or other social pressure, and when such practices are in alignment with the organization's strategic direction (e.g., Bansal, 2002, 2003; Bansal & Roth, 2000; Berry & Rondinelli, 1998; Darnall, Henriques, & Sadorsky, 2010; González-Benito & González-Benito, 2005).

With regard to the effectiveness of adopting environmentally friendly practices, research results are somewhat mixed. The triple bottom line (ecological, social, and economic) impact of adopting environmentally friendly practices is not

clear (Bansal, 2005). There are two primary reasons for this. First, there are various conceptualizations of organizational effectiveness criteria in the area of sustainability, which makes it difficult to delineate the impact of sustainable practices on business performance (Bansal, 2005). Second, assessment of corporate sustainability practices is a complex issue because of the multitude of stakeholders that can drive corporate success (Etzion 2007; Hahn, Figge, Pinkse, & Preuss, 2010; Kassinis & Vafeas, 2006).

To overcome these deficiencies, some researchers have advocated a more comprehensive view of corporate sustainable development that transcends beyond environmental issues and pertains to general principles of sustainable development (Bansal, 2002; Figge et al., 2002; Hahn & Figge, 2011). Research in the assessment of organizational sustainability performance is ongoing, and to date, no clear answer has emerged with regard to this issue in the literature (Marcus & Fremeth, 2009). However, there seems to be consensus that the principles of sustainable development have to permeate business practices, better measures of sustainable development need to be developed, and all stakeholders have to be involved in the initiative (Bansal, 2002; Birkin et al., 2009; Perrini, Russo, Tencati, & Vurro, 2011).

One factor in accomplishing sustainability goals is the role of employees in performing environmentally responsible behaviors while at work (Starik & Rands, 1995). With the exception of studies indicating that some employees seek out opportunities to engage in PEBs at work (Andersson & Bateman, 2000) and that supervisory support encourages some PEBs (Ramus & Steger, 2000), the role of

individuals' attitudes, beliefs, and the organizational context in prompting PEBs in the workplace is largely unknown.

Theoretical Foundations of Pro-Environmental Behaviors

The theoretical frameworks most commonly used in the study of individual PEBs in society are the theory of planned behavior (Ajzen, 1985, 1991), value belief norm theory (Stern, 2000; Stern, Dietz, Abel, Guagnano, & Kalof, 1999), and to some extent, norm activation theory (Schwartz, 1977; Schwartz & Howard, 1981) which is a precursor to value belief norm theory. These theories have provided a good initial understanding of individuals' PEBs in society and some of its important correlates, particularly in drawing our attention to some important psychological predictors of individuals' PEBs in society, such as knowledge, attitudes, motivations, and values (Ones & Dilchert, 2012).

Below, each of the existing theories underlying the study of individuals' PEBs in society is briefly discussed, focusing on their contributions to the understanding of PEBs. Then, these perspectives are integrated to derive the theoretical framework used in this study.

Theory of Planned Behavior

The theory of planned behavior (Ajzen, 1985, 1991) is a general theory of human behavior linking individuals' attitudes to their behaviors. Specifically, the theory posits that attitudes are related to behaviors via behavioral intention (Ajzen, 1985, 1991). Additionally, the theory acknowledges that the link between individuals'

attitudes and behaviors might be affected by various contextual factors and individual differences (Ajzen, 2001).

The theory of planned behavior (Azjen, 1985, 1991) has been successfully employed to explain individuals' behaviors in various domains (Armitage & Conner, 2001). In the area of PEBs, this theory has been used to explain the relationship between individuals' attitudes about the environment and engaging in PEBs in society in general, showing that attitudes account for significant variance in PEBs (e.g., de Groot & Steg, 2007; Fielding, McDonald, & Louis, 2008). However, one of the key shortcomings of the theory of planned behavior is that behaviors are viewed as being motivated by rational self-interest and individuals' sense of morality is ignored (Conner & Armitage, 1998; Manstead, 2000).

This is problematic particularly when it comes to predicting individuals' PEBs because concern for the environment involves a moral element, i.e., individuals' personal moral norms, or feelings of moral obligation towards the environment (Thøgersen, 2006). When contemplating whether to engage in PEBs, individuals are likely to consider the impact of their behaviors on the environment, which involves a moral component in addition to rational self-interest. For understanding behaviors in general, there is abundant empirical evidence that individuals' personal moral norms are predictive of behavioral intent and behaviors above and beyond attitudes and individual difference factors considered in the theory of planned behavior (e.g., Conner & Armitage, 1998; Parker, Manstead, & Stradling, 1995; Rivis, Sheeran, & Armitage, 2009), and for PEBs in particular (Bamberg & Möser, 2007).

Norm activation theory (Schwartz, 1977; Schwartz & Howard, 1981) and value belief norm theory (Stern, 2000; Stern, Dietz, Abel, Guagnano, & Kalof, 1999) incorporate individuals' personal moral norms regarding the intended behavior, a key factor that is particularly relevant in the environmental context.

Norm Activation Theory

Schwartz and his colleagues (Schwartz, 1977; Schwartz & Howard, 1981) proposed the norm activation theory to understand individuals' prosocial behaviors. According to norm activation theory, individuals' prosocial behaviors are driven by their personal norms, i.e., feelings of moral obligation to perform certain behaviors. However, for norms to drive behaviors, they have to first be activated.

Norm activation theory (Schwartz, 1977; Schwartz & Howard, 1981) posits that norms are activated by problem awareness (the extent to which one is aware that the valued object is danger of being negatively affected in some manner), awareness of consequences (the extent to which one is aware of the adverse consequences to the valued object of not performing a certain behavior), ascription of responsibility (feeling personally responsible for performing the behavior that will help alleviate the adverse consequences to the valued object), efficacy beliefs (belief that the behavior will mitigate the adverse consequences to the valued object), and ability beliefs (belief in one's own ability to perform the behavior necessary to alleviate the adverse consequences to the valued object).

Research in environmental psychology has explained individuals' PEBs by incorporating some elements of norm activation theory (Harland, Staats, & Wilke, 2007; Steg & de Groot, 2010). Although norm activation theory was originally

developed to explain prosocial behaviors in general, researchers in environmental psychology often adapted the theory to the specific PEBs they were examining (Steg & de Groot, 2010). The result is that norm activation theory has not been applied systematically to the study of PEBs. Therefore, it is difficult to assess the utility of this theory in explaining individuals' PEBs. Despite these issues, norm activation theory made an important contribution to the field of environmental psychology in that it brought to the forefront the importance of individuals' personal norms as an important antecedent of their PEBs in society in general (e.g., Bamberg & Schmidt, 2003; Harland et al., 2007; Hunecke et al., 2001; Klöckner & Blöbaum, 2010; Nordlund & Garvill, 2003). Further, while not explicitly incorporated, this theory implies that context may be important as a means to activate norms.

Value Belief Norm Theory

Stern and his colleagues (Stern, 2000; Stern et al., 1999) developed the value belief norm theory to specifically explain the attitude-behavior relationship in the environmental context. Value belief norm theory has its origins in norm activation theory (Schwartz, 1977; Schwartz & Howard, 1981). Akin to norm activation theory, according to the postulates of value belief norm theory, PEBs are considered to be motivated by prosocial values, and individuals' personal moral norms regarding the environment are considered to be an important predictor of their PEBs in society in general (Stern, 2000; Stern et al., 1999).

The value belief norm theory (Stern, 2000; Stern et al., 1999) proposed an indirect causal link between individuals' values and behaviors such that individuals' values lead to their attitudes, which activate their norms, which ultimately lead to

their behaviors. Specifically, in the context of individuals' PEBs, the theory posits that individuals' values, particularly altruism, lead to positive environmental attitudes, which activate their personal moral norms regarding the environment, which then lead them to engage in PEBs in society in general. Research in environmental psychology has found individuals' personal norms to be a strong predictor of their PEBs in society in general (e.g., Gardner & Abraham, 2010; Harland, Staats, & Wilke, 1999; Hernández, Martín, Ruiz, & Hidalgo, 2010; Hunecke et al., 2001; Thøgersen, & Ölander, 2006; Widegren, 1998). Despite this contribution, value belief norm theory has not necessarily provided a significant improvement in predicting individuals' PEBs in society over the theory of planned behavior (Azjen, 1985, 1991), according to which individuals' PEBs are considered an outcome of purely rational thought with attitudes a key driver of the behaviors (Bamberg & Schmidt, 2003; Kaiser, Hübner, & Bogner, 2005).

Summary

Despite the progress made in understanding individuals' PEBs in society in general, none of the three theories discussed thus far has emerged a clear winner in best explaining PEBs. Several studies have compared at least two or all three theories to explain individuals' PEBs such as commuting choice, willingness to pay for environmental goods, and conservation (e.g., Bamberg & Schmidt, 2003; Kaiser et al., 2005; Klöckner & Blöbaum, 2010; Liebe et al., 2011; Wall, Devine-Wright, & Mill, 2007), but the results are not consistent as to which theory best explains these behaviors. Taken together, the theories and prior work highlight that it is critical to consider both attitudes and norms simultaneously in understanding PEBs.

A key question that still requires attention is: when are certain PEBs predictable and why (Steg & Vlek, 2009)? According to Steg and Vlek (2009), there are two primary reasons for our failure to answer this question as yet. First, these theories did not pay adequate attention to contextual factors that might affect individuals' PEBs. Second, the theories generally assumed that people make choices based on logical reasoning when it comes to PEBs. There is a need for a more comprehensive theoretical framework that provides a more holistic understanding of individuals' PEBs (Steg & Vlek, 2009). Several researchers have called for an integrated approach whereby a moral component is added to the theory of planned behavior (Azjen, 1985, 1991) to explain individuals' PEBs (e.g., Bamberg & Möser, 2007; Bamberg & Schmidt, 2003; Kaiser, Ranney, Hartig, & Bowler, 1999; Kaiser et al., 2005).

Further, these theories fail to take into account the distinction between types of PEBs (low-cost PEBs versus high-cost to self PEBs). As will be discussed in more detail later, norm activation theory and value belief norm theory (Stern, 2000; Stern et al., 1999) seem to better explain low-cost PEBs, i.e., PEBs easy to perform, while the theory of planned behavior (Azjen, 1985, 1991) seems to be better suited to explain high-cost PEBs, i.e., PEBs that cost time or effort or have higher constraints associated with them (Steg & Vlek, 2009).

The effects of contextual factors on PEBs and how these factors might affect various PEBs vis-à-vis other motivational factors need to be examined in greater depth (Steg & Vlek, 2009). To date, little systematic research has been directed at understanding contextual influences on individuals' PEBs, so the nature and

magnitude of the contextual effects associated are either ambiguous or unexplored, which makes the person-environment interaction a rich area for future research in environmental sustainability (Ones & Dilchert, 2012). It remains to be seen whether contextual factors and individual differences are direct, proximal, or distal antecedents of PEBs, and whether they act as moderators, mediators, or suppressors of relationships (Ones & Dilchert, 2012). Incorporating a commons dilemma perspective (Hardin, 1968) with the propositions from the theory of planned behavior (Azjen, 1985, 1991), norm activation theory, and value belief norm theory (Stern, 2000; Stern et al., 1999) can help answer the question "when are certain PEBs predictable and why" (Steg & Vlek, 2009) within the organizational context.

Commons Dilemma

The commons dilemma perspective was originally applied by Hardin (1968) to explain the ability of the earth to sustain or support an infinitely growing population given its finite resources and to highlight the perils of "overharvesting," i.e., depletion of the earth's resources. Hardin (1968) explained the dilemma using the metaphor of a common pasture that is freely available to herdsmen to use for grazing their cattle.

The dilemma is that while the benefits of grazing cattle on the commons accrue to individual herdsmen who possess more cattle, collectively, grazing more cattle has a negative effect of overgrazing on the commons that is shared by all. Rational thought suggests that each herdsman would be driven by self-interest and seek to maximize his gain by grazing as many cattle as he could on the commons. However, if a large number of herdsmen behaved in this manner, they would increase

their herd limitlessly while harvesting from a finite resource, resulting in overharvestation, or depletion of resources, which would bring ruin to all.

The commons dilemma suggests that individuals' behaviors are not just a function of rational self-interest as conceptualized in the theory of planned behavior (Ajzen, 1985, 1991), nor are they completely a moral decision based on one's prosocial values as conceptualized in the value belief norm theory (Stern, 2000, Stern et al., 1999). Rather, behaviors are a function of both, i.e., rational self-interest and prosocial considerations are not mutually exclusive when it comes to making a decision to engage in a particular behavior. With respect to PEBs, a commons dilemma perspective includes the notion that the decision to engage in PEBs might be based on rational thought but also allows for a moral component, which takes into account the potential consequences of one's actions on the future state of the environment in making the choice.

The commons dilemma can be applied to PEBs in the organizational context. In the workplace, there are no direct costs associated with utilizing resources such as water, electricity, or office supplies because employees typically do not pay for them. From a commons dilemma perspective, individuals at work benefit from the earth's natural resources commonly available to all employees. Rational self-interest, consistent with the theory of planned behavior (Azjen, 1985, 1991), would suggest that each individual should maximize his or her use of the available resources, and pay little heed to the potential negative consequences of their actions for the collective. While such behavior has direct benefits for the individual, the cost associated with the individual's behavior, i.e., depletion of the earth's natural

resources, is distributed across all individuals utilizing the resource, i.e., the entire population of the earth. However, if a large number of individuals behave in this manner, i.e., overharvest the earth's resources, it will result in overuse and resource depletion, which, in the long run, will have an adverse impact on all.

As explained above, individuals do not have any direct costs associated with the use of resources at work. However, engaging in certain PEBs at work might have a personal cost associated with them. For example, PEBs such as recycling or switching appliances off are relatively easy to perform and require minimal effort. However, PEBs such as using reusable items that require maintenance rather than using disposable items, or carpooling, which could be more time consuming than driving, require individuals to spend time and/or effort. Depletion of time and effort resources is a cost that individuals will incur should they choose to engage in such PEBs at work. In other words, for some PEBs, individuals have to expend their own resources in order to conserve a common resource that is beneficial to all. The notion of rational self-interest from the theory of planned behavior (Azjen, 1985, 1991) would suggest that individuals would be unlikely to engage in such PEBs. However, the emphasis on moral obligation and personal norms from value belief norm theory (Stern, 2000; Stern et al., 1999) suggests that individuals with strong environmental norms should engage in such behaviors. This contradiction can be resolved through a commons dilemma framework and by considering the type of PEBs performed (easy to perform PEBs at work or PEBs that incur a cost to self).

In essence, a commons dilemma framework allows for the notion that individuals' PEBs may be driven by rational thought, in accordance with the theory of

planned behavior (Ajzen, 1985, 1991), as well as by prosocial motives, in accordance with value belief norm theory (Stern, 2000, Stern et al., 1999). Additionally, the framework highlights the fact that PEBs are essentially common goods or resource dilemmas. This has important implications for motivations to perform PEBs. The commons dilemma framework implies that individuals' PEBs are likely to be driven by the interplay of attitudinal, personal, contextual, and moral factors. Further, it allows for the fact that besides contextual factors in an individual's environment, characteristics of the PEBs themselves might affect the individual's motivations to perform them or affect the environmental attitude - PEBs relationship. Hence, this framework is well-suited to aid in developing a more comprehensive understanding of the factors related to individuals' PEBs in society in general and in the workplace.

The objective of the current study is to better understand the factors related to individuals' PEBs in the workplace. As can be seen in Figure 1, in addition to attitudes as a predictor of individuals' PEBs at work, the model for this study includes social contextual factors relevant to the workplace and individual differences that are known to be related to individuals' PEBs in society in general.

In sum, although it is long known in psychology that individuals' social environment generally affects their behavior (Lewin, 1951), this aspect has largely been ignored in environmental psychology research with respect to PEBs (Olli et al., 2001). The current model (see Figure 1) addresses this gap. Further, although the individual differences examined in this study are known to affect individuals' PEBs in society in general (Bamberg & Möser, 2007), they have not been studied within the organizational context. Including both contextual factors and individual differences in

the same model allows for examining their relative importance as predictors of individuals' PEBs in the workplace. As suggested by the commons dilemma perspective, both context and individual differences should be important factors and should be differentially important depending on the type of PEBs in which employees engage. In the following sections, the linkages proposed in the model are discussed in more detail as well as developing rationales for specific hypotheses.

Environmental Attitude and Pro-Environmental Behaviors

As discussed in the section pertaining to the theoretical foundations of PEBs, it has been established that a positive environmental attitude is related to individuals' PEBs in society in general (Bamberg & Möser, 2007; Hines et al., 1986). The primary theoretical framework employed to explain this relationship is the theory of planned behavior, a general theory of behavior, which posits that individuals' behavior is a function of their attitude (Ajzen, 1985, 1991). Empirical evidence corroborates the theory. In their meta-analyses of studies examining PEBs in society in general, both Hines et al. (1986) and Bamberg and Möser (2007) found a moderate correlation between individuals' environmental attitudes and their PEBs across studies.

Additionally, research and theory acknowledges that the strength of the attitude-behavior relationship might be modest because it may be influenced by a number of contextual and individual factors (Ajzen, 1985, 1991; Bamberg & Möser, 2007; Hines et al., 1986). Hence, a similar relationship is expected with regard to individuals' PEBs in the workplace, i.e., the more individuals are concerned about the

environment the more they are likely to engage in PEBs and PEBs at a cost to self at work, but other factors are needed to better understand PEBs in the workplace.

Hypothesis 1a. Environmental attitude will be positively related to PEBs at work.

Hypothesis 1b. Environmental attitude will be positively related to PEBs at a cost to self at work.

Contextual Factors and Pro-Environmental Behaviors

The commons dilemma perspective (Hardin, 1968) implies that the attitude-behavior link for PEBs may not always be driven by rational thought as expected in the theory of planned behavior (Azjen 1985, 1991). Contextual and individual difference factors are likely to play an important role. This sentiment has also been echoed by researchers utilizing the theory of planned behavior to study PEBs in society in general (e.g., Bamberg, 2003; Bamberg & Möser, 2007; Hines et al., 1986) The attitude-behavior link for PEBs is likely to be moderate because the relationship is influenced by a host of contextual and personal factors, including perceptions of behavioral control (beliefs regarding volition of performing the behavior), normative beliefs (perceptions regarding social norms related to the behavior), and situational constraints (Ajzen, 1985, 1991). In essence, the theory of planned behavior establishes the attitude-behavior relationship, but suggests that additional factors need to be examined in order to better understand what drives individuals' PEBs. Likewise, the commons dilemma perspective (Hardin, 1968) highlights the role of considering individual motivators as well as context. In this study, unit climate for PEBs, leader

support for PEBs, home climate for PEBs, and role overload are examined as contextual factors that affect individuals' PEBs in the workplace and as moderators of the environmental attitude - PEBs relationship in organizations.

Consideration of the organizational context is critical in order to fully understand the factors that influence various outcomes in the workplace (Johns, 2006). One important contextual factor operating in the workplace known to be related to individuals' attitudes and behaviors is climate (Carr et al., 2003; Parker et al., 2003), i.e., individuals' perceptions of behaviors that are valued in the organization based on their interpretation of the organization's policies, procedures, and practices (Ostroff et al., 2012).

In general, individuals have a need to reduce subjective uncertainty in their environment (Weick, 1995), i.e., to the extent possible, they need to feel confident regarding what to expect from their social environment, and how to behave or react to it. Individuals interpret organizational events and attach meaning to them based on their social interactions (Weick, 1995), which gives rise to their climate perceptions (Schneider & Reichers, 1983). Mead's (1934) theory of symbolic interaction is one basis for climate formation, i.e., individuals make an effort to understand their work environment primarily through social interactions in the workplace, which gives rise to their climate perceptions (Ashforth, 1985).

Additionally, it is important to distinguish between psychological climate and unit level climate, first proposed by James and Jones (1974), and widely accepted in the area of climate research. Psychological climate is individuals' perceptions of organizational policies, practices, and procedures, and indicates to employees what is

important, valued, and rewarded in their organization (Schneider, 1990). When individuals within an organizational unit, such as a department, share similar perceptions, unit level climate is said to emerge (James, 1982).

From a multilevel perspective, shared perceptions or unit level climate derives its meaning from consensus among lower level unit members, and does not exist at the unit level unless there is agreement at the lower level (James, 1982; Ostroff & Bowen, 2000). Similarity in climate perceptions among members belonging to an organizational unit implies shared assignment of meaning, hence individual scores can then be aggregated to represent the unit climate (James, 1982). The aggregate score is an indicator of unit members' shared perceptions of their work environment (James, Joyce, & Slocum, 1988; Schneider & Reichers, 1983).

Because of the nature of work processes in organizations in general, individuals tend to interact more with unit members and their immediate supervisor than with other organizational members, which facilitates the emergence of shared perceptions of organizational policies and practices within the unit (Ostroff et al., 2012). Indeed, prior research suggests that social interaction among unit members and leaders can play a significant role in climate strength, or within-group agreement of climate perceptions in units (e.g., González-Romá, Peiró, & Tordera, 2002; Klein, Conn, Smith, & Sorra, 2001; Naumann & Bennett, 2000; Zohar & Tenne-Gazit, 2008).

Unit level climate can influence individuals' attitudes and behaviors in the workplace (e.g., Gonzalez & Denisi, 2009; Hui & Rupp, 2005; Joshi, Hui, & Jackson, 2006; Kath, Swody, Magley, Bunk, & Gallus, 2009; Schulte, Ostroff, & Kinicki,

2006; Tangirala & Ramanujam, 2008; Wolfe-Morrison, Wheeler-Smith, & Kamdar, 2011; Zohar & Luria, 2005). Additionally, unit level climates, or "subclimates," such as at the departmental level may exist nested within an overarching organizational level climate and these subclimates can differentially impact unit members' work related attitudes and behaviors (Ostroff et al., 2012). For example, employees in certain units might adhere to organizational policies and practices more strictly than in others, or certain leaders might emphasize organizational policies and practices or reinforce behaviors consistent with organizational policies and practices more than others, making organizational policies and practices relatively salient and unambiguous in the unit and affecting related work outcomes.

Further, the concept of strategic climate is widely recognized in climate research, i.e., climate based on a specific strategic outcome or referent (Schneider & Reichers, 1983). Organizations may establish policies and procedures to advocate particular strategic objectives, which result in specific climate referents or foci (Reichers & Schneider, 1990). Employees interpret these policies and procedures, or take into consideration related organizational events and try to make sense of and attach meaning to the set of events (Schneider & Reichers, 1983) giving rise to strategic climate.

Empirical evidence corroborates the notion that strategic climates are predictive of specific outcomes, such as safety climate being related to safety behavior (Zohar & Luria, 2005) or service climate being related to customer service behavior (Gracia, Cifre, & Grau, 2010). One such strategic climate referent is PEBs. Organizations may enact certain policies and procedures to signal that PEBs are

encouraged and valued in the workplace. Employee perceptions of these policies and procedures may give rise to a climate for PEBs, which should impact engaging in PEBs at work. Because shared perceptions within individuals' departments may be facilitated by department members or the leader, department membership may have a differential impact on individuals' attitudes and behaviors in the workplace. Hence, in this study, the influence of unit level perceptions of climate for PEBs in the department and perceptions of leader support for PEBs were purported to be related to individuals' PEBs in the workplace.

Unit level climate for PEBs in the department is conceptualized as shared perceptions among department members regarding the extent to which PEBs are emphasized and valued at work. Unit level leader support for PEBs is conceptualized as shared perceptions among department members regarding the extent to which they believe their supervisor supports and encourages PEBs at work. A referent shift composition model (Chan, 1998) is used, with items referencing the unit, because the focus is on employees' perceptions that PEBs are encouraged and supported within their department and whether their department leader supports PEBs in the group in general.

In sum, unit level shared perceptions of the work environment, or climate perceptions, may affect various individual work outcomes. Social interaction with department members and cues from leaders are two important mechanisms by which climate formation is facilitated (Ashforth, 1985; Ostroff & Bowen, 2000; Ostroff et al., 2012). Hence, unit level climate for PEBs in the department and unit level leader support for PEBs were of particular interest in this study with respect to PEBs in the

workplace. Both were expected to facilitate individuals' PEBs and PEBs at a cost to self in the workplace.

Consistent with value belief norm theory (Stern, 2000; Stern et al., 1999), departments that have a climate for PEBs may enact a value for PEBs by actively promoting PEBs through policies and practices, and rewarding behaviors consistent with their environmental policies. It is likely that in an environment where PEBs are valued and actively promoted by department members, individuals will exert greater effort to act in an environmentally responsible manner. Hence, the following relationships were expected:

Hypothesis 2a. Unit climate for PEBs will be positively related to PEBs at work.

Hypothesis 2b. Unit climate for PEBs will be positively related to PEBs at a cost to self at work.

Similarly, a supervisor may enact a value for PEBs by actively promoting and encouraging PEBs through policies and practices, and rewarding behaviors consistent with these environmental policies. Prior work has indicated that leader support and cues from leaders influence employees' behaviors at work (e.g., Amabile, et al., 2004; Chen, et al., 2011; Gao et al., 2011; Kirkman et al., 2009). It is likely that in an environment where PEBs are valued and actively promoted by a supervisor, individuals will make a greater effort to act in an environmentally responsible manner. Hence, the following relationships were expected:

Hypothesis 3a. Leader support for PEBs will be positively related to PEBs at work.

Hypothesis 3b. Leader support for PEBs will be positively related to PEBs at a cost to self at work.

Individuals' PEBs in the workplace might be influenced not only by climate perceptions regarding PEBs within the organization, but also by climate perceptions regarding PEBs external to the organization. There is theoretical reason and empirical evidence to believe that events and cues that individuals experience in their day-to-day lives outside the organization can impact their attitudes, behaviors, and outcomes within the workplace. For example, individuals' perceptions of climate for diversity within the community influences job related outcomes such as their decision to accept a job offer (McKay & Avery, 2006), and experiences with diversity within the community affects perceptions of climate for diversity within the organization (McKay & Avery, 2006; Pugh, Dietz, Brief, & Wiley, 2008).

In the environmental context, a climate for PEBs external to the organization, such as a climate for PEBs in the home, may influence their PEBs in the workplace. Some PEBs are a consequence of personal habit or household routine (Stern, 2000). A climate for PEBs in the home could spill over to other contexts in an individual's life, such as the workplace. Therefore, it can be expected that climate for PEBs in the home will be positively related to individuals' PEBs and PEBs at a cost to self in the workplace.

Hypothesis 4a. Home climate for PEBs will be positively related to PEBs at work.

Hypothesis 4b. Home climate for PEBs will be positively related to PEBs at a cost to self at work.

In addition to climate and leader support for PEBs, another important contextual variable likely to influence PEBs in the workplace is role overload. Role overload is an individual's perception that their job demands exceed their available resources (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). Having job demand stressors such as role overload, or feeling overwhelmed at work, can have several negative consequences, including compromising of performance (Brown, Jones, & Leigh, 2005; Gilboa, Shirom, Fried, & Cooper, 2008).

Empirical evidence shows that role overload can deplete one's cognitive resources, which can compromise one's effectiveness in the workplace in general. For example, role overload has been related to several negative outcomes such as stress, burnout, work life conflict, and well- being (Eby, Casper, Lockwood, Bordeaux, & Brinley, 2005; Michel, Kotrba, Mitchelson, Clark, & Baltes, 2011; Rafferty & Jimmieson, 2010; Vandenberghe, Panaccio, Bentein, Mignonac, & Roussel, 2011; Zohar, 1997). Environmental stressors like role overload consume cognitive resources as individuals appraise the stressful event and employ coping strategies (e.g., Folkman & Lazarus, 1984; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986; Luria & Torjman, 2009). Further, role overload has also been directly linked to cognitive failures, such as unintended failure of memory, attention, or action in the workplace (e.g., failure to follow rules or procedures, or to address requests made by co-workers or customers, etc.), and failure to follow safety procedures (e.g., Hofmann & Stetzer, 1996; Wallace & Chen, 2005).

Additionally, when individuals feel overwhelmed by their workload, their cognitive resources are more likely to be directed towards accomplishing their job

related goals through a task focus (Brown, Westbrook, Challagalla, 2005), and towards coping with the stressful event in general. In essence, the more individuals experience role overload, the less they may be mindful of and hence less likely to engage in non-essential tasks or behaviors such as PEBs, which although might be encouraged, are not mandatory in the workplace. PEBs are not likely to be salient in individuals' minds if they are preoccupied with coping with their job demands, which might result in failure to engage in such behaviors. Hence, the following relationships were expected:

Hypothesis 5a. Role overload will be negatively related to PEBs at work.

Hypothesis 5b. Role overload will be negatively related to PEBs at a cost to self at work.

Context not only affects behavior directly, but can also moderate the relationship between variables (Johns, 2006). Hence, in addition to directly affecting individuals' PEBs at work, climate perceptions regarding PEBs in the department and at home, perceptions of leader support for PEBs, and role overload are likely to moderate the relationship between environmental attitude and PEBs in the workplace.

Individuals' behaviors tend to be generally consistent with their attitudes (Ajzen, 1985, 1991; Stern et al., 1999), suggesting that individuals who have a positive attitude towards the environment will generally engage in PEBs at work. Further, social groups can reduce individuals' cognitive dissonance (Festinger, 1957) and lead to attitude-behavior consistency by providing support in the form of consonant attitudes and behaviors exhibited by group members (Cooper, 2007;

Cooper & Stone, 2000). Similarly, a positive attitude coupled with a supportive social environment should strengthen individuals' attitude-behavior relationship with regard to PEBs in the workplace. Thus, the consistency between attitudes and climate perceptions and between attitudes and support from the leader should reduce cognitive dissonance (Festinger, 1957), and should reinforce one other to jointly motivate individuals to engage in PEBs at work.

Hypothesis 6a. Unit climate for PEBs will strengthen the positive relationship between environmental attitude and PEBs at work.

Hypothesis 6b. Unit climate for PEBs will strengthen the positive relationship between environmental attitude and PEBs at a cost to self at work.

Hypothesis 7a. Leader support for PEBs will strengthen the positive relationship between environmental attitude and PEBs at work.

Hypothesis 7b. Leader support for PEBs will strengthen the positive relationship between environmental attitude and PEBs at a cost to self at work.

Hypothesis 8a. Home climate for PEBs will strengthen the positive relationship between environmental attitude and PEBs at work.

Hypothesis 8b. Home climate for PEBs will strengthen the positive relationship between environmental attitude and PEBs at a cost to self at work.

Individuals' feeling of role overload may also moderate the relationship between their environmental attitudes and PEBs at work. Because behaviors tend to

be generally consistent with attitudes (Ajzen, 1985, 1991; Stern et al., 1999), if individuals have a positive attitude towards the environment, they are likely to generally engage in PEBs at work. However, if individuals experience a high level of role overload at work, they might focus their attention on their job, i.e., tasks and in-role behaviors, and try to cope with their job demands and stresses.

Moreover, mindfulness, which refers to alertness to cues in the current contextual environment and consciousness of the present (Langer, 1989), has been found to moderate the relationship between intention and behavior (Chatzisarantis, & Hagger, 2007). Mindfulness clearly requires cognitive resources, and therefore, is likely to be negatively related to role overload. Additionally, specific to the environmental context, there is some research in the field of environmental psychology that relates mindfulness to PEBs in society in general (e.g., Amel et al., 2009). This suggests that when individuals are preoccupied at work, extra-role behaviors such as PEBs may not be as salient in their minds as their job related behaviors as they engage in their day-to-day activities in the workplace. Hence, role overload might result in a failure to engage in PEBs despite a positive environmental attitude.

Hypothesis 9a. Role overload will weaken the positive relationship between environmental attitude and PEBs at work.

Hypothesis 9b. Role overload will weaken the positive relationship between environmental attitude and PEBs at a cost to self at work.

Individual Differences and Pro-Environmental Behaviors

Research in environmental psychology has consistently shown that individuals' personal norms (i.e., a sense of moral obligation towards protecting the environment), descriptive social norms (i.e., perception of the extent to which people in general behave in an environmentally responsible manner), and feelings of guilt for not engaging in PEBs are related to intentions of engaging in PEBs in society in general (Bamberg & Möser, 2007). In this study, these individual differences were examined in relation to PEBs in the organizational context.

Personal norms regarding a certain behavior are an individual's sense of personal responsibility, or felt moral obligation, towards engaging in the behavior (Ajzen, 1991; Schwartz, 1977). Undoubtedly, there is a moral component associated with environmental issues and behaving in an environmentally responsible manner (Kals & Maes, 2002). Across studies in various contexts, personal norms have been found to be strongly related to behavioral intentions, particularly for behaviors with a moral dimension (Rivis et al., 2009).

The importance of personal norms can be understood from self-determination theory (Deci & Ryan, 2000). Self-determination theory of motivation posits that individuals' goal striving behaviors are regulated by their innate psychological needs of autonomy, competence, and relatedness (Deci & Ryan, 2000). The more the goal and regulatory processes underlying goal striving behaviors satisfy individuals' innate psychological needs, the more they are likely to be motivated towards pursuing and attaining their goals (Deci & Ryan, 2000).

Further, the theory posits that the type of motivation for a particular goal striving behavior depends on individuals' internalization of the behavior, which lies along a continuum and represents the extent to which they actively adopt, i.e., personally endorse, a social value or external regulation as their own (Deci & Ryan, 2000). The more individuals internalize a value or regulation, the more they consider the behavior to stem from their own volition or to be self-determined, rather than it being forced upon them or controlled (Deci & Ryan, 2000).

Self-determination theory is well-suited to study motivational processes in the workplace (Gagné & Deci, 2005). Consistent with the postulates of self-determination theory, studies have shown that managers' support of their employees' needs for autonomy is related to various employee attitudes and behaviors, including learning, performance, prosocial and citizenship behaviors, satisfaction, commitment, turnover intentions, and well-being (e.g., Baard, Deci, & Ryan, 2004; Deci, Connell, & Ryan, 1989; Grant & Berry, 2011; Greguras & Diefendorff, 2009; Liu & Fu, 2011; Liu, Zhang, Wang, & Lee, 2011; O'Reilly & Chatman, 1986; Vansteenkiste et al., 2007).

Similarly, in the environmental context, several studies have found a link between individuals' personal norms and PEBs in society in general. For example, personal norms have been related to general PEBs (e.g., Harland et al., 1999; Kaiser et al., 1999; Kaiser & Shimoda, 1999), and to specific behaviors such as conservation (e.g., Corral-Verdugo & Frías-Armenta, 2006; Kaiser, 2006), recycling (e.g., Valle, Rebelo, Reis, & Menezes, 2005), littering (e.g., Kallgren, Reno, & Cialdini, 2000), green commuting (e.g., Bamberg, Hunecke, & Blöbaum, 2007; Eriksson, Garvill, & Nordlund, 2006; Hunecke et al., 2001; Klöckner & Matthies, 2009; Nordlund &

Garvill, 2003), and green purchasing (e.g., Thøgersen & Ölander, 2006; Widegren, 1998).

In an environmental context, personal norms can be conceptualized as individuals' sense of moral obligation towards protecting the environment (Schwartz, 1977). Individuals who possess a personal norm regarding PEBs in general have internalized these behaviors to a great extent such that they personally endorse the value and importance of PEBs. Their sense of self is tied to being environmentally responsible to the extent that they consider it their moral responsibility to behave in an environmentally responsible manner, and would personally feel bad if they did not do so.

Individuals who possess a personal norm regarding PEBs have integrated the goal of being environmentally responsible with their sense of self and perceive their PEBs as autonomous rather than controlled. Hence, they are likely to be highly motivated to engage in PEBs (Deci, Eghrari, Patrick, & Leone, 1994; Deci & Ryan, 2000; Ryan & Deci, 2000).

Hypothesis 10a. Personal norms will be positively related to PEBs at work.

Hypothesis 10b. Personal norms will be positively related to PEBs at a cost to self at work.

Research in social psychology distinguishes between personal norms and social norms. Schwartz and his colleagues first made this distinction in relation to altruistic behaviors (Schwartz, 1973, 1977; Schwartz & Howard, 1981, 1982, 1984). While a personal norm is a feeling of moral obligation towards performing a certain

behavior, social norms are individuals' perceptions of behaviors that are valued and expected by society. Individuals act in accordance with their personal norms to be consistent with their internalized values. However, social norms are not internalized, i.e., individuals may not personally endorse these values. Rather, individuals comply with social norms because of societal expectations and rewards and punishments associated with the behavior (Schwartz, 1973, 1977; Schwartz & Howard, 1981, 1982, 1984).

Social norms have a substantial impact on a wide range of human behaviors (Cialdini & Trost, 1998). Similarly, the presence of social normative influences has been demonstrated with regard to individuals' PEBs in society in general across numerous studies (Bamberg & Möser, 2007). For example, individuals' social norms have been related to their conservation behavior (e.g., Göckeritz et al., 2010; Goldstein, Cialdini, & Griskevicius, 2008; Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007), recycling (e.g., Terry, Hogg, & White, 1999; White, Smith, Terry, Greenslade, & McKimmie, 2009), and littering (e.g., Cialdini, Reno, & Kallgren, 1990; Reno et al., 1993).

To understand how social norms influence behavior, a distinction needs to be made between injunctive and descriptive norms (Cialdini et al., 1990). Injunctive norms are individuals' perceptions of others' approval or disapproval of certain behaviors, whereas descriptive norms are individuals' perceptions of whether certain behaviors are typically performed by others (Cialdini et al., 1990). Although the two are likely to be related because people are likely to perform behaviors that meet with

others' approval, injunctive and descriptive norms are distinct constructs that influence behavior uniquely (Cialdini et al., 1990), perhaps because they influence behaviors via different psychological mechanisms (Cialdini 2003, 2007).

While injunctive norms are based on an evaluation of the social acceptability of behaviors, descriptive norms are based on information regarding the social prevalence of behaviors and do not require further evaluation (Cialdini 2003, 2007). For example, there is some empirical evidence that while the influence of injunctive norms on behavioral intentions depends on how persuasive they are, descriptive norms have a direct influence on behavioral intentions, indicating additional evaluation of the injunctive norm prior to making behavioral intention decisions (Cialdini, 2003). Research in environmental psychology suggests that descriptive social norms in particular have a powerful impact on individuals' PEBs in society in general, often more than persuasive messages that are informational in nature or that appeal to people to protect the environment (Cialdini, 2007; Nolan et al., 2008).

Additionally, because descriptive norms do not require much cognitive evaluation, they might be activated more easily than injunctive norms (Gilovich & Griffin, 2010). Norms do not influence behavior unless they are activated (Schwartz, 1977), or made focal (Cialdini et al., 1990), for instance, by cues from individuals' immediate environment (e.g., Joly, Stapel, & Lindenberg, 2008). Moreover, because injunctive norms are contingent upon others' approval or disapproval, motivation for behaviors based on such norms might be moderated by the public versus private nature of the behavior in question (Cialdini et al., 1990; Kallgren et al., 2000).

Because the objective of this study is to understand the extent to which individuals' social norms influence PEBs in the workplace regardless of the social acceptability and characteristics of the behaviors, descriptive, rather than injunctive norms are more appropriate. It can be expected that individuals' descriptive norms will be positively related to their PEBs and PEBs at a cost to self at work.

Hypothesis 11a. Descriptive norms will be positively related to PEBs at work.

Hypothesis 11b. Descriptive norms will be positively related to PEBs at a cost to self at work.

Finally, guilt has been shown to be a key individual difference linked to PEBs in society in general (Bamberg & Möser, 2007). Although research on the relationship between guilt and PEBs has been useful in advancing our understanding of some of the motivations behind individuals' PEBs, guilt repair, defined as the tendency to undertake reparative action following experience of guilt, could be a more powerful predictor of PEBs.

Guilt is an emotion that arises from a failure to follow one's moral standards, i.e., one's knowledge and personal endorsement of moral norms and conventions. Moral emotions such as guilt are evoked by self-reflection and self-evaluation following a transgression, and can act as a motivator for performing moral behaviors (Tangney, Stuewig, Mashek, 2007).

It should be noted that although guilt is elicited as a negative evaluation of a particular behavior, guilt proneness or the tendency to experience guilt, is an affective disposition (Tangney et al., 2007) and can therefore be considered an individual

difference. In other words, the experience of guilt following a transgression depends on the individual that committed the transgression rather than the nature of the transgression (Tangney et al., 2007). Further, because guilt is a negative behavior evaluation, it motivates individuals to take reparative action in the form of attempting to undo the negative consequences of their original behavior (Tangney et al., 2007). Given the distinction between guilt and guilt repair, individuals' tendency for guilt repair, rather than their feeling of guilt, following the transgression of not behaving in an environmentally responsible manner should be relevant for engaging in PEBs. Hence, it can be expected that individuals' extent of guilt repair will be positively related to their PEBs and PEBs at a cost to self at work.

Hypothesis 12a. Guilt repair will be positively related to PEBs at work.

Hypothesis 12b. Guilt repair will be positively related to PEBs at a cost to self at work.

In addition to being directly related to individuals' PEBs in the workplace, the individual differences of personal norms, descriptive norms, and guilt repair, are expected to moderate the relationship between environmental attitudes and PEBs in the workplace. Individuals who have a positive attitude towards the environment will generally engage in PEBs at work (Ajzen, 1985, 1991; Stern et al., 1999). When individuals' environmental attitudes are reinforced by their personal norms, perceptions of societal norms regarding PEBs, or tendency towards guilt repair for not being environmentally responsible, they may be more motivated to engage in PEBs in the workplace.

Individuals possessing positive attitudes towards the environment may not necessarily have strong personal norms regarding protecting the environment. Environmental attitude is the general belief or view that environmental responsibility is important (Dunlap, Van Liere, Mertig, & Emmet Jones, 2000). However, this does not mean that the view is internalized and has to become part of one's personal norm system that guides one's behavior about morally responsible actions (Bamberg & Möser, 2007; Thogersen, 2006, 2009). Without adopting environmental values as part of one's personal norm system, the environmental attitude - PEBs relationship should be weak. The past research showing a moderate relationship between attitudes and behaviors (Bamberg & Möser, 2007) may be due to the failure to consider the importance of personal norms in the relationship. Norms, particularly when adopted as one's own are a key driver of PEBs (Thogersen, 2009), and would be key to enhancing the attitude-behavior relationship (Thøgersen & Ölander, 2006).

When individuals have a strong personal norm regarding environmental protection in addition to a positive attitude regarding the environment, the consistency between their attitudes and norms should reduce cognitive dissonance (Festinger, 1957) and reinforce each other to jointly motivate individuals to generally engage in PEBs. Hence, it can be expected that when individuals possess a positive attitude towards the environment and a personal norm regarding environmental protection, they will be strongly motivated to engage in PEBs in the workplace.

Hypothesis 13a. Personal norms will strengthen the positive relationship between environmental attitude and PEBs at work.

Hypothesis 13b. Personal norms will strengthen the positive relationship between environmental attitude and PEBs at a cost to self at work.

Similar to personal norms, when individuals have a strong descriptive norm regarding PEBs in addition to a positive attitude regarding the environment in general, the consistency between their attitudes and norms should reduce cognitive dissonance (Festinger, 1957). Additionally, as explained previously, social groups can reduce individuals' cognitive dissonance and lead to attitude-behavior consistency when group members' attitudes and behaviors are congruent with one's own (Cooper, 2007; Cooper & Stone, 2000).

That is, individuals with a positive environmental attitude believe that it is important to behave in an environmentally responsible manner (Dunlap et al., 2000). This attitude is likely to be strengthened or reinforced to the extent that individuals believe that environmentally responsible behaviors are valued and performed in society in general. Hence, when individuals possess a positive attitude towards the environment together with a strong descriptive norm regarding PEBs, they are likely to be more motivated to engage in PEBs in the workplace.

Hypothesis 14a. Descriptive norms will strengthen the positive relationship between environmental attitude and PEBs at work.

Hypothesis 14b. Descriptive norms will strengthen the positive relationship between environmental attitude and PEBs at a cost to self at work.

Finally, individuals' tendency for guilt repair may also moderate the relationship between their environmental attitudes and PEBs. When individuals have a positive attitude towards the environment, but fail to engage in PEBs, they will likely experience strong dissonance because of the incongruence between their attitudes and behaviors and will feel a need to reduce dissonance by changing the attitude or the behavior (Festinger, 1957). Guilt could be the driving force behind the need for reducing dissonance (Kenworthy, Miller, Collins, Read, & Earleywine, 2011). Hence, when a positive attitude is coupled with guilt repair, it should jointly lead to more engagement in PEBs. Therefore, it can be expected that guilt repair will enhance the environmental attitude - PEBs relationship in the workplace.

Hypothesis 15a. Guilt repair will strengthen the positive relationship between environmental attitude and PEBs at work.

Hypothesis 15b. Guilt repair will strengthen the positive relationship between environmental attitude and PEBs at a cost to self at work.

Two Forms of Pro-Environmental Behaviors

To this point, I have addressed the notion that a positive environmental attitude, contextual factors, and individual differences can impact individuals' PEBs in the workplace. Two forms of PEBs at work are distinguished: PEBs relatively easy to accomplish and PEBs that require a cost to oneself in terms of time, effort, or resources in order to perform them. Because the nature of these two forms of PEBs differ, it is likely that environmental attitude, contextual factors, and individual differences are differentially related to the two forms of PEBs. In what follows, I

incorporate a commons dilemma (Hardin, 1968) perspective to develop the proposition that environmental attitude is likely to be more strongly related to PEBs than to PEBs at a cost to self at work, and further that contextual factors will have a greater influence on PEBs while individual differences will be more critical for PEBs at a cost to self at work.

Some researchers have advocated the use of a commons dilemma framework to understand individuals' PEBs in society at large (e.g., Gardner & Stern, 2002; Osbaldiston & Sheldon, 2002; Van Vugt, 2002, 2009), and have applied this framework to the study of PEBs in the area of environmental psychology (e.g., Joireman, Posey, Truelove, & Parks, 2009; Kortenkamp & Moore, 2006; Samuelson, 1990; Thøgersen, 2008; Van Vugt, 2001; Van Vugt, Meertens, & Van Lange, 1995). However, it has not been consistently used to explain some contradictory results in past research by making a distinction between easy to perform PEBs and those that require a cost a self. Further, although the commons dilemma is also relevant in the organizational context, this framework has not been applied to explain individuals' PEBs specific to the workplace.

Studies in environmental psychology, such as the ones mentioned above, have been instrumental in establishing the importance of applying the commons dilemma in furthering our understanding of individuals' PEBs. However, the studies are primarily experimental and hypothetical in nature and focus on individuals' PEBs in society in general. Participants are usually presented with a social resource dilemma and are posed with a hypothetical choice between harvesting or conserving the earth's natural resources such as economic development vs. conserving a natural resource.

Individuals who have a positive environmental attitude are likely to be more environmentally responsible and conserve natural resources because it is the common resource from which everyone would ultimately benefit. If PEBs at work are easy to perform in that they do not cost individuals any personal resources, it is likely that individuals will act in accordance with their attitudes. However, if there is ambiguity regarding the size of the common resource or the extent to which others engage in conservation behaviors, which is true with respect to the earth's natural resources, the principles of the commons dilemma suggest that regardless of their environmental attitude, individuals' actions would be likely to stem to a greater extent from rational self-interest than from a sense of moral obligation to protect the common resource (as predicted by the theory of planned behavior). This tendency of individuals to weigh rational self-interest more than prosocial values or a sense of moral obligation when considering engaging in PEBs at work could be particularly true if individuals incurred a cost when engaging in such behaviors.

Indeed, studies have determined that environmental attitudes are most strongly related to PEBs in society in general when they involve minimal cost to the individual with respect to the required time and/ or effort (e.g., Best & Kneip, 2011; Diekmann, & Preisendörfer, 2003; Ewing, 2001; Guagnano et al.,1995; Schultz & Oskamp, 1996; Stern, 2000; Thøgersen, 2009). Further, from a commons dilemma perspective, Wade-Benzoni, Tenbrunsel, and Bazerman (1996) found that individuals' decisions to harvest from the common resource in a hypothetical scenario were influenced by their perceptions of fairness and were related to the amount of harvesting they expected from others who shared the common resource. Moreover, studies show that

under resource size certainty, people tend to base their harvesting decisions on equity rules, whereas under resource size uncertainty, people rely more on their own social value orientations and tend to overharvest, i.e., they act in self-interest (e.g., de Kwaadsteniet, van Dijk, Wit, & de Cremer, 2006; Kortenkamp & Moore, 2006).

Additionally, although PEBs that require individuals to utilize their own resources would prove to be beneficial to the organization or to society in the long term, in the short term, individuals would incur a personal cost when engaging in the behaviors. Hence, individuals might hold ambivalent attitudes towards such PEBs and might be less likely to engage in them at work despite generally having a positive environmental attitude. Ambivalence has been associated with weaker attitude-behavior relationships in the environmental context (e.g., Conner et al., 2002; Costarelli & Colloa, 2004; Ojala, 2008).

In sum, because it is easier to engage in PEBs that do not require much time or effort or do not cause much inconvenience (Stern, 2000), it can be expected that individuals' environmental attitudes will be more strongly related to their PEBs than to their PEBs at a cost to self at work.

Hypothesis 16. The relationship between environmental attitude and PEBs at work will be stronger than the relationship between environmental attitude and PEBs at a cost to self at work.

Building on the above and incorporating the self-determination theory of motivation (Deci & Ryan, 2000), the contextual factors and individual differences examined in this study were expected to differentially impact the environmental attitude - PEBs relationships across the two forms of PEBs at work. Both contextual

and person factors can affect regulatory processes with regard to goal striving (Deci & Ryan, 1987). Hence, self-determination theory is well-suited to study the differential impact of contextual factors and individual differences with regard to regulation of motivational processes related to PEBs in the workplace.

Congruent with the postulates of self-determination theory, across various studies it has been found that when individuals engage in behaviors due to internalized reasons such as valuing and understanding the importance of the goals, they are more autonomous, and have been found to be related to greater interest in and persistence of the behaviors, and to greater well-being (Deci & Ryan, 1987; Deci & Ryan, 2000), possibly because autonomy is an innate psychological need in human beings across cultures (Ryan & Deci, 2006). On the other hand, when individuals engage in behaviors because of external reasons such as rewards, fear of punishment, or compliance with rules, the behaviors are controlled by these external events such that they tend to persist only as long as these external reasons are present (Deci & Ryan, 1987; Deci & Ryan, 2000).

Additionally, self-determination theory posits that the more internalized regulatory processes of motivation involve the self (Deci & Ryan, 2000). Human beings strive to maintain a positive sense of self (Baumeister, 1998). Hence, it seems likely that the more individuals internalize their motivations to engage in PEBs in society in general, the more they will engage in such behaviors even at a cost to themselves. The commons dilemma perspective highlights a dilemma that individuals may face when deciding to engage in PEBs, namely to follow their self-interest by not performing high-cost PEBs, but in doing so, harm the greater good. The dilemma

can be resolved for individuals with more internalized motivations for PEBs as suggested by self-determination theory (Deci & Ryan, 2000), as those with internal motivations will be more likely to overcome rational self-interest and engage in PEBs at a cost to the self.

Research in environmental psychology has found that when individuals internalize their motivations for PEBs, they are more likely to engage in PEBs in society at large and the behaviors are more likely to be sustained over time (e.g., Osbaldiston & Sheldon, 2002, 2003; Pelletier, 2002; Pelletier et al., 2011; Tabernero & Hernández, 2011). While little research has examined whether individuals with internalized motivations for PEBs would engage in such behaviors a cost to themselves, some evidence supports this notion (e.g., Green-Demers, Pelletier, & Ménard, 1997; Thøgersen, 2009).

The individual differences examined in this study, personal norms, descriptive norms, and guilt repair, are more internalized regulatory factors compared to the contextual factors of unit climate for PEBs, leader support for PEBs, home climate for PEBs, and role overload with respect to motivations for engaging in PEBs at work. This suggests that the individual differences examined in this study are likely to be more important for engaging in PEBs at a cost to self at work than the contextual factors that were examined.

Individuals who possess a personal norm regarding PEBs should integrate the goal of being environmentally responsible with their sense of self and engage in integrated regulatory processes with respect to their motivation for PEBs at work even if it requires additional time and/ or effort on their part (Deci et al., 1994; Deci

& Ryan, 2000; Ryan & Deci, 2000). In addition, regardless of whether individuals personally value PEBs, they might engage in such behaviors in the workplace because of their descriptive norms for PEBs in society in general, i.e., their perceptions of the extent to which people generally engage in PEBs (Thøgersen, 2006). Self-determination theory proposes that individuals tend to internalize the values of the social groups they belong to because of their innate need for relatedness (Deci & Ryan, 2000; Ryan & Deci, 2000). If individuals believe that people generally engage in PEBs, they will engage in introjected regulatory processes with regard to their motivation for PEBs in general and in the workplace, i.e., they will derive a sense of self-worth and other-approval from engaging in PEBs and may feel bad if they fail to do so (Deci et al., 1994; Deci & Ryan, 2000; Ryan & Deci, 2000). Research also shows that personal and social norms can facilitate cooperation in a commons dilemma situation regarding PEBs in society in general (e.g., Biel & Thøgersen, 2007; Nordlund & Garvill 2003; Thøgersen, 2008). Thus, personal or descriptive norms will likely drive individuals to engage in PEBs at work even if it requires additional time and/ or effort on their part.

Finally, guilt repair is individuals' tendency to engage in reparative action following a transgression (Tangney et al., 2007). As explained earlier, although individuals' feelings of guilt and guilt repair stem from a negative behavior evaluation, to an extent, it still involves the self (Tangney et al., 2007). In terms of self-determination theory (Ryan & Deci, 2000), following a lapse in PEBs at work, individuals' guilt repair is likely to give rise to integrated and/ or introjected regulatory processes with respect to their motivation for PEBs at work, both of which

are internalized to the extent that they involve the self. Hence, individuals prone to guilt repair are likely to engage in PEBs at work even if it requires additional time and/ or effort on their part.

In sum, based on self-determination theory, it can be expected that because more internalized behaviors are tied to individuals' sense of self, the more individuals internalize their concern for the environment, the more they are likely to engage in PEBs at work, even at a cost to themselves. Therefore, the internalized individual differences are expected to be more strongly related to PEBs at a cost to self at work than the contextual factors.

Hypothesis 17a. Compared to contextual factors, individual differences will be more strongly related to PEBs at a cost to self at work.

In contrast, contextual factors should be more important for PEBs than for PEBs at a cost to self at work. For example, even though PEBs may not be directly rewarded in the workplace, if there is an understanding among individuals that such behaviors are expected in the workplace, engaging in PEBs can be considered a tacit "rule" in the workplace. Hence, individuals are likely to try to meet these expectations by complying with the tacit rule of engaging in PEBs, and might be afraid of negative consequences, such as punishment, if they do not.

Climate, as perceptions of behaviors that are valued and encouraged by an external entity, such as department members or family, may motivate individuals to engage in PEBs at work even though they might not personally value such behaviors. Perceptions of leader support for PEBs may similarly motivate individuals because it

reinforces the notion that their leader encourages PEBs in the workplace. Finally, role overload is an external contextual factor that draws individuals' attention away from a regulatory focus towards engaging in PEBs at work. In terms of self-determination theory, these are external regulatory factors that may affect motivation for PEBs (Ryan & Deci, 2000). If PEBs are driven by such external motivators, they are only likely to persist as long as the motivating factors are present or salient in people's minds. Hence, it is likely that contextual factors might have a stronger impact on individuals' PEBs at work than their PEBs at a cost to self at work.

Hypothesis 17b. Compared to individual differences, contextual factors will be more strongly related to PEBs at work.

Chapter 2: Method

Participants

Participants were recruited from two large public universities in the Southwest and Southeast United States to participate in an online survey. Participants were staff from various administrative and academic departments of the universities. There were a total of 584 participants of which 73 were dropped because of missing data. The final sample size used for all analyses was 511. 87 (17%) participants were from one university and 424 (83%) from the other. Twenty four percent were male and seventy six percent were female. The average age was 43.96 years (*SD* = 12.89) and the average organizational tenure was 10.62 years (*SD* = 9.4).

The proposed factors for understanding PEBs at work exist at the individual and unit (department) levels. Hence, it was important to consider both levels of analysis in determining the appropriate sample size. The number of units impacts the power to detect small cross-level moderation effect sizes (LaHuis & Ferguson, 2009) and unit level standard errors (Maas & Hox, 2005). Data were obtained from 26 groups with an average group size of 12 (*SD* = 7.36). The requirement of a large number of units may be relaxed if the sample size within each unit is larger. For example, LaHuis and Ferguson's (2009) simulation study showed that a cross-level moderation effect of 0.1 was detected 82% of the time with 100 units of unit size 5,

and 80% of the time with 50 units of unit size 10. The lower number of groups in this study reduces power.

Procedure

An online survey was administered by the sustainability offices at the two participating universities as part of a drive to seek feedback from their employees regarding the organizations' sustainability efforts. A financial incentive was offered in an effort to increase participation levels. Participants were given the opportunity to enter a drawing for multiple $25 gift certificates. An email inviting employees to participate in the survey and informing them of the drawing was sent out via the universities' electronic mailing systems. Participants were given 3 weeks to complete the survey. A reminder was sent out 1 week after the initial survey announcement in an effort to boost participation levels. Participants responded to 4 categories of variables: environmental attitudes, context (unit climate for PEBs, leader support for PEBs, home climate for PEBs, and role overload), individual differences (personal norms, descriptive norms, and guilt repair), and PEBs in the workplace.

Pretest of Measures

Pilot studies were conducted to ensure adequate reliabilities of the measures used in the primary study. Measures that did not have a well-established scale or that had not been previously tested in an organizational setting were pretested using a student sample at a large public university in the Southwest United States (N = 91)

and using a web hosting service that provides an online portal for human intelligence tasks (N = 50). Not all measures were tested in both samples. For example, measures pertaining to guilt repair and PEBs at a cost to self at work were not tested in the student sample because the items assessed individuals' reaction to hypothetical situations in the workplace. Similarly, measures pertaining to unit climate and leader support were not measured in the online sample because it is not possible to ensure that respondents belong to the same organization or unit. In the student sample, the referent for unit was student activities group and the referent for leader was the student activities group leader.

A confirmatory factor analysis (CFA) and reliability analysis were also conducted using the primary sample. Results of the CFA are presented in Table B1 and final scale reliabilities are shown in Table B2 along the diagonal of the bivariate correlation matrix of the measures. The survey items for each of the measures are shown in Appendix A. In the section below, the measures are described and results of the pilot study and CFA on the primary sample are presented.

Measures

Environmental Attitude. Individuals' environmental attitude was measured using 8 items adapted from Dunlap and Van Liere's (1978) New Environmental Paradigm (NEP) scale. Items assessed individuals' attitudes towards the environment and humans' role in sustaining it. Sample items included "The balance of nature is very delicate and easily upset" and "Humans must live in harmony with nature in order to survive." Participants rated the items on a 5-pt scale, ranging from 1 =

"strongly disagree" to 5 = "strongly agree." This measure was pretested in the student sample. The reliability was 0.78 in the pretest and primary samples.

Contextual factors. Unit climate, leader support, home climate, and role overload were the contextual factors assessed. Because existing scales specific to PEBs did not exist for unit climate, leader support, or home climate, and measures were adapted for these variables, it was important to pretest them. Findings from the pretest are incorporated below.

Unit climate for PEBs. Individuals' perceptions of the climate for PEBs within their department were measured with 4 items assessing the extent to which they perceived their department members as engaging in recycling, reduction of waste, and conservation of energy in the workplace. These items were adapted from various studies in the environmental psychology literature that assessed PEBs (e.g., Dolnicar & Grun, 2009; Ferguson, Branscombe, & Reynolds, 2011; Mobley, Vagias, & DeWard, 2010; Thapa 2010). The most commonly assessed items across studies that were relevant to or that could be adapted to an organizational setting were used. Sample items included "In my department, we generally recycle paper, plastic, metal cans, packing materials, etc." and "In my department, we generally generate and share ideas on how to be more environmentally friendly in our day-to-day activities at work." Participants rated the items on a 5-pt scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree."

Pretests in the student sample revealed an initial reliability of 0.74. The reliability was reduced because of the following negatively worded item, "In my group, we generally waste materials or office supplies that could be reused." After

dropping this item, the reliability of the measure increased to 0.79. In the primary sample, one item, "In my department, we generally carpool, share a ride, or take public transportation to work" was dropped from the scale because of low item total correlation (r = 0.24) and low factor loading (λ = 0.33). The reliability of the final scale was 0.69.

Unit (i.e., department) level climate for PEBs was conceptualized as a compositional model with referent shift consensus (Chan, 1998). In order to justify aggregation to the unit level, within-unit agreement of perceptions was assessed by computing $r_{wg(j)}$ assuming a uniform null distribution to ensure satisfactory agreement (James, Demaree, & Wolf, 1984). $r_{wg(j)}$ >= 0.70 are deemed to represent adequate levels of agreement. Further, intra-class correlation coefficients, ICC(1) was computed to evaluate within and between department variance in climate perceptions and ICC(2) to examine the reliability of the mean scores. The average $r_{wg(j)}$ (range of 0.65 to 0.95) for unit climate for PEBs was 0.75 (SD = 0.07), indicating a high level of agreement within departments. Results of one-way ANOVA with department as the independent variable were significant (F(23,258) = 1.79, p < .05). ICC(1) was 0.06, indicating that group membership explains some variance in unit climate for PEBs. However, ICC(2) was 0.45, indicating lower reliability of the unit level mean score.

Leader support for PEBs. Individuals' perceptions of the extent to which their supervisor valued and promoted PEBs was measured with 5 items reflecting their supervisor's efforts to reinforce, emphasize, and encourage PEBs in the workplace. These items were adapted from Zohar (2000) and Zohar and Luria's (2005) measures

of employees' perceptions of their supervisor's efforts to encourage safety behaviors, changing the referent to PEBs instead of safety. Sample items included "My manager/ supervisor emphasizes the need to be environmentally friendly at work" and "My manager/ supervisor seriously considers employees' suggestions on how to be more environmentally friendly at work." Participants rated the items on a 5-pt scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree."

In the pretest, the reliability of the leader support for PEBs measure was fairly high (α = 0.82). However, after dropping one item, "My [student activities] leader gets annoyed whenever (s)he sees someone wasting resources at work," further improved reliability to 0.87. Therefore, this item was dropped in the primary study. In the primary sample, the reliability of the scale was 0.93.

Department level perception of leader support for PEBs was conceptualized as a compositional model with referent shift (Chan, 1998). Individuals reported about their own leader or supervisor, but the item content referenced the group in general. Individual level perceptions of leader support for PEBs were aggregated to the department level. The average $r_{wg(j)}$ (range of 0.55 to 0.99) for leader support for PEBs was 0.87 (SD = 0.10), indicating a high level of agreement within departments. Results of one-way ANOVA with department as the independent variable were significant ($F(23,258) = 1.82$ $p < .05$). ICC(1) was 0.06, indicating that group membership explains some variance in leader support for PEBs. However, ICC(2) was 0.44, indicating lower reliability for the unit level mean of leader support for PEBs.

Home climate for PEBs. Individuals' perceptions of the climate for PEBs in their home were measured with 3 items assessing the extent to which PEBs are valued and encouraged in the household. Sample items included "At home, we try to learn more about environmental issues (e.g., watch TV programs, read books/ magazines/ newspaper articles, etc. about the environment)" and "At home, we try to be as environmentally responsible as possible (e.g., recycle and reuse items, conserve energy, etc.)." Participants rated the items on a 5-pt scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree."

In the pretest, the reliability of the home climate for PEBs measure was lowered (α = 0.69) because of the item, "At home, we think of ways to be as environmentally responsible as possible." This item might be interpreted as trying to be creative or innovative with regard to PEBs rather than trying to increase the number of PEBs performed as was intended. Therefore, in the primary study, this item was modified as follows: "At home, we try to be as environmentally responsible as possible." In the primary sample, the reliability of the scale was 0.75.

Role overload. The extent to which individuals feel overwhelmed by their workload was assessed with the 3 items used by Bolino and Turnley (2005). Studies indicate that the role overload measure used by Bolino and Turnley (2005) tends to have better reliability, i.e., above 0.80, than the role overload measure from the 1983 Minnesota Organizational Assessment Questionnaire developed by Cammann, Fichman, Jenkins & Klesh, (cf., Bolino & Turnley, 2005; Bolino, Turnley, Gilstrap, & Suazo, 2010). Therefore, Bolino and Turnley's (2005) measure of role overload was used in the primary study. Sample items included "The amount of work I am

expected to do is too great" and "I never seem to have enough time to get everything done at work." Participants rated the items on a 5-pt scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree." The reliability of the measure was 0.90 in the primary sample.

Individual differences. Three individual difference moderators were assessed: personal norms about environmental protection, descriptive social norms about PEBs in society in general, and guilt repair about PEBs at work. Personal and descriptive norms were pretested in the student sample and guilt repair was pretested in the online sample. Each measure is detailed below.

Personal norms. Individuals' personal norms were assessed with 3 items reflecting their sense of personal moral obligation towards protecting the environment and behaving in an environmentally responsible manner. Items were adapted from Gärling, Fujii, Gärling, and Jakobsson's (2003) study that examined the role of norms on pro-environmental behavior intention. Sample items included "I personally feel I have a moral obligation to protect the environment" and "Not being environmentally responsible would violate my personal principles." Participants rated the items on a 5-pt scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree." The reliability of the scale was 0.89 in the pretest and 0.88 in the primary sample.

Descriptive norms about societal PEBs. Individuals' descriptive norms were assessed with 3 items reflecting their perception of the extent to which people in general engage in PEBs such as recycling, reducing waste, and conserving water and energy. Items were adapted from Gärling et al.'s (2003) study that examined the role of norms on pro-environmental behavior intention. Sample items included "How

often do you think people in society do the following?" "Recycle paper, plastic, metal cans, etc." and "Conserve natural resources such as water and energy." Participants rated the items on a 5-pt scale, ranging from 1 = "very rarely" to 5 = "very often."

In the pretest, the relatively lower reliability (α = 0.74) of the descriptive norm measure was due to the negatively worded item, "How often to you think people in society have no regard for the environment." Dropping this item considerably improved the reliability of this measure to 0.83. However, having only two items may not entirely capture individuals' perceptions of the extent to which people engage in PEBs in society in general. Therefore, in the primary study, this item was replaced with a positively worded item, "How often to you think people in society reduce waste by reusing items such as water bottles, jars, paper, plastic, etc." The reliability of the scale was 0.83 in the primary sample.

Guilt repair about PEBs. Individuals' sense of guilt when they fail to engage in PEBs at work and the extent to which they are inclined to repair this transgression was assessed with 4 items based on the Guilt Repair subscale of the Guilt and Shame Proneness scale (GASP) developed by Cohen, Wolf, Panter, and Insko (2011), but modified to be relevant to the environmental context. A sample item was "In the past week there were a few times when you forgot to recycle, although none of your coworkers noticed this. What is the likelihood that this would lead you to be more responsible about recycling in future?" Participants rated the items on a 5-pt scale, ranging from 1 = "very unlikely" to 5 = "very likely," to indicate the likelihood that they would take corrective actions following their lapse in PEBs at work. The reliability of the scale was 0.79 in the pretest and 0.89 in the primary sample.

PEB outcomes. There is no well-established scale that measures PEBs. Although a few studies in environmental psychology have examined PEBs in society in general (e.g., Dolnicar & Grün, 2009; Ferguson et al., 2011; Iwata, 2001; Mobley et al., 2010; Thapa 2010), the vast majority of studies have examined specific PEBs, such as those related to household practices (e.g., Staats, Harland, & Wilke, 2004), consumption behaviors (e.g., Thøgersen, & Ölander, 2003), conservation behaviors (e.g., Abrahamse, Steg, Vlek, & Rothengatter, 2005; Corral-Verdugo, Bechtel, & Fraijo-Sing, 2003), or travel mode choice (e.g., Klöckner, & Blöbaum, 2010). In addition, some of the studies that assess PEBs in society, also include within their purview aspects of environmental activism, such as taking environmental concerns into account when voting, donating time and/or money to an environmental organization, supporting an environmental cause (e.g., Ferguson et al., 2011; Schultz, Zelezny, & Dalrymple, 2000; Thapa, 2010), and the like. A clear assessment of individuals' PEBs has not been offered.

In this study, two types of pro-environmental outcomes were assessed: engaging in PEBs and engaging in PEBs at a cost to oneself in the workplace. Both of these PEB outcomes at work were measured by means of a self-report questionnaire in which participants were asked to indicate the extent to which they engaged in certain PEBs in the workplace. Because the objective of the study was to study individuals' PEBs in the workplace in general rather than any particular environmentally responsible behavior, participants were asked a range of questions pertaining to recycling, reuse, waste reduction, and conservation behaviors at work. Questionnaire items were adapted from various studies in the environmental

psychology literature that assessed PEBs in society in general (e.g., Cottrell, 2003; Dolnicar & Grün, 2009; Ferguson et al. 2011; Iwata, 2001; Mobley et al., 2010; Thapa 2010; Urien & Kilbourne, 2011). The most commonly assessed items across studies that were relevant to or that could be adapted to an organizational setting were used.

Further, an online poll was conducted to ensure that individuals perceived items in the PEBs measure as easy to perform and those in the PEBs at a cost to self measure as requiring more effort. As expected, items in the PEBs scale pertaining to recycling, reusing items, and conserving energy in the workplace were rated "very easy" or "easy" to perform. However, one item, "In the workplace, I usually carpool, share a ride, or take public transportation to work," was rated "neutral" or "difficult." All items in the PEBs at a cost to self scale were rated "neutral" or "difficult."

Pro-environmental behaviors at work. PEBs at work was measured with 3 items assessing the extent to which individuals engage in recycling, reduction of waste, and conservation of energy in the workplace. Sample items included "In the workplace, I usually recycle paper, plastic, metal cans, packing materials, etc." and "In the workplace, I usually conserve energy by switching off lights, computers, appliances, etc." Participants rated the items on a 5-pt scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree."

The PEBs at work measure was pretested in the student sample and the reliability was 0.72. Although none of the items compromised the reliability of the PEBs at work measure, one item, "I usually carpool, share a ride, or take public transportation to work," correlated lowest with the rest of the items in the measure.

This may have been due to the limited options available for public transportation in the city from where the student sample was recruited. To account for this, in the primary study, an item was added to control for individuals' perceptions of green commuting options in their city: "Green commuting is fairly easy in this city, i.e., there is good public transportation, options for carpooling or rideshare, etc."

In the primary sample, the item, "In the workplace, I usually carpool, share a ride, or take public transportation to work," compromised the reliability of the PEBs measure ($\alpha = 0.43$). The item had low item total correlation ($r = 0.15$) and CFA revealed low factor loading ($\lambda = 0.22$). Based on the reliability analysis of the PEB scale, CFA, and ratings of difficulty of the various PEBs, this item was dropped from all subsequent analyses. The reliability of the final scale was 0.57.

Pro-environmental behaviors at a cost to self. Individuals' PEBs at a cost to self at work was measured with 5 items assessing the extent to which they would engage in reduction of waste, conservation of energy, green purchasing, and green commuting behaviors in the workplace at the cost of additional effort or inconvenience to themselves. A sample item was "I would adjust thermostat temperature settings in my office to conserve energy even though it might be a little uncomfortable (e.g., use a fan in the summer or put on an extra sweater in the winter rather than turn up the AC or heat)." Participants rated the items on a 5-pt scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree." PEBs at a cost to self at work was pretested in the student sample and the reliability was 0.79. The reliability of the scale in the primary sample was 0.77.

Control variables. To mitigate their confounding effects on the results, the following control variables were utilized: social desirability, conscientiousness, job satisfaction, and demographic variables (education level, organizational and departmental tenure, employment type, age, and sex).

Social desirability. It is reasonable to assume that social desirability might play a role in inflating participant responses because concern for the environment and PEBs are generally valued by society, particularly with the recent emphasis on environmental issues such as pollution and climate change.

In the organizational context, a strong climate in the workplace is likely to send a strong signal to employees about which behaviors are highly desirable (Ostroff & Bowen, 2000), which might positively skew some responses. Specific to environmental attitudes, Olli et al.'s (2001) study suggests that the social context is an important factor in shaping individuals' environmental attitudes and behaviors. Additionally, PEBs might be associated with high status, which individuals generally find desirable. For example, Griskevicius, Tybur, and Van den Bergh (2010) found that when status motives were activated, purchase of green products increased when shopping in public.

With a few exceptions (e.g., Kaiser, 1998; Milfont & Duckitt, 2010), the environmental psychology literature has not paid much attention to the role of social desirability with regard to self-report of PEBs. However, based on the evidence presented above, social desirability should be controlled in order to obtain a more accurate picture of PEBs in the workplace.

The extent to which individuals engage in socially desirable responding was assessed based on 4 items adapted from the 11 item short form (Form A; Reynolds, 1982) of the original 33 item Marlowe-Crowne Social Desirability (MCSD) scale (Crowne & Marlowe, 1960). Studies have indicated that short forms of the MCSD scale are viable alternatives to the full form, particularly Reynolds' (1982) Form A (Zook & Sipps, 1985) and might even have better psychometric properties than the full form (Loo & Thorpe, 2000). Similar to the original scale, participants rated the items true/ false to indicate whether or not they would behave in the manner described. One item, "I'm always willing to admit it when I make a mistake" was dropped from the scale because of negative item total correlation (r = -0.29). The final reliability of the scale was 0.44.

Conscientiousness. Research indicates that in addition to task performance, conscientiousness is related to citizenship behaviors at work (Chiaburu, Oh, Berry, Li, & Gardner, 2011), particularly citizenship behaviors targeted at the organization (Iles, Fulmer, Spitzmuller, & Johnson, 2009). Citizenship behaviors are extra-role behaviors that are not required or explicitly rewarded, but would be beneficial to overall effectiveness in the workplace (Organ, 1988). PEBs, as discretionary behaviors, can be considered a type of citizenship behaviors. Moreover, individuals who are conscientious are likely to be diligent about the policies, procedures, and practices followed in the workplace because conscientiousness includes a sense of responsibility (Mount & Barrick, 1995). Hence, if an organization has a strong pro-environmental climate, which is reflected in its policies, procedures, and practices,

conscientiousness might play a role in inflating participant responses. Thus, conscientiousness was controlled.

Individuals' level of conscientious was assessed using the 5 positively worded items of the International Personality Item Pool (IPIP) conscientiousness scale (Goldberg, 1999), which is based on the revised version of the Neuroticism Extroversion Openness Personality Inventory (NEO-PI R; Costa & McCrae, 1992). Participants rated the items on a 5-pt scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree," to indicate the extent to which they agree that the items describe them. The reliability of the scale was 0.81.

Job satisfaction. Job satisfaction is an affective attitude that is related to several job outcomes, including citizenship behaviors (Bateman & Organ, 1983). Job satisfaction has been found to have a direct effect on citizenship behaviors independent of personality or other contextual differences such as fairness perceptions (e.g., Fassina, Jones, & Uggerslev, 2008; Ilies et al., 2009; Konovsky & Organ, 1996; Organ & Ryan, 1995). Therefore, job satisfaction was controlled to remove affective attitudes from engaging in PEBs at work.

In this study, individuals' overall satisfaction with their job is of interest, which is more inclusive and complex than the sum of the satisfaction with various facets of their job (Scarpello & Campbell, 1983). Single item measures of overall job satisfaction correlate highly with scale measures of overall job satisfaction (Scarpello & Campbell, 1983; Wanous, Reichers, & Hudy, 1997). Therefore, the extent to which individuals are satisfied with their job in general was assessed using a single item

measure that asks participants to rate the item "All in all I am satisfied with my job" on a 5-pt scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree."

Education level. It seems reasonable to presume that individuals' level of education might be positively related to their environmental attitudes and their PEBs at work because more educated individuals are likely to be more aware of environmental issues and policies, or consequences of pollution (Hungerford & Volk, 1990). Indeed, meta-analyses have indicated that individuals' awareness of environmental issues is positively related to their PEBs (Bamberg & Möser, 2007; Hines et al., 1986).

Level of education was measured on a 6-pt scale, ranging from 1-6 where 1 = "Less than High School," 2 = "High school/ GED," 3 = "Associates/ Technical Degree," 4 = "Bachelors Degree," 5= "Masters Degree," and 6 = "Doctoral Degree."

Organizational and departmental tenure. Individuals' organizational and departmental tenure might be positively related to their environmental attitudes and their PEBs at work because individuals with longer tenure in the organization are more likely to be familiar with the policies, procedures, and practices that are valued in the organization. Participants indicated the number of years worked in the organization and in the department.

Employment type. Individuals' employment type, i.e., full-time vs. part-time, might be positively related to their environmental attitudes and their PEBs at work. Full-time employees have greater opportunities to interact with their coworkers and leaders, and hence may be more influenced by contextual factors such as climate and

leader support. Participants indicated whether they are employed in a full- or part-time capacity at their organization.

Age. Across several studies in the environmental psychology area, age has been shown to be related to environmental concern and PEBs in society in general (Cottrell, 2003). Moreover, PEBs may be driven in part by health and safety concerns, such as organic food purchase (Kriwy & Mecking, 2012), which might be greater among older individuals (Saphores, Nixon, Ogunseitan, & Shapiro, 2007). Participants indicated their age in years.

Sex. Studies have found that women tend to be more concerned about the environment and engage in PEBs in society in general (Hunter, Hatch, & Johnson, 2004), and also have more knowledge regarding environmental issues, such as climate change (McCright, 2010). Participants indicated whether they were male or female.

Confirmatory factor analysis

A CFA was performed on the items from the primary sample to validate the expected underlying factor structure of the scales used to measure the constructs of interest: environmental attitude, unit climate, leader support, home climate, role overload, personal norms, descriptive norms, guilt repair, PEBs and PEBs at a cost to self. Results of the CFA, as indicated by the high factor loadings and good model fit indices (CFI = 0.94, RMSEA = 0.06, SRMR = 0.05), confirmed that the hypothesized factor structure fit the data well. The factor structure and loadings of the survey items are presented in Table B1.

Analysis Plan

As can be seen in Figure 1, individuals' PEBs in the workplace were expected to be affected by their environmental attitude, and certain contextual factors and individual differences. While environmental attitude and individual differences expected to affect individuals' PEBs were at the individual level, some of the contextual factors expected to affect individuals' PEBs were at the unit (department) level. Additionally, because individuals were nested within departments, it was necessary to take this nesting into account. Hence, a hierarchical linear model (Bryk & Raudenbush, 1992; Raudenbush, 2002) was implemented to test the hypotheses. Scales were grand-mean centered to aid interpretability for the moderation hypotheses (Hofmann & Gavin, 1998).

The hierarchical linear model analyses for PEBs and PEBs at a cost to self at work were conducted in several steps. First, only the control variables were included in the model. Second, in addition to the controls, environmental attitude was included as a predictor. Third, the contextual factors and individual differences were included as predictors in the model beyond the controls and environmental attitude. Fourth, the cross-product terms of the contextual factors and individual differences with environmental attitude were also included as predictors in the model.

Finally, coefficients obtained from the hierarchical linear model analyses for the two outcomes, PEBs and PEBs at a cost to self at work, were compared to determine whether any of the predictors were differentially related to them. Specifically, coefficients for contextual factors (unit climate for PEBs, leader support for PEBs, home climate for PEBs, and role overload) were compared to the individual

differences (personal norm, descriptive norm, and guilt repair) for each of the outcomes to determine whether the contextual factors were more strongly related to PEBs compared to PEBs at a cost to self at work, and whether the individual differences were more strongly related to PEBs at a cost to self compared to PEBs at work. As outlined by Cohen, Cohen, West, & Aiken (2003), t-tests were conducted to test whether the estimates of the contextual and individual difference variables differed significantly.

Additionally, analyses were conducted to determine whether any of the predictors were differentially related to PEBs compared to PEBs at a cost to self at work. Following the methodology detailed by Cohen et al. (2003), after standardizing all variables, PEBs at work were regressed on the controls, environmental attitude, and the predictors to obtain predicted values of PEBs at work. Then, the difference between predicted PEBs at work and PEBs at a cost to self at work was treated as an outcome and regressed on the controls, environmental attitude, and the predictors to test whether they were significant. A significant predictor of this outcome would indicate that the predictor was differentially related to PEBs and PEBs at a cost to self at work. The direction of the predictor would indicate whether it was more strongly related to PEBs or PEBs at a cost to self at work.

Chapter 3: Results

Aggregation and Unit Level Contextual Variables

The primary goal of the study was to understand some of the factors that influence individuals' PEBs and PEBs at a cost to self at work. While many of the factors purported to influence individuals' PEB outcomes were at the individual level, two were at the unit (department) level: unit climate for PEBs and leader support for PEBs. Prior to testing the hypotheses, tests were conducted to determine whether these variables had adequate within department agreement and between department variance to justify aggregation and utilize these variables at the higher level of analysis.

As indicated in the method section, unit climate and leader support for PEBs both had adequate $r_{wg(j)}$ and ICC(1) values, however, ICC(2) values were lower indicating relatively low reliability of the mean scores. One-way ANOVA results indicated that unit climate for PEBs ($F(23,258) = 1.82$, $p < .05$) and leader support for PEBs ($F(23,258) = 1.79$, $p < .05$) varied significantly between departments.

Taken together, these results indicate sufficient justification to aggregate to the department level. However, a pre-condition for testing cross-level main effects or moderation is that there are significant between unit differences in the outcome variables (Hofmann, Griffin, & Gavin, 2000). To test this, a null random intercept model (Table B8) was computed, which is a test of the variance of the intercept by department, analogous to an ANOVA. Neither PEBs (*Estimate* = 0.00, *n.s.*) nor PEBs

at a cost to self (*Estimate* = 0.01, *n.s.*) at work varied significantly by department. This indicated that group membership did not have any influence on individuals' level of PEBs or PEBs at a cost to self at work. It is possible that individuals' psychological perceptions of climate and leader support were driving their PEBs in the workplace. Unless shared perceptions are strong or unambiguous, individuals' psychological perceptions may drive their attitudes and behaviors in the workplace (Ostroff et al., 2012; Ostroff & Bowen, 2000). Therefore, climate for PEBs and leader support for PEBs were based on individual level perceptions in all subsequent analyses. The individual level variables of unit climate for PEBs and leader support for PEBs are referred to as psychological unit climate for PEBs and psychological leader support for PEBs respectively.

The between department variance in unit climate for PEBs and leader support for PEBs indicates that there might be some effects of individuals being nested within departments. Thus, to account for this nesting, all analyses were conducted using hierarchical linear modeling.

Means, Standard Deviations, and Intercorrelations

Means, standard deviations, reliabilities of the scales, and zero-order correlations are shown in Table B2. The correlation between PEBs and PEBs at a cost to self at work was moderate ($r = 0.52$, $p < .01$), indicating they are related, but separate constructs.

Among the antecedent variables, environmental attitude was most strongly related to personal norm ($r = 0.50$, $p < .01$), followed by home climate ($r = 0.44$, $p <$

.01), guilt repair (r = 0.21, p < .01), and descriptive norm (r = -0.16, p < .01). As would be expected, environmental attitude was not related to the work context variables of psychological unit climate (r = -0.02) or leader support (r = -0.05) as an individual attitude should not impact the work context. Consistent with Hypothesis 1, environmental attitudes were significantly related to both types of PEBs in the workplace. Environmental attitude was more strongly related (z = -3.32, p < .05) to PEBs at a cost to self (r = 0.29, p < .01) than to PEBs (r = 0.15, p < .01) in the workplace.

All the variables purported to be related to PEBs and PEBs at a cost to self at work were significantly related to them except for role overload and descriptive norm. PEBs at work were most strongly related to personal norm (r = 0.36, p < .01) and home climate for PEBs (r = 0.36, p < .01), followed by psychological perceptions unit climate for PEBs (r = 0.31, p < .01) and guilt repair (r = 0.23, p < .01). PEBs at a cost to self at work were also most strongly personal norms (r = 0.53, p < .01) and home climate for PEBs (r = 0.53, p < .01), followed by psychological unit climate for PEBs (r = 0.37, p < .01) and guilt repair (r = 0.31, p < .01).

Environmental Attitude and Pro-Environmental Behaviors

Hypothesis 1 (environmental attitude). Environmental attitude was expected to be positively related to PEBs (H1a) and PEBs at a cost to self (H1b) in the workplace. To test these hypotheses, two hierarchical linear models were analyzed whereby each of the PEB outcomes was regressed on environmental attitude after accounting for the control variables. Results of these analyses are shown in Table B3

for PEBs and Table B4 for PEBs at a cost to self at work. Results from Step 2 of these analyses indicate that environmental attitude was significantly related to PEBs (*Estimate* = 0.12, $p < .05$) and PEBs at a cost to self (*Estimate* = 0.31, $p < .01$) at work. Thus, hypotheses 1a and 1b were supported.

Main Effects of Contextual Factors on Pro-Environmental Behaviors

To test the main effects of the contextual variables (psychological unit climate for PEBs, psychological leader support for PEBs, home climate for PEBs, and role overload) on individuals' PEBs and PEBs at a cost to self at work, two hierarchical linear models were analyzed whereby each of the PEB outcomes was regressed on the contextual variables after accounting for the control variables and environmental attitude. All the contextual and individual difference variables were included in the model to examine the relative importance of each. Results of these analyses are shown in Step 3 of Table B3 for PEBs and Table B4 for PEBs at a cost to self at work.

Hypothesis 2 (unit climate for PEBs). Hypotheses 2a and 2b predicted that unit climate for PEBs would be positively related to PEBs and PEBs at a cost to self in the workplace, respectively. Given the lack of between department differences in PEBs and PEBs at a cost to self at work, analyses were conducted at the individual level. Analyses indicated that psychological perceptions of unit climate for PEBs were significantly related to PEBs (*Estimate* = 0.25, $p < .01$) and PEBs at a cost to self (*Estimate* = 0.28, $p < .01$) at work. Significant positive relationships existed

between unit climate for PEBs and individuals' PEBs and PEBs at a cost to self at work at the individual level, but not at the department level.

Hypothesis 3 (leader support for PEBs). Hypotheses 3a and 3b predicted that department level shared perceptions of leader support for PEBs would be positively related to PEBs and PEBs at a cost to self in the workplace. As with unit climate for PEBs, analyses for leader support for PEBs were conducted at the individual level. Analyses indicated that psychological leader support for PEBs was significantly related to PEBs (*Estimate* = -0.07, $p < .05$). However, contrary to expectations, this relationship was negative. Additionally, psychological leader support for PEBs was not related to PEBs at a cost to self at work (*Estimate* = -0.03, *n.s.*). Thus, hypotheses 3a and 3b were not supported.

The unexpected weak and negative relationship between leader support and PEBs work may be due to a suppressor effect. The zero-order correlations revealed that psychological leader support for PEBs was positively related to both PEBs ($r = 0.11$, $p < .01$) and PEBs at a cost to self at work ($r = 0.17$, $p < .01$). Additionally, strong correlations were found between psychological leader support for PEBs and psychological unit climate for PEBs ($r = 0.53$, $p < .01$), and between psychological unit climate for PEBs and the two PEB outcomes: PEBs ($r = 0.31$, $p < .01$) and PEBs at a cost to self ($r = 0.37$, $p < .01$) at work. This pattern indicates that psychological leader support for PEBs could be suppressing the relationship between psychological unit climate for PEBs and the two PEB outcomes.

Hierarchical linear analyses were conducted to further support this notion. The results of these analyses are shown in Table B9 for PEBs and Table B10 for PEBs at

a cost to self at work. The analyses were conducted in two steps. First, each PEB outcome was regressed on the control variables followed by environmental attitude and the contextual and individual difference variables, excluding psychological leader support for PEBs. Then, similar analyses were conducted with psychological leader support for PEBs included in the model. The estimates of psychological unit climate for PEBs obtained from the two models were then compared. Results indicated that the positive relationship between psychological unit climate for PEBs and PEBs at work (*Estimate* = 0.21, $p < .01$) increased after adding psychological leader support for PEBs to the model (*Estimate* = 0.25, $p < .01$). Similarly, the positive relationship between psychological unit climate for PEBs and PEBs at a cost to self at work (*Estimate* = 0.26, $p < .01$) increased after adding after adding psychological leader support for PEBs to the model (*Estimate* = 0.28, $p < .01$). This result coupled with the pattern of zero-order correlations indicates that psychological leader support for PEBs was likely acting as a suppressor of the relationship between psychological unit climate for PEBs and the two PEB outcomes. Hence, psychological leader support for PEBs was included in all subsequent hierarchical linear models, but the estimates for the variable were not substantively interpreted.

Hypothesis 4 (home climate for PEBs). Home climate for PEBs was expected to be positively related to PEBs (H4a) and PEBs at a cost to self (H4b) in the workplace. Analyses indicated that home climate for PEBs was significantly related to PEBs (*Estimate* = 0.16, $p < .01$) and PEBs at a cost to self (*Estimate* = 0.24, $p < .01$) at work. Thus, hypotheses 4a and 4b were supported.

Hypothesis 5 (role overload). Role overload was expected to be negatively related to PEBs (H5a) and PEBs at a cost to self (H5b) in the workplace. However, analyses indicated that role overload was not significantly related to PEBs (*Estimate* = -0.04, *n.s.*) or PEBs at a cost to self (*Estimate* = 0.01, *n.s.*) at work. Thus, hypotheses 5a and 5b were not supported.

Moderating Role of Contextual Factors

To test the moderating effects of the contextual variables (psychological unit climate for PEBs, psychological leader support for PEBs, home climate for PEBs, and role overload) on individuals' PEBs and PEBs at a cost to self at work, two hierarchical linear models were analyzed whereby each of the PEB outcomes was regressed on the cross-product terms of the contextual variables and environmental attitude after accounting for the control variables, environmental attitude, and the set of contextual and individual difference variables. All the individual difference and contextual variables, and cross-product terms were included in the model to examine the relative importance of each. Results of these analyses are shown in Step 4 of Table B3 for PEBs and Table B4 for PEBs at a cost to self at work.

Hypothesis 6 (unit climate for PEBs). Hypotheses 6a and 6b predicted that unit climate for PEBs would strengthen the positive relationship between environmental attitude and PEBs and PEBs at a cost to self in the workplace. As explained previously, analyses for unit climate for PEBs were conducted at the individual level using climate as a psychological climate construct. The analyses indicated that psychological unit climate for PEBs significantly interacted with

environmental attitude in relation to PEBs (*Estimate* = -0.22, $p < .01$), but not in relation to PEBs at a cost to self (*Estimate* = -0.09, *n.s.*) at work. However, contrary to predictions, the interaction was negative (see Figure B1). The simple slopes of psychological unit climate for PEBs at work were significant at low ($B = -0.48$, $p < .01$) and high ($B = -0.74$, $p < .01$) environmental attitude. Hence, hypotheses 6a and 6b were not supported.

Hypothesis 7 (leader support for PEBs). Leader support for PEBs was expected to strengthen the positive relationship between environmental attitude and PEBs (H7a) and PEBs at a cost to self (H7b). Similar to climate for PEBs, all analyses for leader support for PEBs were conducted at the individual level. Failing to support the hypotheses, the analyses indicated that psychological leader support for PEBs did not interact with environmental attitude in relation to PEBs (*Estimate* = -0.08, *n.s.*) or PEBs at a cost to self (*Estimate* = 0.00, *n.s.*) at work.

Hypothesis 8 (home climate for PEBs). Hypotheses 8a and 8b predicted that home climate for PEBs would strengthen the positive relationship between environmental attitude and PEBs and PEBs at a cost to self in the workplace respectively. Analyses indicated that home climate for PEBs did not significantly moderate the environmental attitude - PEBs at work relationship (*Estimate* = 0.08, *n.s.*) or the environmental attitude - PEBs at a cost to self at work relationship (*Estimate* = 0.08, *n.s.*). Thus, hypotheses 8a and 8b were not supported.

Hypothesis 9 (role overload). It was expected that role overload would weaken the positive relationship between environmental attitude and PEBs (H9a) and PEBs at a cost to self (H9b) in the workplace. Role overload moderated the

environmental attitude - PEBs at work relationship (*Estimate* = -0.12, $p < .01$), but not the environmental attitude - PEBs at a cost to self at work relationship (*Estimate* = -0.03, *n.s.*) at work. In support of hypothesis 9a, when role overload is greater, there is a stronger negative relationship between attitudes and PEBs at work. When role overload is low, PEBs remained at a higher level. The simple slopes of role overload for PEBs at work were significant at low ($B = -0.44$, $p < .01$) and high ($B = -0.58$, $p < .01$) environmental attitude. Hypothesis 9b was not supported.

Summary of Contextual Factors

In sum, for the set of contextual variables, psychological unit climate for PEBs and home climate for PEBs were positively related to PEBs and PEBs at a cost to self at work. Interestingly, when the contextual and individual difference variables were included in the model, environmental attitude was no longer significant, suggesting that the set of context and individual differences are more proximal and important drivers of PEBs than attitude towards the environment.

Further, only role overload significantly interacted with environmental attitude in relation to PEBs at work in the direction expected. Although role overload did not directly affect PEBs at work, it negatively impacted the environmental attitude - PEBs at work relationship. The moderating role of psychological unit climate for PEBs was negative, contrary to expectations. The implications of these findings are addressed in the discussion section.

Main Effects for Individual Differences and Pro-Environmental Behaviors

Results of the analyses for individual difference factors are shown in Step 3 of Table B3 for PEBs and Table B4 for PEBs at a cost to self at work. Note that the contextual variables are also included so their relative importance can be ascertained.

Hypothesis 10 (personal norms). Hypotheses 10a and 10b predicted that personal norms would be positively related to PEBs and PEBs at a cost to self in the workplace. In support of the hypotheses, personal norms were found to be significantly related to PEBs (*Estimate* = 0.18, $p < .01$) and PEBs at a cost to self (*Estimate* = 0.27, $p < .01$) at work.

Hypothesis 11 (descriptive norms). Descriptive norms were purported to be positively related to PEBs (H11a) and PEBs at a cost to self (H11b). Analyses failed to support the hypothesis for PEBs (*Estimate* = 0.01, *n.s.*) or PEBs at a cost to self (*Estimate* = -0.06, *n.s.*) at work.

Hypothesis 12 (guilt repair). Hypotheses 14a and 14b predicted that guilt repair would be positively related to PEBs and PEBs at a cost to self in the workplace. Guilt repair was significantly related to PEBs at a cost to self (*Estimate* = 0.07, $p < .05$), but not to PEBs (*Estimate* = 0.05, *n.s.*), at work. Thus, hypothesis 12b was supported, but not hypothesis 12a.

Moderating Role of Individual Differences

Results of the analyses for individual differences as moderators are contained in Step 4 of Table B3 for PEBs and Table B4 for PEBs at a cost to self at work. All

the individual difference and contextual variables, and cross-product terms were included in the model to determine the relative importance of each.

It was predicted that individuals' personal norms (H13a and H13b), descriptive norms (H14a and H14b), and guilt repair (H15a and H15b) would strengthen the positive relationship between environmental attitude and PEBs and PEBs at a cost to self in the workplace. However, analyses indicated that individual difference variables did not moderate either the environmental attitude - PEBs or the environmental attitude - PEBs at a cost to self relationships. Thus, these hypotheses were not supported.

Summary of Individual Differences

In sum, individual differences were directly related to PEBs and PEBs at a cost to self at work. However, they did not moderate the relationship between environmental attitude and either of the PEB outcomes at work. Individuals' personal norms were an important driver of both PEBs and PEBs at a cost to self at work. Additionally, individuals' feelings of guilt repair were significantly positively related to the extent which they engaged in PEBs at a cost to self at work. Interestingly, individuals' descriptive norms were not related to their PEBs and PEBs at a cost to self at work.

Relative Importance of Contextual Factors and Individual Differences

Hypothesis 16 (environmental attitude). Hypothesis 16 predicted that the relationship between environmental attitude and PEBs at work would be stronger than the relationship between environmental attitude and PEBs at a cost to self at work. Tests for significant differences between the coefficients were conducted (Cohen et al., 2003). As can be seen in Step 2 of Tables B3 and B4, the estimate for environmental attitude was 0.12 for PEBs and 0.31 for PEBs at a cost to self. Results of tests for significant differences in the coefficients presented in Table B7 indicate that, contrary to hypotheses, the relationship between environmental attitude and PEBs at a cost to self was significantly stronger than that for PEBs at work (t = -1.77, $p < .05$). When the contextual and individual difference variables were included, environmental attitude was no longer significant for either type of PEB at work suggesting that individual differences and context are relatively more important than attitudes for PEBs in the workplace.

Hypothesis 17 (contextual factors and individual differences). It was expected that individual difference variables would be relatively more important for PEBs at a cost to self (H17a) while contextual factors would be relatively more important for general PEBs at work (H17b). For PEBs at a cost to self at work, the individual differences of personal norm and guilt repair were significant, as were the contextual variables of psychological unit climate and home climate for PEBs. Results of the comparisons of coefficients presented in Table B5 indicated that the relationship between personal norms and PEBs at a cost to self was not significantly different than those for psychological unit climate or home climate, but was significantly stronger

than that of role overload ($t = 4.73$, $p < .01$). Similarly, the relationship between guilt repair and PEBs at a cost to self was stronger than that of role overload ($t = 1.84$, $p < .05$). Thus partial support for H17a was found.

For PEBs at work, the contextual variables of psychological unit climate and home climate were significant, and the only individual difference variable that was significant was personal norm. As can be seen in Table B6, the relationship between psychological unit climate and PEBs was significantly stronger than those for descriptive norm ($t = 3.63$, $p < .01$) and guilt repair ($t = 3.26$, $p < .01$). The same findings hold for home climate with respect to descriptive norm ($t = 2.51$, $p < .01$) and guilt repair ($t = 1.78$, $p < .05$). However, there were no significant differences between the impact of psychological unit climate or home climate and that of personal norm on individuals' PEBs at work. These results partially support H17b.

As an additional test, the estimates of the contextual and individual difference variables for the two different PEBs outcomes were compared using procedures outlined by Cohen et al. (2003). Hierarchical linear models were analyzed to determine whether any of the contextual or individual difference variables was a significant predictor of the difference between PEBs and PEBs at a cost to self at work, to determine whether any of the variables were differentially related to the two PEBs outcomes. As can be seen in Table B7, home climate was significantly more important for PEBs at a cost to self at work ($t = -1.71$, $p < .05$). Similarly, role overload ($t = -1.95$, $p < .05$) and descriptive norm ($t = -1.89$, $p < .05$) variables were also more important for PEBs at a cost to self at work, although neither was found to

be independently significant for either of the PEB outcomes as reported in the analyses shown in Tables B3 and B4.

Chapter 4: Discussion

The primary objective of the current study was to examine some of the factors related to individuals' PEBs in the workplace. In order to gain a better understanding of PEBs and the relationship between individuals' environmental attitudes and PEBs within the organizational arena, both contextual factors and individual differences were examined.

Drawing on research in the area of environmental psychology and on an extended version of the theory of planned behavior (Ajzen, 1985, 1991), it was expected that: (a) individuals' environmental attitudes would be positively related to their PEBs; (b) the contextual factors of unit climate for PEBs, leader support for PEBs, and home climate for PEBs would be positively related to individuals' PEBs and strengthen the relationship between environmental attitudes and PEBs, while role overload would be negatively related to individuals' PEBs and weaken the environmental attitude - PEBs relationship and (c) the individual differences of personal norms, descriptive social norms, and guilt repair would be positively related to individuals' PEBs and strengthen the environmental attitude - PEBs relationship.

Additionally, two types of PEBs were distinguished: PEBs easily engaged in and PEBs that necessitate a cost to self. Integrating the commons dilemma (Hardin, 1968) perspective with the theories of planned behavior (Ajzen, 1985, 1991) and self-determination theory (Ryan & Deci, 2000, 2006), it was expected that (a) individuals' environmental attitudes would be more strongly related to PEBs as compared to PEBs

at a cost to self; (b) contextual factors would be more strongly related to individuals' PEBs compared to PEBs at a cost to self; and (c) individual differences would be more strongly related to individuals' PEBs at a cost to self compared to PEBs. Overall, the goal was to better understand the motivations for the different types of PEBs in the workplace, how these PEBs are related to individuals' environmental attitudes, and which factors are more likely to influence individuals' environmental attitude - PEBs relationship within the organizational context.

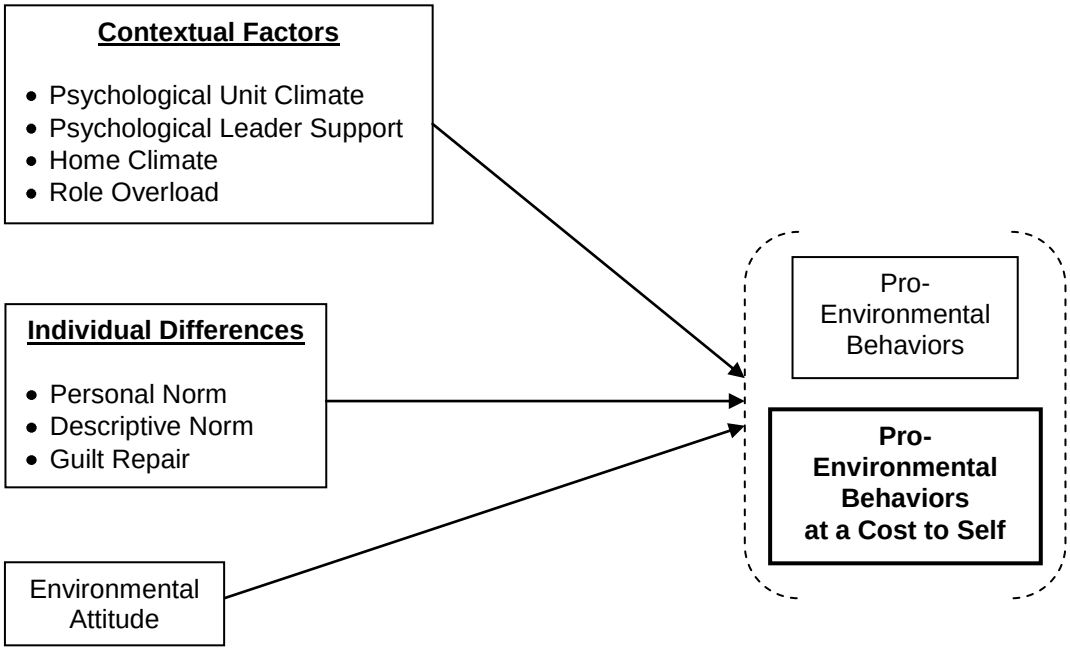

Figure 2. Pro-Environmental Behaviors in the Workplace: Summary of Results

A summary of the findings is shown in Figure 2. In general, the results were in accordance with respect to the main effects of the contextual factors and individual differences purported to be related to individuals' PEBs in the workplace. Psychological perceptions of unit climate for PEBs, home climate for PEBs, and personal norms were relatively more important for both general, easy to perform PEBs at work and PEBs that incur a cost to self at work. Additionally, guilt repair was significantly related to individuals' PEBs at a cost to self.

The expected moderation of contextual factors and individual differences in the relationship between attitudes and PEBs were weak and largely non-significant. Only the environmental attitude and PEBs at work relationship was moderated by psychological unit climate for PEBs and role overload, but often in unexpected ways. However, the finding that the relationship between environmental attitudes and PEBs in the workplace was not significant in the presence of contextual and individual difference factors highlights the notion that contextual and individuals differences play a stronger role and are likely to be more proximal to PEBs than general attitudes about protecting the environment.

Taken together the results contribute our understanding of the factors that influence PEBs at work. This is one of the first studies to examine PEBs in the workplace, and the first study to examine the relative importance of a variety of contextual and individual difference factors. The pattern of results suggests that is important to distinguish between easy to perform PEBs and PEBs that occur at a cost to self at work. Contextual variables, particularly perceptions of climate for PEBs and personal norms are important for general PEBs while psychological climate for

PEBs, home climate for PEBs and personal norms are particularly important for PEBs at a cost to self, with guilt repair also playing a role. These results are discussed below along with theoretical and practical implications. Limitations of the study and avenues for future research are also discussed.

Environmental Attitudes and Pro-Environmental Behaviors

As expected, individuals' environmental attitudes were positively related to both PEBs and PEBs at a cost to self at work. It was also expected that environmental attitude would be more strongly related to PEBs at a cost to self than to PEBs at work. However, the opposite pattern was found.

The supposition that individuals' environmental attitude would be more strongly related to PEBs than to PEBs at a cost to self at work was based on the notion that attitudes are likely to be more strongly related to behaviors that are easy to perform compared to behaviors that require additional time or effort or cause inconvenience (Stern, 2000). Further, in cases involving resource uncertainty, such as environmental resources, individuals are more likely to act in their self-interest (e.g., de Kwaadsteniet et al., 2006; Kortenkamp & Moore, 2006). That is, even if individuals have a positive environmental attitude, the more time or effort required or inconvenience experienced in engaging in PEBs, the less likely they will engage in these PEBs because the limits of environmental resources are uncertain. Difficulty in ascertaining one's ultimate gain from engaging in PEBs that will incur a cost could invoke a tendency to maximize one's gain by not spending time and effort to engage in these behaviors.

The opposite finding that environmental attitudes are more strongly related to PEBs that incur a cost to self than general PEBs at work might be explained by considering effort. Some research in environmental psychology suggests that attitudes are more strongly related to behaviors that are difficult to perform (e.g., Kaiser & Schultz, 2009; Schultz & Oskamp, 1996; Schultz, Oskamp, & Mainieri, 1995). The reasoning is that when more effort is required to perform a behavior, possessing a positive attitude towards performing the behavior facilitates performance. On the other hand, when the effort required to perform a particular behavior is low, even a weak attitude might be sufficient to facilitate taking action (Schultz & Oskamp, 1996). This notion is also consistent with findings for personal norms. Attitudes and personal norms are different, but related constructs. Both entail some degree of personal belief about the importance of environmental responsibility. Personal norms showed some indication of being more strongly related to PEBs at a cost to self (*Estimate* = 0.27, $p < .01$) than to PEBs in general at work (*Estimate* = 0.13, $p < .01$).

Another important finding was that when the contextual and individual difference variables were included in the model, the relationships between environmental attitude and PEBs and PEBs at a cost to self at work were no longer significant. These results suggest that various contextual and personal factors may be relatively more important drivers of one's PEBs in the workplace and might be more proximal determinants of the behaviors (Stern, 2000).

To further elucidate the relative importance of environmental attitude, contextual factors, and individual difference variables, supplementary analyses were conducted. PEBs and PEBs at a cost to self at work were regressed on environmental

attitude and either the contextual factors or the individual difference variables to determine whether it is the set of contextual variables or the set of individual difference variables or both that are relatively more than attitudes in explaining PEBs. Environmental attitude was not significantly related to PEBs at work in addition to the set of contextual factors or to the set of individual differences (Table B11). Therefore, both contextual factors and individual differences appear to be relatively more important predictors than attitudes of the extent to which individuals engage in general PEBs at work.

On the other hand, environmental attitude was significantly related to PEBs at a cost to self at work when contextual factors were also considered, but not when individual differences were included (Table B12). This finding suggests the context alone does not supersede the importance of attitudes for driving PEBs that entail a cost to self; attitudes or other individual differences are also instrumental for engaging in PEBs at a cost to self. However, the significance of environmental attitudes disappears when individual differences are considered. When engaging in more time consuming or difficult to perform PEBs, individual differences, particularly personal norms and guilt repair, supersede the influence of attitudes and may be more proximal predictors of the extent to which individuals engage in PEBs at a cost to self in the workplace than environmental attitudes.

This pattern of findings also suggests that individuals' environmental attitudes could be an indirect predictor of their PEBs at a cost to self at work through personal norms. Environmental attitudes and personal norms were significantly related (r = 0.50, $p < .01$) and personal norms were related to PEBs (r = 0.15, $p < .01$) and PEBs

at a cost to self ($r = 0.29$, $p < .01$) at work. The results shown in Tables B11 and B12 support the notion that personal norms may mediate the relationship between environmental attitudes and both types of PEBs.

As mentioned previously, researchers have compared models of PEBs based on various theories in an effort to understand the relationship between attitudes, individual differences such as norms, and PEBs (e.g., Bamberg & Schmidt, 2003; Kaiser et al., 2005; Klöckner & Blöbaum, 2010; Liebe et al., 2011; Wall et al., 2007), but a clear answer has not emerged as to the underlying nature of these relationships (Steg & Vlek, 2009). The findings of this study are in accordance with the postulates of norm activation theory (Schwartz, 1977; Schwartz & Howard, 1981) and value belief norm theory (Stern, 2000; Stern et al., 1999), both of which posit that individuals' personal norms are proximal indicators of their PEBs. Additionally, value belief norm theory (Stern, 2000; Stern et al., 1999) posits that environmental attitudes give rise to personal norms regarding the environment, which in turn drive individuals' PEBs. Although the post-hoc tests for mediation support the proposition of value belief norm theory, the concurrent nature of the design precludes assessing causality. An alternate explanation is that attitudes and norms are not casually related but are simply related constructs, and that personal norms are relatively more important for PEBs. Clearly, additional research is needed to tease out the relationships between environmental attitudes, individual difference variables, and PEBs.

Contextual Factors and Pro-Environmental Behaviors

Psychological unit climate for PEBs, psychological leader support for PEBs, home climate for PEBs, and role overload were examined in relation to engaging in PEBs to evaluate their relative importance. Results indicated that psychological unit climate for PEBs and home climate for PEBs were the strongest predictors of PEBs and PEBs at a cost to self at work.

The findings for psychological climate for PEBs were consistent and relatively strong, consistent with past research on the importance of psychological climate for behavior and responses at work (Carr, et al., 2003; Parker et al., 2003). Moreover, results indicated that social descriptive norms were not related to individuals' PEBs or PEBs at a cost to self at work, which suggests that individuals' PEBs are not influenced by perceptions of others' environmental behaviors in society in general. Rather, perceptions that PEBs are expected and valued and take place in the proximal work context appears to be more important than perceptions about PEBs in society in general. This finding corroborates the notion that the immediate organizational context is an important factor related to various outcomes in the workplace (Johns, 2006) and individuals' perceptions of behaviors that are valued in the organization based on their interpretation of the organization's policies, procedures, and practices (Ostroff et al., 2012), are important for understanding PEBs.

Perceptions of a home climate for PEBs were also related to both types of PEBs at work. A home climate for PEBs is likely to be closely related to individuals' personal environmental habits in the household and general day-to-day environmental

behaviors, which have been shown to be significantly related to individuals' PEBs in society in general (Stern, 2000). The findings are also in accordance with the notion that the events and cues that individuals experience in their day-to-day lives outside the workplace can impact their attitudes, behaviors, and outcomes within the workplace (McKay & Avery, 2006; Pugh et al., 2008). Because environmental sustainability is at the forefront of issues facing today's society (WCED, 1987), additional influences other than home climate, such as neighborhood emphasis on PEBs, would be fruitful avenues for future research.

Leader support for PEBs appeared to act as a suppressor for the relationship between psychological climate for PEBs and PEBs at work. This finding may be a function of this particular sample. Given that leader support has been consistently shown to influence employee responses at work (e.g., Amabile et al., 2004; Chen et al., 2007, 2011; Gao et al., 2011; Kirkman et al., 2009) and that the zero-order correlations indicated a positive relationship between leader support and PEBs in this study, more research is needed to understand the relative importance of leaders in impacting PEBs at work.

In addition to the direct relationship between contextual factors and PEBs and PEBs at a cost to self at work, moderating effects were also evidenced in the environmental attitude - PEBs at work relationship for both psychological unit climate and role overload. Results indicated that role overload may draw attention away from general PEBs at work even when individuals have a positive attitude towards the environment, presumably because role overload can lead to preoccupation with trying to cope with in-role or required job demands and stresses

(Brown et al., 2005). Because PEBs are not considered a part of required job duties, these behaviors are not likely to be very salient in employees' minds when job demands are high.

The moderating influence of psychological unit climate for PEBs was contrary to expectations. The relationship between environmental attitudes and PEBs was stronger when climate was higher as expected, however the slopes were negative. Environmental attitude was positively related to PEBs, but was not significant in the presence of the contextual and personal variables. Psychological perceptions of unit climate were also positively related to PEBs. However, the interaction of the two produced a negative relationship between environmental attitudes and PEBs. Given the lack of significant moderating effects for most variables in the model, this finding may be due to chance.

Alternately, a possible explanation for the negative slopes in the interaction of climate and environmental attitude and the two types of PEBs at work could be individuals' ideas regarding the efficacy of individual level PEBs. There is some evidence that individuals who have very positive environmental attitudes tend to strongly favor governmental interventions such as policy and regulations that promote environmental conservation in addition to individual level PEBs (Poortinga, Steg, & Vlek, 2002). Often times individuals have misperceptions as to which behaviors help mitigate environmental risks and often discount or underestimate the impact of individual level PEBs on the environment, especially when they are not be directly related to a particular environmental risk or concern (such as the impact of thermostat

settings or meat consumption on global warming) and therefore might not engage in them (Poortinga, Steg, Vlek, & Wiersma, 2003; Truelove & Parks, 2012).

Taken together, there is a possibility that individuals who have very positive attitudes towards the environment also believe that environmental concerns are serious issues and should be tackled at the governmental level. They might feel that individual level PEBs are not very efficacious in mitigating environmental risks, and therefore might not engage in PEBs as much, hence making their environmental behaviors inconsistent with their attitudes and perhaps even negatively related to their attitudes. Numerous studies on goal setting attest to the fact that when goals are considered extremely difficult to achieve or when goals are not specific, they can negatively affect goal directed behavior (Mento, Steel, & Karren, 1987).

Further, from a commons dilemma perspective, when individuals perceive others around them to be environmentally responsible, it may indicate that environmental resources are generally being conserved, and as a result, there are more environmental resources available for common use (van Dijk, Wit, Wilke, & Budescu, 2004). As such, those with positive attitudes who perceive a positive climate for PEBs may feel sufficient resources are being conserved by others and hence are less motivated to engage in PEBs at work. Studies in environmental psychology also show that in commons dilemma situations regarding PEBs, prosocially or altruistically oriented individuals tend to behave in an environmentally responsible manner, whereas egoistically or self-enhancement oriented individuals tend to maximize their gain (e.g., Joireman, Van Lange, & Van Vugt, 2004; Nordlund & Garvill, 2003; Van Vugt et al., 1995; Wade-Benzoni, Tenbrunsel, & Bazerman,

1996), particularly under resource uncertainty conditions (de Kwaadsteniet et al., 2006; Roch & Samuelson, 1997). Additional research is needed to explore the moderating role of climate for PEBs in more depth, including a possible interaction with the degree of to which individuals are prosocially oriented.

Unit Level Climate and Leader Support for Pro-Environmental Behaviors

The original intention was to explore the role of unit level, rather than individual level psychological perceptions of climate, as they relate to PEBs. Shared perceptions of climate within a workgroup have consistently been related to individuals' attitudes and behaviors in the workplace (e.g., Gonzalez & Denisi, 2009; Hui & Rupp, 2005; Joshi et al., 2006; Kath et al., 2009; Schulte et al., 2006; Tangirala & Ramanujam, 2008; Wolfe-Morrison et al., 2011; Zohar & Luria, 2005) and it was expected that unit level climate for PEBs would influence PEBs at work as well. Within-group agreement in perceptions and significant differences between units in their aggregate climate perceptions and leader support perceptions were obtained, indicating that a collective construct for these variables exists.

However, PEBs did not differ between units, precluding testing a cross level model. One explanation is that both PEBs and PEBs at a cost to self are more a function of personal attributes such as individual perceptions, attitudes, and habits, as opposed to shared perceptions, hence similar PEBs among members within a unit may not occur. A second explanation is that the study was conducted at the department level and relationships can be observed at some levels of analysis but not other levels of analysis (Kozlowski & Klein, 2000). A lower level analysis, such as a

smaller workgroup, may be more important for elucidating the role of the social context on PEBs.

Individual Differences and Pro-Environmental Behaviors

The individual differences examined in this study were personal norms, descriptive social norms, and guilt repair. Of these, only personal norms were significantly and positively related to PEBs at work and both personal norm and guilt repair were positively related to PEBs at a cost to self at work.

Personal norms are indicative of an individual's personal value system, and hence, should be important for driving behaviors such as PEBs. As advocated by both value belief norm theory (Stern, 2000; Stern et al., 1999) and norm activation theory (Schwartz, 1977; Schwartz & Howard, 1981) and the findings of a number of studies in the environmental psychology area (e.g., Bamberg & Schmidt, 2003; Harland et al., 2007; Hunecke et al., 2001; Klöckner & Blöbaum, 2010; Nordlund & Garvill, 2003), the results corroborate the notion that individuals' personal norms are important for understanding PEBs.

However, descriptive norms were not significantly related to either PEBs or PEBs at a cost to self at work. Descriptive norms are based in reference to what others do while personal norms deal with the self only and are independent of others and the context. The importance of referents for descriptive norms may explain the failure to find results for this variable. There is some evidence with regard to conservation behaviors, recycling, or environmental behaviors such as littering, that descriptive norms are more effective in influencing behavior when they are situation

specific, i.e., when the normative behaviors are performed in similar contextual settings (Goldstein et al., 2008; Reno et al., 1993).

Additionally, following from the idea of social comparison in social psychology (Festinger, 1954) that individuals compare or evaluate themselves in relation to similar others, social descriptive normative beliefs have been shown to be most effective in influencing individuals' behavior when individuals are similar to or socially identify with those performing the normative behaviors (Terry & Hogg, 1996; Terry, Hogg, & McKimmie, 2000; Terry et al., 1999). Similar results have been evidenced in environmental psychology (e.g., Cialdini & Goldstein, 2004; Cialdini & Trost, 1998; Smith & Louis, 2008; White, Smith, Terry, Greenslade, & McKimmie, 2009). Hence, perceptions of the extent to which people in society in general engage in PEBs might not affect individuals' PEBs in the workplace.

Descriptive norms specifically for PEBs in the workplace, particularly if they are based on coworkers' PEBs in the workplace, may be more relevant. As individuals engage in their day-to-day activities at work, unit members' behaviors are visible and can act as cues to behave in an environmentally responsible manner in the workplace. For engaging in PEBs in the workplace, individuals are more likely to socially identify with their unit members than with individuals in society at large, and hence, should be more likely to be affected by their perception that this behavior is valued in their unit rather than their perception that members in society at large engage in PEBs.

The findings for guilt repair indicate its relevance for individuals' PEBs at a cost to self but not to PEBs at work. Guilt is generally experienced when individuals

act in ways that are counter to their beliefs and values (Tangney et al., 2007). When guilt is evoked, some individuals may feel the need to compensate or repair it, particularly in the case of behaviors that have a moral dimension to them, such as PEBs (Kenworthy et al., 2011).

Correlations between guilt repair and both types of PEBs were significant and positive. However, guilt repair was relatively less important for PEBs in general when context and personal norms were considered. Results indicated that individuals' personal norms and their psychological perceptions of unit climate and home climate for PEBs were the drivers of PEBs that are relatively easy to perform. Guilt may be less critical relative to personal norms or the perceived importance of PEBs in the work unit or home as contextual factors such as habit, cost, availability of alternatives, or other constraints might drive individuals' PEBs (Steg & Vlek, 2009). For PEBs that require expending of time or effort, additional personal factors such as guilt repair may come into play to actuate the drive to be environmentally responsible.

Overall, results indicated that individual differences do not affect the relationship between individuals' environmental attitude and PEBs or PEBs at a cost to self at work. Rather, they appear to directly affect individuals' PEBs in the workplace, supporting the notion that factors other than environmental attitudes can directly affect individuals' PEBs (Stern, 2000).

Limitations and Future Directions

Despite the positive findings for the contextual and individual difference factors in explaining PEBs in the workplace, there are several limitations of the current study. One limitation is the use of self-report measures to assess PEBs. A concern with using self-report measures is the possibility of measurement bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). A review of environmental psychology research indicated that self-report measures of PEBs are a valid indicator of individuals' actual PEBs. For example, Kaiser, Frick, & Stoll-Kleemann (2001) compared subjective measures and objective observations of several behaviors from Kaiser's (1998) General Ecological Behavior scale and found that that self-reports were fairly stable and valid indicators of ecological behaviors. However, other studies showed results that were less strong. For example, Lam and Cheng (2002) compared self-report of PEBs with other-report of PEBs and found them to be moderately correlated ($r = 0.4$). They did not find self-reports of PEBs to be consistently higher than other-reports of PEBs, and other-reports may be suspect due to observational opportunities.

Additionally, according to a multi-trait multi-method analysis conducted by Corral-Verdugo and Figueredo (1999) wherein they assessed the correlation between observed reuse behaviors and self-report of the frequency of reuse behaviors and quantity of reused materials, observed reuse behaviors were fairly highly correlated with self-report of quantity of reused materials (average $r = 0.6$) and moderately correlated with self-report of frequency of reuse behaviors (average $r = 0.4$). They also conducted a confirmatory factor analysis, which revealed a significant

correlation between observed reuse behaviors and self-report frequency of reuse behaviors (r = 0.3) and between observed reuse behaviors and self-report quantity of reused materials (r = 0.3). These results indicate that self-report of PEBs can be a fairly good indicator of individuals' actual PEBs.

Further, research in environmental psychology indicates that engaging in certain specific PEBs does not necessarily generalize to PEBs in other domains, primarily due to situational constraints affecting particular behaviors (Kaiser & Keller, 2001; Steg & Vlek, 2009). If one recycles, it does not mean that (s)he also conserves energy. For example, individuals' household energy consumption tends to be driven to a larger extent by factors such as family-size, income, availability of alternatives, and the like, than by environmental attitudes (Gatersleben, Steg, & Vlek, 2002; Newton & Meyer, 2012).

Such concerns are applicable to PEBs in the workplace as well. With regard to this study, without a great deal of time spent observing individuals, it would have been feasible to observe only a limited number of PEBs. For example, recycling behaviors could be observed to some extent, yet observation of the quantity of recycling or frequency of recycling would be unlikely to provide a good indication of the extent to which people generally engage in PEBs in the workplace. Individuals' recycling frequency and quantity are likely to be related to the nature of their job. Individuals who work in an administrative capacity might generate, and therefore, recycle more paper than those who work in technology simply because their job requires them to do so. Recycling more does not indicate that administrative

personnel generally engage in PEBs in the workplace to a greater extent than other employees.

Another concern regarding the use of self-report measures is common method variance, which could result in inflation of observed correlations between constructs, leading to Type I error (Campbell & Fiske, 1959). In addition to collecting some objective measures, common method variance could be minimized by temporally separating the predictor and outcome variables with a time lag between data collections or obtaining measures from other sources such as peers and family members (Ostroff, Kinicki, & Clark, 2002; Podsakoff et al., 2003).

Additionally, because a concern for the environment and PEBs are generally valued in today's society, a related concern in using a self-report measure of individuals' PEBs is social desirability bias, i.e., individuals' tendency to respond to an item more positively as a result of its social acceptability rather than being reflective of their true feelings (Podsakoff et al., 2003). Although there is some debate in the literature as to whether social desirability affects organizational research (Moorman & Podsakoff, 1992), a measure of social desirability was included as a control in conducting all analyses. Social desirability was not significantly related to PEBs, but was related to some of the contextual and individual difference variables.

A second limitation is that the sample may not be representative. In both organizations that participated in the survey, the survey was released to a limited audience. Only employees who subscribed to the organizations' informational mailing list designed to disseminate informational messages such as events and other news announcements received notification of the survey. A disadvantage of such a

sample is the possibility that employees who are interested in receiving information about their organization might generally be more attuned to situational cues and might make additional effort to gather information regarding their work environment (Bauer & Green, 1998; Morrison, 1993).

In the context of the current study, it is likely that individuals who pay attention and attach importance to contextual cues in the workplace are also more likely to engage in PEBs in the workplace than other employees in general. Additionally, it is likely that such individuals might have more positive perceptions of contextual factors such as unit climate for PEBs and leader support for PEBs. In order to overcome this deficiency, in future studies, surveys should be disseminated to all employees of an organization if possible. Similarly, the sample in this study was university employees. In future, it would be beneficial to draw samples from other industries and organizations in order to further generalize the results.

A third limitation of the study is the relatively small number of units. Although analyses indicated that unit level unit climate for PEBs and leader support for PEBs varied significantly between departments and agreement within departments for these two constructs was fairly high, the reliabilities of the unit level means were low. It could be that climate is more salient at a lower unit level such as one's workgroup or team because social effects could be more prominent at this level rather than at the department level, and hence stronger results and higher reliabilities for the mean scores might be obtained.

Increasing the number of units may also yield larger differences between groups and would also increase the power to detect cross level influences. To obtain

more variance between units, a study that includes a wider range of different organizations or industries may be useful because similarity in employee perceptions can occur within organizations (Schneider, 1987). This strategy may also yield significant difference between units in their overall level of PEBs to allow for testing cross-level effects.

A fourth limitation of the study is that a concurrent methodology was employed in collecting the measures. Even though the model implied that the antecedents examined in the study affected individuals' PEBs in the workplace, and partial support for these hypotheses was found, no causal claims can be made because there was no time lag between the responses. Additional research is needed to test the causal linkages implied in the model to show that the effects of the antecedents are still present even after the passage of time (Maxwell & Cole, 2007). Future studies should employ longitudinal designs in order to gain a better understanding of the causal nature of contextual and individual differences for influencing PEBs as well as the extent to which PEBs at work are sustained over time.

In addition to methodological issues, the results from the study point to the need to further explore the mechanisms by which individuals' environmental attitudes and personal norms affect PEBs at a cost to self at work. It is not clear whether individuals' personal norms are more proximal than their environmental attitudes in predicting the extent to which they engage in PEBs at a cost to self at work, or whether they mediate individuals' environmental attitude - PEBs at a cost to self relationship at work. Although norm activation theory (Schwartz, 1977; Schwartz & Howard, 1981) and value belief norm theory (Stern, 2000; Stern et al., 1999) have

both established the importance of individuals' personal norms with regard to their PEBs in society in general, the mechanism by which they influence environmental outcomes is still not clear. While norm activation theory and value belief norm theory have explained PEBs that are easy to perform fairly well, they do not seem well-suited to explain PEBs that require more time or effort (Steg & Vlek, 2009). In essence, the theoretical mechanisms employed in environmental psychology to explain individuals' PEBs in society in general have so far failed to provide a conclusive answer as to how individuals' personal norms affect their PEBs. There is a need to understand this mechanism for PEBs in society in general and PEBs in the workplace.

Additionally, further research is needed to examine personal attributes, besides personal norms, that may be important for understanding PEBs at work and how they might compare or interact with contextual factors in determining such behaviors (Ones & Dilchert, 2012; Steg & Vlek, 2009). Some personal attributes such as personality (Milfont & Sibley, 2012), values (de Groot & Steg, 2008), and empathy (Berenguer, 2007, 2010) have been examined in relation to individuals' PEBs. However, personal attributes generally have not been examined in conjunction with contextual factors with regard to individuals' PEBs. In essence, more systematic research is needed in this domain. The person-environment interaction area is still wide open for further exploration with respect to PEBs in the workplace (Ones & Dilchert, 2012).

Additionally, examining injunctive norms, which refer to individuals' perceptions of others' general societal approval or disapproval of certain behaviors,

(Cialdini et al., 1990) could be useful. Because climate perceptions regarding PEBs in the workplace are individuals' perceptions of behaviors that are valued in the organization and was found to be strongly positively related to both PEBs and PEBs at a cost to self at work, it might be of value to examine the relative importance of injunctive norms regarding PEBs in society in general and climate for PEBs in the workplace to see if individuals' climate perceptions override the effect of injunctive norms within the workplace. Finally, the relative importance of personal norms, descriptive norms, and injunctive norms could also be examined in relation to individuals' PEBs in the workplace.

In sum, research suggests that there is a need to better conceptualize PEBs, and understand what motivates individuals to engage in them, when, and why. Hence, it is important to build the nomological network of individuals' PEBs in the workplace and pay particular attention to the psychological factors and the situational constraints that might define its structure, helping to define under what circumstances are certain factors related to PEBs and why, a recurring theme that has emerged in environmental psychology with regard to individuals' PEBs in society in general (e.g., Steg & vlek, 2009) and in organizational psychology with regard to individuals' PEBs in the workplace (e.g., Ones & Dilchert, 2012).

Future research on individuals' PEBs in the workplace can take advantage of knowledge gained from work in environmental psychology on individuals' PEBs in society in general, and apply an organizational framework to examine specific organizational factors that might facilitate or constrain individuals' PEBs in organizations. Such an approach might help us understand what organizations can do

(e.g., institute policies and procedures, disseminate information, or establish training programs) to encourage and motivate employees to be more environmentally responsible in the workplace.

Summary and Practical Implications

This study was based on an extensive review of research conducted in the area of environmental psychology and utilized an extended version of the theory of planned behavior (Ajzen, 1985, 1991) and a commons dilemma perspective (Hardin, 1968) as its theoretical framework. To adapt the theory of planned behavior for explaining behaviors in the organizational context, a moral dimension was added to the theory of planned behavior to include individuals' feelings of personal moral obligation towards the environment based on notions from norm activation (Schwartz, 1977; Schwartz & Howard, 1981) and value belief norm (Stern, 2000; Stern et al., 1999) theories. To account for the fact that individuals' environmental behaviors may stem from prosocial, moral, or ethical concerns in addition to rational thought, and to help delineate when and why certain factors might be more efficacious in motivating individuals to engage in different types of PEBs in the workplace, a commons dilemma (Hardin, 1968) perspective was applied to the study.

Overall, this study furthered our understanding of some of the contextual and personal factors related to individuals' PEBs in the workplace. Results indicated that psychological unit climate for PEBs and home climate for PEBs are important contextual factors, while a personal norm, and to some extent guilt repair, are

important personal attributes for explaining the extent to which individuals engage in PEBs in the workplace.

From a practical perspective, this knowledge can inform us as to how organizations can encourage employees to generally engage in PEBs in the workplace and also motivate them to take the additional step to engage in PEBs at a cost to themselves. Organizations could foster a climate for PEBs in the workplace and encourage employees to be environmentally responsible by providing incentives for purchasing eco-friendly office products or organizing carpooling or rideshare programs to encourage green commuting. Organizations could also encourage managers to promote environmentally responsible behaviors among their subordinates. Finally, organizations could institute HR policies to enhance PEBs in the workplace. For example, they could consider individuals' personal norms regarding the environment in their employee selection process or in making hiring decisions.

Employees' PEBs in the workplace hold several benefits for organizations, most important of which is that individual PEBs in the aggregate could impact the organization's triple bottom line, i.e., their ecological, social, and economic performance (Elkington, 1997). Further, spearheaded by the Global Reporting Initiative, there is increasing pressure on organizations to disclose their sustainability practices and publish sustainability reports (Willis, 2003; Wilson & Lombardi, 2001). In order to facilitate comparison of environmentally responsible practices across organizations, there is an impetus for greater granularity, transparency, and standardization of sustainability metrics (Etzion & Ferraro, 2010). Hence, facilitating

PEBs in the workplace could help improve an organization's sustainability metrics and its standing among its stakeholders.

Additionally, because of the call for an active response to ecological and sustainability issues rather than passive compliance with environmental regulations (WCED, 1997), organizations are beginning to focus on training their workforce to adopt and engage in environmentally responsible practices (Jarventaus, 2007). Hence, the increased understanding of the factors that facilitate PEBs in the workplace could help organizations improve sustainability training effectiveness. For example, training programs could be tailored to make climate unambiguous or salient in order to facilitate employees' PEBs in the workplace.

In sum, just as a psychological perspective has helped us understand the behavioral aspect of human interaction with the environment such as conservation behaviors and other environmentally responsible actions (Clayton & Myers, 2009; Gardner & Stern, 2002; Nickerson, 2003), an organizational psychology or organizational behavior perspective could contribute to the study of sustainability issues in organizations (e.g., assessing the viability and/or efficacy of sustainable business practices, providing effective sustainability training, and motivating employees to engage in PEBs). It could help organizations and workers successfully adapt to the changes in the business environment associated with adopting and implementing sustainable business practices (Campbell & Campbell, 2005; DuBois & DuBois, 2010; Huffman, Watrous-Rodriguez, Henning, & Berry, 2009).

Appendices

Appendix A: Measures

Appendix B: Tables and Figures

Appendix A

The items for each of the measures are listed below. Unless otherwise indicated, all items will use a 5-pt scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree," to indicate the extent to which participants agree or disagree with the item. When appropriate, item scores were reverse coded before conducting all analyses. Items requiring reverse scoring are indicated below with an "(r)."

Environmental Attitude

1. The balance of nature is very delicate and easily upset.
2. Humans have the right to modify the natural environment to suit their needs. (r)
3. Humans were meant to rule over the rest of nature. (r)
4. When humans interfere with nature it often produces disastrous consequences.
5. Plants and animals exist primarily to be used by humans. (r)
6. Humans must live in harmony with nature in order to survive.
7. Humans need not adapt to the natural environment because they can remake it to suit their needs. (r)
8. Humans are severely abusing the environment.

Source: Adapted from the New Environmental Paradigm (Dunlap & Van Liere, 1978)

Unit climate for PEBs

In my department, we generally:

1. recycle paper, plastic, metal cans, packing materials, etc.

2. reduce waste by minimizing printing or printing double-sided, using re-usable kitchenware or mugs, reusing office supplies, etc.
3. conserve energy by switching off lights, computers, appliances, etc.
4. generate and share ideas on how to be more environmentally friendly in our day-to-day activities at work.

Leader Support for PEBs

My departmental manager/ supervisor:

1. appreciates or acknowledge whenever they see someone being environmentally friendly (e.g., recycling, reusing items, conserving energy) at work.
2. seriously considers employees' suggestions on how to be more environmentally friendly at work.
3. emphasizes the need to be environmentally friendly at work.
4. encourages employees to generate and share ideas on how to be more environmentally friendly at work.
5. discusses environmental issues with us and encourage us to learn about them.

Source: Adapted from Zohar (2000) and Zohar & Luria (2005)

Home Climate for PEBs

At home, we:

1. try to learn more about environmental issues (e.g., watch TV programs, read books/ magazines/ newspaper articles, etc. about the environment).

2. try to be as environmentally responsible as possible (e.g., recycle and reuse items, conserve energy, etc.).
3. discuss environmental issues, legislation, policies, etc.

Role Overload

1. The amount of work I am expected to do is too great.
2. I never seem to have enough time to get everything done at work.
3. It often seems like I have too much work for one person to do.

Source: Bolino and Turnley (2005)

Personal Norm

1. I personally feel I have a moral obligation to protect the environment.
2. I personally feel it is important that I behave in environmentally responsible ways.
3. Not being environmentally responsible would violate my personal principles.

Source: Adapted from Gärling et al. (2003)

Descriptive Norm

How often do you think people in society do the following?

1. Recycle paper, plastic, metal cans, etc.
2. Reduce waste by reusing items such as water bottles, jars, paper, plastic, etc.
3. Conserve natural resources such as water and energy.

Response choices: 1= very rarely; 2 = rarely; 3= neutral; 4 = often; 5 = very often

Source: Adapted from Gärling et al. (2003)

Guilt Repair

Assume that your organization strongly encourages everyone to be environmentally responsible in their day-to-day activities at work. Then think of the following hypothetical workplace scenarios, and indicate the likelihood that you would react in the way described.

1. In the past week there were a few times when you forgot to recycle, although none of your coworkers noticed this. What is the likelihood that this would lead you to be more responsible about recycling in future?
2. You were having a meeting in the conference room and turned on the AC a bit high because the room seemed too warm. However, you forgot to turn the AC back down after your meeting, although none of the others present in the room noticed this. What is the likelihood that this would lead you to be more responsible about such things in future?
3. You were in a hurry and forgot to turn off the faucet in the washroom at work yesterday, although no one realized that it was you. What is the likelihood that this would lead you to be more responsible about this in future?
4. You were the last person to leave the office yesterday and forgot to switch the lights off on your way out. You were also first person in today, so no one found out. What is the likelihood that this would lead you to be more careful about such things in future?

Response choices: 1 = very unlikely; 2 = unlikely; 3 = neutral; 4 = likely; 5 = very likely

Source: Adapted from the Guilt Repair subscale of the Guilt and Shame Proneness scale (Cohen et al., 2011)

Pro-Environmental Behaviors

In the workplace, I usually:

1. recycle paper, plastic, metal cans, packing materials, etc.
2. reuse items such as water bottles, paper, plastic, office supplies, etc.
3. conserve energy by switching off lights, computers, appliances, etc.

Pro-Environmental Behaviors at a Cost to Self

The following are some hypothetical scenarios in the workplace. Please indicate the extent to which you are likely to act in the way described.

I would:

1. adjust thermostat temperature settings in my office to conserve energy even though it might be a little uncomfortable (e.g., use a fan in the summer or put on an extra sweater in the winter rather than turn up the AC or heat).
2. switch to buying products from a company that follows environmentally friendly practices, even though I might be inconvenienced (e.g., do extra paperwork for procurement/ purchasing, bear with longer order processing times, etc.).
3. substitute products I currently use and like with products I may not prefer as much just because they are more environmentally friendly or use environmentally friendly packaging (e.g., buy office products made of post-recycled paper or plastic, or come in recyclable or biodegradable packaging, etc.).

4. try to reduce waste even if it required more time and effort on my part (e.g., take the time to clean and reuse old binders rather than use a new one, print double sided even if I have to manually flip the paper, etc.).
5. use reusable products that might require more effort on my part to maintain rather than quick-and-easy disposable products (e.g., for your office lunch, use cloth towels, containers for food storage, etc. that would need to be washed rather than using disposable paper towels/ wipes, plastic food bags, plastic kitchenware, etc.).

Response choices: 1 = very unlikely; 2 = unlikely; 3 = neutral; 4 = likely; 5 = very likely

Social Desirability

1. I'm always willing to admit it when I make a mistake.
2. There have been times when I was quite jealous of the good fortune of others.
3. I am sometimes irritated by people who ask favors of me.
4. I have never deliberately said something that hurt someone's feelings. (r)

Response choices: 0 = true; 1 = false

Source: Adapted from Reynolds' (1982) short form (Form A) of the Marlowe Crowne Social Desirability scale (MCSD; Crowne & Marlowe, 1960).

Conscientiousness

1. I am always prepared.
2. I pay attention to details.
3. I get chores done right away.

4. I carry out my plans.
5. I make plans and stick to them.

Source: Adapted from the International Personality Item Pool (IPIP)

Conscientiousness scale (Goldberg, 1999)

Demographic information

- Education
- Organizational tenure
- Departmental tenure
- Employment type: Full time / part time
- Age
- Sex

Appendix B

Table B1

Confirmatory factor analysis to determine the factor structure of survey items

Item	Factor Loading			
	Environmental Attitude	Unit Climate	Leader Support	Role Overload
1. The balance of nature is very delicate and easily upset.	0.54	- -	- -	- -
2. Humans have the right to modify the natural environment to suit their needs.	0.48	- -	- -	- -
3. Humans were meant to rule over the rest of nature.	0.55	- -	- -	- -
4. When humans interfere with nature it often produces disastrous consequences.	0.57	- -	- -	- -
5. Plants and animals exist primarily to be used by humans.	0.57	- -	- -	- -
6. Humans must live in harmony with nature in order to survive.	0.67	- -	- -	- -
7. Humans need not adapt to the natural environment because they can remake it to suit their needs.	0.47	- -	- -	- -
8. Humans are severely abusing the environment.	0.69	- -	- -	- -
9. In my department, we generally: recycle paper, plastic, metal cans, packing materials, etc.	- -	0.55	- -	- -
10. reduce waste by minimizing printing or printing double-sided, using re-usable kitchenware or mugs, reusing office supplies, etc.	- -	0.62	- -	- -
11. carpool, share a ride, or take public transportation to work.	- -	0.33	- -	- -
12. conserve energy by switching off lights, computers, appliances, etc.	- -	0.61	- -	- -
13. generate and share ideas on how to be more environmentally friendly in our day-to-day activities at work.	- -	0.66	- -	- -
14. My departmental director/ manager: appreciates or acknowledges whenever (s)he sees someone being environmentally friendly …	- -	- -	0.84	- -
15. seriously considers employees' suggestions on how to be more environmentally friendly at work.	- -	- -	0.80	- -
16. emphasizes the need to be environmentally friendly at work.	- -	- -	0.90	- -
17. encourages employees to generate and share ideas on how to be more environmentally friendly at work.	- -	- -	0.94	- -
18. discusses environmental issues and encourages us to learn about them.	- -	- -	0.83	- -
19. The amount of work I am expected to do at my job is too great.	- -	- -	- -	0.83
20. I never seem to have enough time to get everything done at work.	- -	- -	- -	0.83
21. It often seems like I have too much work for one person to do.	- -	- -	- -	0.95

Table B1

(Continued)

Item	Factor Loading			
	Home Climate	Personal Norm	Descriptive Norm	Guilt Repair
22. At home, we usually: try to learn more about environmental issues …	0.80	- -	- -	- -
23. try to be as environmentally responsible as possible …	0.63	- -	- -	- -
24. discuss environmental issues, legislation, policies, etc.	0.78	- -	- -	- -
25. I personally feel I have a moral obligation to protect the environment.	- -	0.90	- -	- -
26. I personally feel it is important that I behave in environmentally responsible ways.	- -	0.85	- -	- -
27. Not being environmentally responsible would violate my personal principles.	- -	0.84	- -	- -
28. How often do you think people in society do the following? Recycle paper, plastic, metal cans, etc.	- -	- -	0.72	- -
29. Reduce waste by reusing items such as water bottles, jars, paper, plastic, etc.	- -	- -	0.85	- -
30. Conserve natural resources such as water and energy.	- -	- -	0.77	- -
31. In the past week there were a few times when you forgot to recycle … What is the likelihood that this would lead you to be more responsible about recycling in future?	- -	- -	- -	0.77
32. You were having a meeting in the conference room and turned on the AC a bit high because the room seemed too warm. However, you forgot to turn the AC back down after your meeting … What is the likelihood that this would lead you to be more responsible about such things in future?	- -	- -	- -	0.82
33. You were in a hurry and forgot to turn off the faucet in the washroom at work yesterday … What is the likelihood that this would lead you to be more responsible about this in future?	- -	- -	- -	0.84
34. You were the last person to leave the office yesterday and forgot to switch the lights off on your way out … What is the likelihood that this would lead you to be more careful about such things in future?	- -	- -	- -	0.88

Table B1

(Continued)

Item	Factor Loading	
	Pro-Env. Behav.	Pro-Env. Behav. at a cost to self
35. In the workplace, I usually: recycle paper, plastic, metal cans, … etc.	0.55	- -
36. reuse items such as water bottles, paper, plastic, office supplies, etc.	0.62	- -
37. conserve energy by switching off lights, computers, appliances, etc.	0.46	- -
38. carpool, share a ride, or take public transportation to work.	0.22	- -
39. In the workplace, I usually: recycle items such as packing materials, paper, glass, plastic, metal cans, etc. even if I have to go to a recycling bin/ center that is not in my office area.	- -	0.61
40. (if available) switch to products that are more environmentally friendly or use environmentally friendly packaging ..., even though I may not prefer them as much as the products I currently use.	- -	0.66
41. reduce waste even if it requires more time and effort on my part …	- -	0.69
42. use reusable products that might require more effort on my part to maintain rather than quick-and-easy disposable products …	- -	0.67
43. conserve energy even if it inconveniences me a little …	- -	0.55

Note: Pro-Env. Behav. = Pro-Environmental Behaviors.

Table B2

Means, standard deviations, and correlations of measures and controls

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9
1. Environmental Attitude	3.97	0.58	(0.78)								
2. Psychological Unit Climate	3.66	0.69	-0.02	(0.69)							
3. Psychological Leader Support	2.97	0.89	-0.05	0.53**	(0.93)						
4. Home Climate	3.87	0.78	0.44**	0.19**	0.13**	(0.75)					
5. Role Overload	2.87	1.01	0.04	0.08	0.04	0.08	(0.90)				
6. Personal Norm	4.27	0.65	0.50**	0.16**	0.07	0.66**	0.06	(0.88)			
7. Descriptive Norm	3.15	0.68	-0.16**	0.29**	0.23**	0.01	0.07	-0.05	(0.83)		
8. Guilt Repair	4.09	0.80	0.21**	0.17**	0.05	0.29**	-0.05	0.30**	0.04	(0.89)	
9. Pro-Environmental Behaviors	4.32	0.64	0.15**	0.31**	0.11*	0.36**	-0.02	0.36**	0.08	0.23**	(0.57)
10. Pro-Environmental Behaviors at a cost to self	3.98	0.67	0.29**	0.37**	0.17**	0.53**	0.05	0.53**	0.02	0.31**	0.52**
11. Organizational Tenure	10.62	9.44	0.00	0.10*	0.05	0.13**	0.13**	0.09*	0.13**	0.07	0.13**
12. Departmental Tenure	7.64	7.73	-0.02	0.04	0.03	0.11*	0.17**	0.07	0.09*	0.05	0.10*
13. Education	4.40	1.05	0.23**	-0.13**	-0.09*	0.16**	0.13**	0.19**	-0.11*	0.02	0.05
14. Job Satisfaction	3.94	0.87	0.03	0.13**	0.14**	0.02	-0.14**	0.08	0.02	0.00	0.13**
15. Age	43.96	12.89	0.08	0.10*	0.10*	0.30**	0.06	0.20**	0.14**	0.18**	0.15**
16. Sex	0.76	0.43	0.18**	0.07	-0.02	-0.03	-0.04	-0.01	0.08	0.13**	0.12**
17. Conscientiousness	3.76	0.62	-0.02	0.17**	0.12**	0.10*	-0.07	0.10*	0.12**	0.12**	0.16**
18. Social Desirability	1.44	0.34	-0.02	0.17**	0.13**	0.05	-0.06	0.01	0.13**	0.12**	0.05
19. Sample	0.17	0.38	-0.20**	-0.07	0.09*	-0.19**	-0.04	-0.21**	-0.08	-0.08	-0.11*

Note: * $p < .05$, ** $p < .01$. Reliabilities are shown on the diagonal in parentheses. Correlations are based on listwise deletion. $N = 511$.
Sex: 0 = Male; 1 = Female. Sample: 0 = Sample 1; 1 = Sample 2.

Table B2

(Continued)

Variable	10	11	12	13	14	15	16	17	18	19
1. Environmental Attitude										
2. Psychological Unit Climate										
3. Psychological Leader Support										
4. Home Climate										
5. Role Overload										
6. Personal Norm										
7. Descriptive Norm										
8. Guilt Repair										
9. Pro-Environmental Behaviors										
10. Pro-Environmental Behaviors at a cost to self	(0.77)									
11. Organizational Tenure	0.14**	--								
12. Departmental Tenure	0.11*	0.79**	--							
13. Education	0.05	-0.02	0.06	--						
14. Job Satisfaction	0.11*	0.10*	0.07	0.07	--					
15. Age	0.18**	0.62**	0.55**	0.03	0.08	--				
16. Sex	0.09*	-0.04	-0.10*	0.00	-0.03	-0.10*	--			
17. Conscientiousness	0.19**	-0.05	-0.07	0.01	0.12**	-0.03	0.03	(0.81)		
18. Social Desirability	0.08	0.10*	0.04	-0.17**	0.07	0.17**	0.08	0.15**	(0.44)	
19. Sample	-0.12**	-0.04	-0.02	-0.23**	0.00	-0.04	-0.11*	0.18**	0.10*	--

Note: * $p < .05$, ** $p < .01$. Correlations are based on listwise deletion. $N = 511$.
Sex: 0 = Male; 1 = Female. Sample: 0 = Sample 1; 1 = Sample 2.

Table B3

Hierarchical linear model analysis to determine predictors of pro-environmental behaviors

	Step 1			Step 2			Step 3			Step 4		
	Est.		*SE*	*Est.*		*SE*	*Est.*		*SE*	*Est.*		*SE*
DV: Pro-Environmental Behaviors												
Intercept	2.88	**	0.27	2.97	**	0.27	3.84	**	0.27	3.88	**	0.26
Sex	-0.16	**	0.06	-0.14	*	0.07	-0.16	**	0.06	-0.14	*	0.06
Source	0.14		0.09	0.12		0.09	0.02		0.08	0.04		0.08
Organizational Tenure	0.00		0.01	0.00		0.01	0.00		0.00	0.00		0.00
Departmental Tenure	0.00		0.01	0.00		0.01	0.00		0.01	0.00		0.01
Education	0.02		0.03	0.01		0.03	0.02		0.03	0.01		0.03
Job Satisfaction	0.06	*	0.03	0.06	*	0.03	0.05		0.03	0.05		0.03
Age	0.01	*	0.00	0.00		0.00	0.00		0.00	0.00		0.00
Conscientiousness	0.17	**	0.05	0.17	**	0.04	0.08		0.04	0.07		0.04
Social Desirability	-0.01		0.08	-0.01		0.08	-0.05		0.08	-0.08		0.08
Environmental Attitude				0.12	*	0.05	-0.06		0.05	-0.05		0.05
Psychological Unit Climate							0.25	**	0.05	0.27	**	0.05
Psychological Leader Support							-0.07	*	0.03	-0.06		0.03
Home Climate							0.16	**	0.05	0.13	**	0.04
Role Overload							-0.04		0.03	-0.03		0.03
Personal Norm							0.18	**	0.05	0.15	**	0.05
Descriptive Norm							0.01		0.04	0.00		0.04
Guilt Repair							0.05		0.03	0.06		0.03
Environmental Attitude * Psyc. Unit Climate										-0.22	**	0.08
Environmental Attitude * Psyc. Leader Support										-0.08		0.05
Environmental Attitude * Home Climate										0.08		0.07
Environmental Attitude * Role Overload										-0.12	**	0.04
Environmental Attitude * Personal Norm										-0.01		0.08
Environmental Attitude * Descriptive Norm										0.09		0.06
Environmental Attitude * Guilt Repair										-0.08		0.06
R^2	0.08	**		0.09	**		0.24	**		0.27	**	
ΔR^2				0.01	*		0.15	**		0.03	**	

Note: * $p < .05$, ** $p < .01$. $N = 511$. Psyc. Unit Climate = Psychological Unit Climate. Psyc. Leader Support = Psychological Leader Support.

Table B4

Hierarchical linear model analysis to determine predictors of pro-environmental behaviors at a cost to self

	Step 1		Step 2		Step 3		Step 4	
	Est.	*SE*	*Est.*	*SE*	*Est.*	*SE*	*Est.*	*SE*
DV: Pro-Environmental Behaviors at a cost to self								
Intercept	2.31 **	0.28	2.55 **	0.27	3.70 **	0.24	3.68 **	0.25
Sex	-0.14 *	0.07	-0.06	0.07	-0.12 *	0.06	-0.12 *	0.06
Source	0.18	0.09	0.12	0.09	0.00	0.07	0.02	0.07
Organizational Tenure	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Departmental Tenure	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Education	0.01	0.03	-0.02	0.03	-0.02	0.02	-0.02	0.02
Job Satisfaction	0.05	0.03	0.04	0.03	0.03	0.03	0.03	0.03
Age	0.01 *	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Conscientiousness	0.22 **	0.05	0.22 **	0.05	0.10 *	0.04	0.10 *	0.04
Social Desirability	0.05	0.09	0.04	0.09	-0.02	0.07	-0.02	0.07
Environmental Attitude			0.31 **	0.05	0.01	0.05	0.02	0.05
Psychological Unit Climate					0.28 **	0.04	0.29 **	0.05
Psychological Leader Support					-0.03	0.03	-0.03	0.03
Home Climate					0.24 **	0.04	0.24 **	0.04
Role Overload					0.01	0.02	0.01	0.02
Personal Norm					0.27 **	0.05	0.25 **	0.05
Descriptive Norm					-0.06	0.04	-0.07	0.04
Guilt Repair					0.07 *	0.03	0.08 *	0.03
Environmental Attitude * Psyc. Unit Climate							-0.09	0.07
Environmental Attitude * Psyc. Leader Support							0.00	0.05
Environmental Attitude * Home Climate							0.08	0.07
Environmental Attitude * Role Overload							-0.03	0.04
Environmental Attitude * Personal Norm							-0.09	0.07
Environmental Attitude * Descriptive Norm							0.00	0.06
Environmental Attitude * Guilt Repair							0.01	0.05
R^2	0.07 **		0.13 **		0.41 **		0.47 **	
ΔR^2			0.06 **		0.28 **		0.06 **	

Note: * $p < .05$, ** $p < .01$. $N = 511$. Psyc. Unit Climate = Psychological Unit Climate. Psyc. Leader Support = Psychological Leader Support.

Table B5

Comparison of individual differences and contextual factors for pro-environmental behaviors at a cost to self

	Individual Differences		Contextual Factors		
	Est.	*SE*	*Est.*	*SE*	*t*
Individual Difference: Personal Norm	0.27	0.05			
Psychological Unit Climate			0.28	0.04	-0.23
Home Climate			0.24	0.04	0.37
Role Overload			0.01	0.02	4.73 **
Individual Difference: Descriptive Norm	-0.06	0.04			
Psychological Unit Climate			0.28	0.04	-5.54 **
Home Climate			0.24	0.04	-5.48 **
Role Overload			0.01	0.02	-1.54
Contextual Factor: Guilt Repair	0.07	0.03			
Psychological Unit Climate			0.28	0.04	-3.70 **
Home Climate			0.24	0.04	-3.07 **
Role Overload			0.01	0.02	1.84 *

* $p < .05$, ** $p < .01$, one-tailed.

Table B6

Comparison of contextual factors and individual differences for pro-environmental behaviors

	Contextual Factors		Individual Differences			
	Est.	*SE*	*Est.*	*SE*	*t*	
Contextual Factor: Psychological Unit Climate	0.25	0.05				
Personal Norm			0.18	0.05	1.03	
Descriptive Norm			0.01	0.04	3.63	**
Guilt Repair			0.05	0.03	3.26	**
Contextual Factor: Home Climate	0.16	0.05				
Personal Norm			0.18	0.05	-0.24	
Descriptive Norm			0.01	0.04	2.51	**
Guilt Repair			0.05	0.03	1.78	*
Contextual Factor: Role Overload	-0.04	0.03				
Personal Norm			0.18	0.05	-3.65	**
Descriptive Norm			0.01	0.04	-1.00	
Guilt Repair			0.05	0.03	-2.35	**

* $p < .05$, ** $p < .01$, one-tailed.

Table B7

Differential relationship of the predictors to the pro-environmental behavior outcomes

	Predictors			
	Est.	*SE*	*t*	
DV: Standardized predicted PEBs - Standardized PEBs at a cost to self				
Environmental Attitude	-0.08	0.04	-1.77	*
Psychological Unit Climate	-0.02	0.04	-0.44	
Home Climate	-0.08	0.05	-1.71	*
Role Overload	-0.07	0.04	-1.95	*
Personal Norm	-0.07	0.05	-1.49	
Descriptive Norm	0.07	0.04	1.89	*
Guilt Repair	-0.03	0.04	-0.81	

Note: PEBs = Pro-environmental behaviors. * $p < .05$, ** $p < .01$, one-tailed.

Table B8

Random intercepts and random slopes null models

	Pro-Environmental Behaviors		Pro-Environmental Behaviors at a Cost to Self	
	Est.	*SE*	*Est.*	*SE*
Random Intercept Model				
Covariance	0.00	0.01	0.01	0.01
Random Slope Model				
Covariance: UN (1,1)	0.00	0.00	0.00	0.01
UN (2,1)	0.00	0.01	0.00	0.01
UN (2,2)	0.00	0.00	0.01	0.03

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

Table B9

Hierarchical linear model analysis to determine suppression effect of psychological leader support on psychological unit climate and pro-environmental behaviors

	Step 1		Step 2		Step 3		Step 4	
	Est.	*SE*	*Est.*	*SE*	*Est.*	*SE*	*Est.*	*SE*
DV: Pro-Environmental Behaviors								
Intercept	2.88 **	0.27	2.97 **	0.27	3.84 **	0.27	3.84 **	0.27
Sex	-0.16 **	0.06	-0.14 *	0.07	-0.16 **	0.06	-0.16 **	0.06
Source	0.14	0.09	0.12	0.09	0.02	0.08	0.02	0.08
Organizational Tenure	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Departmental Tenure	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
Education	0.02	0.03	0.01	0.03	0.02	0.03	0.02	0.03
Job Satisfaction	0.06 *	0.03	0.06 *	0.03	0.05	0.03	0.05	0.03
Age	0.01 *	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Conscientiousness	0.17 **	0.05	0.17 **	0.04	0.08	0.04	0.08	0.04
Social Desirability	-0.01	0.08	-0.01	0.08	-0.05	0.08	-0.05	0.08
Environmental Attitude			0.12 *	0.05	-0.06	0.05	-0.06	0.05
Psychological Unit Climate					0.21 **	0.04	0.25 **	0.05
Psychological Leader Support					--	--	-0.07 *	0.03
Home Climate					0.15 **	0.05	0.16 **	0.05
Role Overload					-0.04	0.03	-0.04	0.03
Personal Norm					0.18 **	0.05	0.18 **	0.05
Descriptive Norm					0.01	0.04	0.01	0.04
Guilt Repair					0.05	0.03	0.05	0.03
R^2	0.08 **		0.09 **		0.24 **		0.24 **	
ΔR^2			0.01 *		0.15 **		0.15 **	

Note: * $p < .05$, ** $p < .01$. $N = 511$.

Table B10

Hierarchical linear model analysis to determine suppression effect of psychological leader support on psychological unit climate and pro-environmental behaviors at a cost to self

	Step 1		Step 2		Step 3		Step 4	
	Est.	*SE*	*Est.*	*SE*	*Est.*	*SE*	*Est.*	*SE*
DV: Pro-Environmental Behaviors at a cost to self								
Intercept	2.31 **	0.28	2.55 **	0.27	3.70 **	0.24	3.70 **	0.24
Sex	-0.14 *	0.07	-0.06	0.07	-0.12 *	0.06	-0.12 *	0.06
Source	0.18	0.09	0.12	0.09	0.00	0.07	0.00	0.07
Organizational Tenure	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Departmental Tenure	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Education	0.01	0.03	-0.02	0.03	-0.02	0.02	-0.02	0.02
Job Satisfaction	0.05	0.03	0.04	0.03	0.03	0.03	0.03	0.03
Age	0.01 *	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Conscientiousness	0.22 **	0.05	0.22 **	0.05	0.10 *	0.04	0.10 *	0.04
Social Desirability	0.05	0.09	0.04	0.09	-0.02	0.07	-0.02	0.07
Environmental Attitude			0.31 **	0.05	0.02	0.05	0.01	0.05
Psychological Unit Climate					0.26 **	0.04	0.28 **	0.04
Psychological Leader Support					--	--	-0.03	0.03
Home Climate					0.24 **	0.04	0.24 **	0.04
Role Overload					0.01	0.02	0.01	0.02
Personal Norm					0.27 **	0.05	0.27 **	0.05
Descriptive Norm					-0.07	0.04	-0.06	0.04
Guilt Repair					0.08 *	0.03	0.07 *	0.03
R^2	0.07 **		0.13 **		0.41 **		0.41 **	
ΔR^2			0.06 **		0.28 **		0.28 **	

Note: * $p < .05$, ** $p < .01$. $N = 511$.

Table B11

Hierarchical linear model analysis to determine the influence of environmental attitude on pro-environmental behaviors

	Step 1		Step 2		Step 3	
	Est.	*SE*	*Est.*	*SE*	*Est.*	*SE*
DV: Pro-Environmental Behaviors						
Intercept	2.97 **	0.27	3.84 **	0.27	3.84 **	0.27
Sex	-0.14 *	0.07	-0.16 **	0.06	-0.16 **	0.06
Source	0.12	0.09	0.02	0.08	0.02	0.08
Organizational Tenure	0.00	0.01	0.00	0.00	0.00	0.00
Departmental Tenure	0.00	0.01	0.00	0.01	0.00	0.01
Education	0.01	0.03	0.02	0.03	0.02	0.03
Job Satisfaction	0.06 *	0.03	0.05	0.03	0.05	0.03
Age	0.00	0.00	0.00	0.00	0.00	0.00
Conscientiousness	0.17 **	0.04	0.09 *	0.04	0.11 **	0.04
Social Desirability	-0.01	0.08	-0.06	0.08	-0.05	0.08
Environmental Attitude	0.12 *	0.05	0.00	0.05	-0.05	0.05
Psychological Unit Climate			0.27 **	0.05	--	--
Psychological Leader Support			-0.07	0.03	--	--
Home Climate			0.24 **	0.04	--	--
Role Overload			-0.04	0.03	--	--
Personal Norm			--	--	0.30 **	0.05
Descriptive Norm			--	--	0.04	0.04
Guilt Repair			--	--	0.08 *	0.03
R^2	0.09 **		0.22 **		0.18 **	

Note: * $p < .05$, ** $p < .01$. $N = 511$.

Table B12

Hierarchical linear model analysis to determine influence of environmental attitude on pro-environmental behaviors at a cost to self

	Step 1		Step 2		Step 3	
	Est.	*SE*	*Est.*	*SE*	*Est.*	*SE*
DV: Pro-Environmental Behaviors at a cost to self						
Intercept	2.55 **	0.27	3.70 **	0.24	3.70 **	0.24
Sex	-0.06	0.07	-0.12 *	0.06	-0.12 *	0.06
Source	0.12	0.09	0.00	0.07	0.00	0.07
Organizational Tenure	0.00	0.01	0.00	0.00	0.00	0.00
Departmental Tenure	0.00	0.01	0.00	0.00	0.00	0.00
Education	-0.02	0.03	-0.01	0.02	-0.04	0.03
Job Satisfaction	0.04	0.03	0.04	0.03	0.04	0.03
Age	0.01	0.00	0.00	0.00	0.00	0.00
Conscientiousness	0.22 **	0.05	0.11 *	0.04	0.14 **	0.04
Social Desirability	0.04	0.09	-0.02	0.07	0.03	0.08
Environmental Attitude	0.31 **	0.05	0.12 **	0.05	0.04	0.05
Psychological Unit Climate			0.31 **	0.05	--	--
Psychological Leader Support			-0.04	0.03	--	--
Home Climate			0.37 **	0.04	--	--
Role Overload			0.00	0.02	--	--
Personal Norm			--	--	0.45 **	0.05
Descriptive Norm			--	--	0.00	0.04
Guilt Repair			--	--	0.11 **	0.03
R^2	0.13 **		0.36 **		0.30 **	

Note: * $p < .05$, ** $p < .01$. $N = 511$.

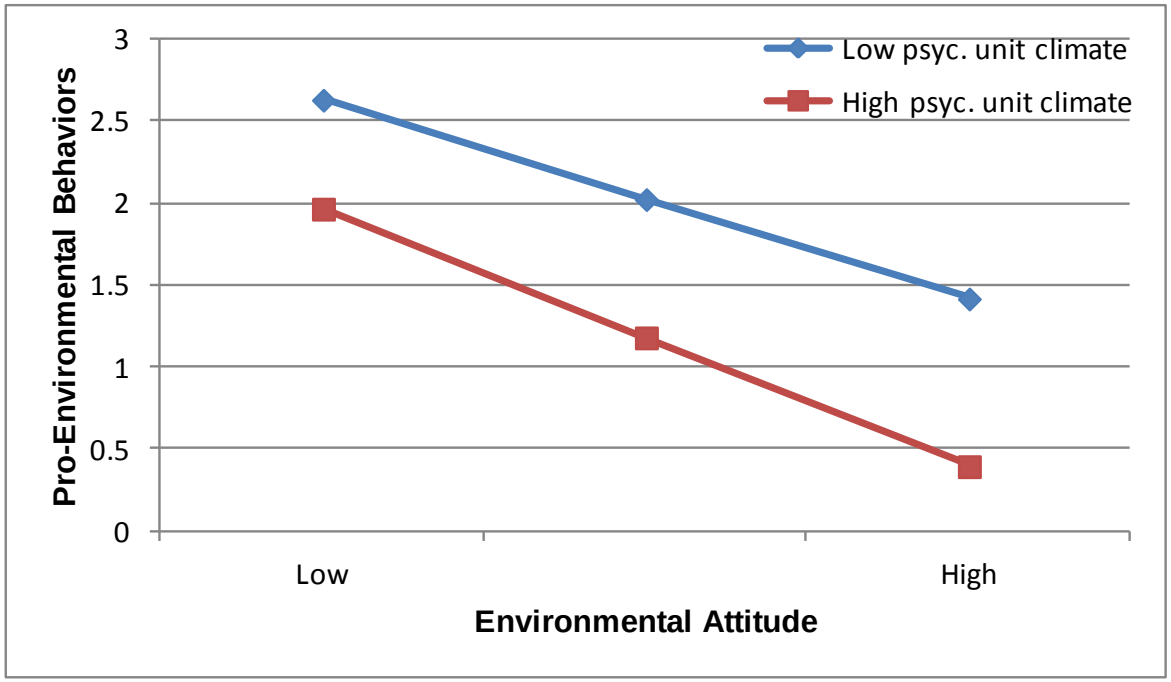

Figure B1. Psychological unit climate as a moderator of the relationship between environmental attitude and pro-environmental behaviors
Note. Psyc. unit climate = psychological unit climate.

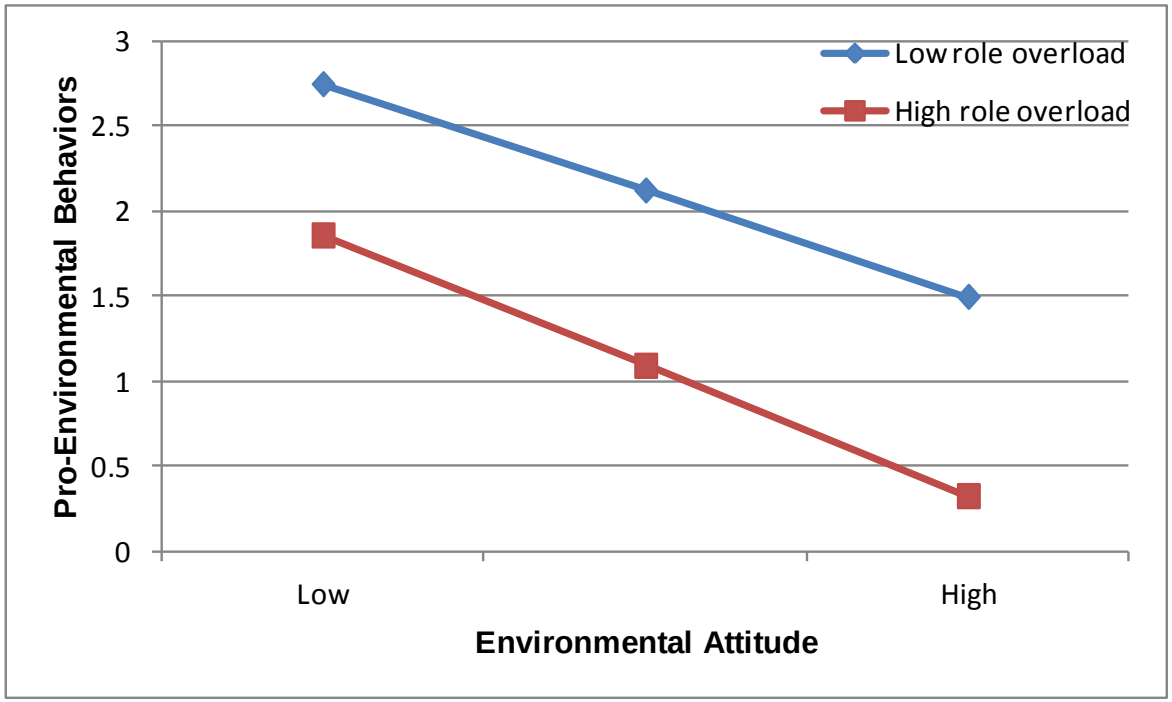

Figure B2. Role overload as a moderator of the relationship between environmental attitude and pro-environmental behaviors

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