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# DEVELOPMENT OF AN EMPLOYEE GREEN BEHAVIOR DESCRIPTIVE NORMS SCALE

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DESCRIPTIVE NORMS SCALE

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A Thesis  
Presented to the  
Faculty of  
California State University,  
San Bernardino

---

In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science  
in  
Psychology:  
Industrial-Organizational

---

by  
Jacqueline Christine McConnaughy

June 2014

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Jacqueline Christine McConnaughy

June 2014

Approved by:

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## ABSTRACT

With a growing interest in sustainability, organizations and researchers have begun to examine pro-environmental behaviors in the workplace (i.e. employee green behaviors). However, general understanding of employee green behaviors is currently limited due to a lack of measurement tools. In this study, a new scale was developed to measure employee green behavior descriptive norms, which are a source of influence on employee green behaviors that develops from observing others' behaviors. Initial items and expected scale structure for the Employee Green Behavior Descriptive Norms Scale were developed based on the Green Five Taxonomy of employee green behaviors. Items were refined through pilot test data and a retranslation task. Data on the refined scale, the Ethical Leadership Questionnaire, and a Work-Family Culture Scale were used to test scale structure and gather evidence of construct validity. Study results supported the expected scale structure and construct validity of the newly developed scale. A multi-item, validated scale contributes to organizational assessment of employee green behavior descriptive norms and contributes to the scientific literature on employee green behaviors.

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# CHAPTER ONE

## INTRODUCTION

### Introduction

Ones and Dilchert (2012a) state, “To be ecologically sustainable, we need to promote, influence, and change *employee behaviors* such that they are congruent with environmental sustainability goals of organizations” (p.112). They call these environmentally-related employee behaviors employee green behaviors (EGBs) and define them as “scalable actions and behaviors that employees engage in that are linked with and contribute to or detract from environmental sustainability” (Ones & Dilchert, 2012a, p. 87). These behaviors can be performed as a requirement of the job or as optional organizational citizenship behaviors. Sometimes, these behaviors can be counterproductive in that they actually detract from the organization’s environmental performance, rather than enhance it. As “scalable” actions, they can vary in terms of how frequently or proficiently employees perform them, and this scalability allows each employee’s contribution to be quantified.

To try and capture the range of EGBs present in the workplace, Ones and Dilchert (2012a) developed a content-based, three-tier Green Five Taxonomy of EGBs. The first tier consists of General Green Performance, whereas the second tier is comprised of the five meta-categories of Working Sustainably, Avoiding Harm, Conserving, Influencing Others, and Taking Initiative. Then the third tier

splits the five meta-categories into 16 categories. In addition to confirming the structure of the Green Five Taxonomy on a new set of incidents from industries within the United States, its generalizability was also supported through its application to an international sample of incidents from European organizations (Hill et al., 2011 as cited in Ones & Dilchert, 2012a). By identifying the content domain of EGBs, the Green Five Taxonomy helps define the behavioral content of future research on EGBs.

Because this area of research is so new, the definition and taxonomy are currently the extent of psychology's examination of EGBs. If this area of study is going to grow, it will be critical to develop appropriate measurement tools. To help forward this line of research, Ones and Dilchert (2012a) are currently in the process of developing a measurement scale for EGBs using their Green Five Taxonomy. However, there are other constructs whose examination could inform our understanding of EGBs and that could benefit from improved measurement scales as well.

Using the environmental psychology literature as a source of ideas, one such construct is descriptive social norms. Social norms are a form of communication among group members regarding whether behaviors are appropriate, beneficial, and easy to perform (Bamberg & Möser, 2007). They can be split into injunctive norms, which indicate what people should do, and descriptive norms, which indicate what people actually do (Cialdini, Reno, & Kallgren, 1990). Both types of norms have been found to influence pro-

environmental behaviors (PEBs; e.g. Cialdini et al., 1990; Reno, Cialdini, & Kallgren, 1993), which are defined as “individual behaviors contributing to environmental sustainability” (Mesmer-Magnus, Viswesvaran, & Wiernik, 2012, p. 160). However, research suggests that descriptive norms typically have a stronger relationship with behavior than do injunctive norms (Manning, 2009; Thøgersen, 2006). Though the reason for this finding is still unclear, there are two possible explanations. First, injunctive norms are thought to require greater cognitive processing before influencing behavior (Jacobson, Mortensen, & Cialdini, 2011). Thus, descriptive norms are more influential because adherence to descriptive norms requires less cognitive effort. Second, because descriptive norms are heuristics for effective behavior, they are more likely to influence behaviors in private settings (e.g. when individuals are alone in their office) than would injunctive norms (Cialdini et al., 1990; Kallgren, Reno, & Cialdini, 2000).

Just as they influence PEBs, descriptive norms are also likely to have a strong influence on EGBs. Descriptive norms influence behavior when behaviors are performed in public (Lapinski & Rimal, 2005) and there are opportunities for people to observe others and mimic their behaviors (Fornara, Carrus, Passafaro, & Bonnes, 2011). This observational learning (Bandura, 1986) allows people to pick up on effective behaviors and adapt to new and ambiguous environments (Cialdini et al., 1990; Griskevicius, Goldstein, Mortensen, Cialdini, & Kenrick, 2006). As noted by Takeuchi, Yun, and Wong (2011), behaviors in the workplace can be strongly influenced by social exchanges among co-workers. By working

and interacting with one's supervisors and co-workers, employees within an organization gain opportunities for such observational learning and for the influence of descriptive norms to affect their behavior. Additionally, as stated by Carrico and Riemer (2011), there is the potential for a stronger normative influence at work because employees are a more "captive audience" than when they are at home or out in public.

In order to examine the influence of descriptive norms on EGBs, a well-developed and validated measure is needed that reflects the construct of EGB descriptive norms. Currently, there are no measures for descriptive norms that reflect the breadth of behaviors identified in the Green Five Taxonomy. Additionally, an examination of the PEB literature provides a few examples of scales that capture descriptive norms for PEBs, but they exhibit certain psychometric limitations. In response, in this study I hope to add to the literature by developing and validating an EGB Descriptive Norms Scale that reflects the distinction between injunctive and descriptive norms, and captures the breadth of EGBs found in the Green Five Taxonomy. In support of this scale, I will examine (a) the distinct nature of descriptive norms, (b) the influence of descriptive norms on PEBs, (c) the limitations of currently available descriptive norms scales for PEBs, (d) the content of the Green Five Taxonomy, and (e) the preliminary development of the nomological network for the EGB Descriptive Norms Scale.

## Types of Norms

Norms are a shared understanding of what constitutes appropriate behavior (Thøgersen, 2006). They shape and enforce behavior through the perceived possibility of punishment for noncompliance and reward for adherence (Schwartz & Howard, 1981). With the focus of this study on descriptive norms, it is important to distinguish the descriptive norm construct from other normative influences. Overall, norms can be distinguished by the source of enforcement (social vs. personal norms), the source of behavioral influence (injunctive vs. descriptive norms), and the source of the normative referent (subjective vs. local norms).

Social norms and personal norms differ on their source of enforcement. Social norms are externally enforced; they are shaped by the expectations of others and are reinforced through perceptions of rewards and punishment administered by these others (Cialdini & Trost, 1998; Schwartz & Howard, 1981). In comparison, personal norms are self-created expectations about one's own behavior (Schwartz, 1977) that typically align with an individual's internal values and beliefs (Thøgersen, 2006). They are internally enforced in that the associated rewards and punishments are self-administered (Schwartz, 1977). Because the focus is on normative influences specific to the workplace, personal norms will not be included in this study. However, the formation of personal norms can be influenced by social norms as a result of the internalization of social references about appropriate behavior (Bamberg & Möser, 2007).

Social norms can be further split into injunctive norms and descriptive

norms based on their different sources of motivation. Cialdini et al. (1990) define injunctive norms as “rules or beliefs as to what constitutes morally approved and disapproved conduct” (p. 1015). Behaviors that align with injunctive norms constitute what people ought to do and what will be socially sanctioned by others. It is the need for social approval from others that motivates people to act in congruence with injunctive norms. In contrast, descriptive norms are perceptions about what others typically do in a certain context (Cialdini et al., 1990). People presume that because other people are doing it, it is likely an effective behavior and adaptive to the situation in question. People are motivated to use the information as a situational heuristic to help simplify behavioral decision-making. Likely related to their use as a heuristic (Jacobson et al., 2011; Johnson & Eagly, 1989), descriptive norms have been found to have a stronger direct relationship with behavior (Manning, 2009; Thøgersen, 2006). This prompted their being chosen as the focus of this study.

Injunctive and descriptive norms have also been qualified as subjective or local norms, which differ in the referent of normative influence. Local norms (Fornara et al., 2011), also called provincial norms (Goldstein, Cialdini, & Griskevicius, 2008), are created by the influence of affectively unimportant others who have shared the same physical space. For example, Goldstein et al. (2008) found that hotel guests could be influenced to reuse their towels if they knew that previous guests had reused their towels in that same hotel room. These previous guests had shared the same physical space, but were of no affective importance



to the current guests. In comparison, subjective norms are created by the expectations of affectively important others, such as family members or friends (Fornara et al., 2011). This label comes from the use of subjective norms in the Theory of Planned Behavior (Ajzen, 1991), which were also based on the expectations of affectively important others. Thus, you can have local descriptive or local injunctive norms as well as subjective descriptive and subjective injunctive norms influencing behavior.

Though identified and defined in the PEB literature, the local-subjective distinction is still somewhat unclear and will not be explored in this study. Very few PEB studies have explicitly compared local norms and subjective norms (e.g. Fornara et al., 2011; Goldstein et al., 2008). Goldstein et al. (2008) compared the influence of local descriptive normative messages to the influence of social identity normative messages on hotel towel reuse. Social identity was defined as self-concept at the group level based on perceived membership, and could be considered a more global descriptive normative influence than the local message. What they found was that the local descriptive message promoted greater reuse than did the social identity message. Additionally, Fornara et al. (2011) examined the factor structure of local versus subjective descriptive and injunctive norms and found four distinct, but correlated, constructs. Thus there is some support for the local-subjective distinction. However, in non-laboratory settings, others who are proximal and others who are affectively important can easily be the same people (Fornara et al., 2011). This clouds the source of

normative influence and could make the distinction between local and subjective norms somewhat arbitrary. Additionally, getting too specific about the location of the normative referent would limit the generalizability of a scale and greatly increase its length. As a result, the scale developed in this study may capture both affectively important and affectively unimportant normative referents, but, in doing so, should capture the overall descriptive norms experienced by employees within their organizations.

The environmental psychology literature has identified and defined descriptive norms as a distinct norm type, though the local-subjective concept is still cloudy. Descriptive norms are externally enforced, and refer to what others actually do in specific contexts. Using this definition, several studies have examined the relationship between descriptive norms and PEBs. In particular, the relationship has been explored in studies grounded in the Theory of Normative Conduct (Cialdini et al., 1990) and the Theory of Planned Behavior (Ajzen, 1991). Though PEBs and EGBs do not represent the same behavioral domain, the relationship between PEBs and descriptive norms should inform the understanding of the influence of descriptive norms on EGBs.

## The Relationship Between Descriptive Norms and Pro-Environmental Behaviors

### The Focus Theory of Normative Conduct

Cialdini et al. (1990) proposed the Focus Theory of Normative Conduct to help clarify mixed findings on the effects of social norms on behavior. They

identified two limitations in previous research. The first was an issue of definition. The popular term “norm” could indicate either what was commonly done or what was approved of by society (Cialdini et al., 1990; Kallgren et al., 2000; Reno et al., 1993). To clarify, the researchers defined descriptive norms as what is commonly done, and injunctive norms as what is approved of by society. Each type of norm was a separate source of motivation that could influence behavior. Thus, individual behavior could be influenced by norms of what is and norms of what ought to be.

The second limitation identified by Cialdini and colleagues (1990, 1993) was that because individuals were perfectly capable of internalizing contradictory norms, norms could be used to explain any behavior. As noted by Cialdini (2012), “accounts that can explain everything after the fact are probably too vague or circular to explain anything” (p. 296). If people can act with or against a norm, then how can we say it was influencing their behavior? To clarify this circular argument, Cialdini et al. (1990) proposed that saliency was key to whether a norm would hold sway in a certain situation. Therefore, individuals can hold contradictory norms, but the norm most salient when a behavior is occurring will be the norm influencing that behavior. Once proposed, early research tested the theory using littering behaviors (Cialdini et al., 1990; Reno et al., 1993). Since then, much of the research on the Focus Theory of Normative Conduct has been tested through application to PEBs. This avenue of research has provided valuable insight into the theory’s processes and influence.

The Outcomes of Normative Influence. By manipulating their saliency, researchers have shown that descriptive norms can influence a variety of PEBs in a range of environments. In a series of three studies, Cialdini et al. (1990) found that descriptive littering norms could be manipulated through the presence or absence of litter in parking lots, mailrooms, and amusement parks. People would respond to the salient descriptive littering norm and litter less in a clean environment and litter more in a littered environment. Reno et al. (1993) replicated Cialdini et al.'s (1990) findings on littering behaviors; Kallgren et al. (2000) extended these findings. They found that a salient descriptive norm could influence behavior in private locations (e.g. alone in a stairwell). Schultz and colleagues (1998, 2007) found that a descriptive normative message would influence participants' energy usage behaviors at home. In a study at the Petrified Forest National Park, Cialdini (2003) noted that descriptive theft norms conveyed through signs on park paths encouraged significantly more theft of protected, petrified wood than did neutral messages on control signs. Goldstein and colleagues (2007, 2008) studied the effects of descriptive norms and environmental pleas on towel reuse at hotels. They found that descriptive norms indicating that most people reuse their hotel towels prompted a 44 percent increase in towel reuse. Additionally, this approach was more effective than an environmental plea encouraging towel reuse in order to benefit the environment, which prompted only a 35 percent increase in towel reuse.

In sum, descriptive norms have been found to influence a range of PEBs,

including littering, towel reuse, and energy conservation, in a range of environments, including at home, in a hotel, at a national park, and in parking lots. Their influence can be positive or negative depending on the content of the norm (e.g. if stealing is indicated as the norm, then people will steal). Because descriptive norms may not be the only social norm present in a given situation, it would be beneficial to understand how norm alignment or misalignment would affect behavioral outcomes.

The Interaction of Injunctive Norms and Descriptive Norms. It may be expected that what people actually do and what people should do are frequently the same thing; however, there are instances when this alignment is not the case. For example, people commonly use bottled water even though the bottle can be damaging to the environment. To better understand social norms' influence on PEBs, it is important to explore how behavioral outcomes differ when injunctive and descriptive norms are aligned or misaligned.

If a situation is encouraging unwanted behavior through a descriptive norm, then a salient injunctive norm should be used to help counteract its effects. Cialdini (2003) explored the effects of norm salience on the theft of petrified wood in the Petrified Forest National Park in Arizona. Signs highlighting a descriptive theft norm (a.k.a. everyone steals wood), an injunctive anti-theft norm (a.k.a. you shouldn't steal wood so as to preserve the park), or a control, nonnormative message were placed at three locations along park paths. Significantly more wood was stolen from around the descriptive theft norm sign than from around

the control sign, and from around the control than from around the injunctive anti-theft norm sign. This was a difference of 7.92 percent to 2.92 percent to 1.67 percent of people stealing wood, and indicated that a positive injunctive norm can help reduce theft in an environment with negative descriptive norms. However, it would have been more informative if they had created a balanced design by including a descriptive no theft norm sign and an injunctive theft norm sign.

Even when a descriptive norm indicates that the desired behavior is prevalent, it is advisable to pair it with a positive injunctive norm to prevent a phenomenon entitled the boomerang effect (Schultz et al., 2007). The boomerang effect occurs when an average amount of the desired behavior is included in a descriptive norm. An example of such a message would be telling people that others in their neighborhood utilize an average of 100 gallons of water a day. By providing this behavioral anchor, people can compare and adjust their behavior to align with the average. While studying recycling behaviors, Schultz (1998) identified the boomerang effect after providing normative recycling information to a California neighborhood. Those who had been recycling above the normative level reduced their frequency of recycling, whereas those who had been recycling below normative levels increased their frequency. However, if the descriptive normative message is paired with an injunctive norm, then the undesirable side of the realignment is mitigated. Schultz et al. (2007) found that the boomerang effect was negated when households were provided an average descriptive energy consumption norm along with a smiley face for those

consuming below the average, or a frowning face for those consuming above the average. Individuals who were consuming more than the average still reduced their energy consumption, but individuals who had been consuming below the average continued to maintain their low levels of consumption. Additionally, these effects held up even after participants were no longer receiving the normative messages. So, providing an injunctive norm along with a descriptive norm encouraged the desired behavior while negating the boomerang effect.

To prompt the most desired outcomes, it is best to have the two norms in alignment. In a study about recycling, Cialdini (2003) created a set of three public service announcements (PSAs) in each of which people were engaged in recycling, spoke approvingly of recycling, and disapproved of a person who was not recycling. Thus, these PSAs highlighted both positive descriptive recycling norms as well as positive injunctive recycling norms. When examining the tonnage of material recycled as a result of these PSAs, the experimental communities who received the PSAs (i.e. all three messages) exhibited a 25.35 percent net advantage for material recycled compared to the control communities who received no messages. In a follow up study, college students viewed and rated the three PSAs on several relevant dimensions, including injunctive and descriptive recycling norms, humor, and ad content. The results of this study supported the proposition that, while not the only influence, injunctive and descriptive recycling norms did significantly influence recycling outcomes as a result of the PSAs. In regards to behavioral intentions, Smith et al. (2012) found

that intentions to conserve energy were highest when both the injunctive and descriptive energy conservation norms were positive. Additionally, they found that when both norms are salient but in conflict, having one norm support the desired behavior while the other is unsupportive prompts a reduction in the intention to engage in the desired behavior. So, having both descriptive and injunctive norms in alignment has a highly positive influence on both intentions and actual behaviors.

As distinct sources of motivation, the two types of norms have been found to interact in interesting ways. Salient injunctive norms can reduce the influence of undesirable descriptive norms, and vice versa. The strongest outcomes are produced when both norms are salient and in agreement. Yet, research has indicated that, although an effective source of influence, descriptive norms are commonly unrecognized and underutilized to affect behavior.

The Influence of Descriptive Norms is Underdetected. Research has found that descriptive norms can influence behavior, both through witnessing the behavior and through written messages. However, it has also been shown that people tend to be unaware of and/or deny this influence (Cialdini, 2007; Goldstein et al., 2007, 2008; Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008). Nolan et al. (2008) surveyed Californian residents concerning their energy conservation behaviors, the importance of various reasons for these behaviors, and their broad beliefs and their descriptive normative beliefs about energy conservation. Though normative reasons were rated last below saving the



environment and benefiting society, they were the only reason for conservation that significantly correlated with participants' self-reported energy conservation efforts. Additionally, in a follow up study that measured actual energy use, normative messages were still rated as least motivational, but those who received the normative messages consumed significantly less energy than those who received the nonnormative messages (Nolan et al., 2008). Even though their behavior was significantly influenced by these descriptive norms, people believed that helping the environment was the reason for their behavior.

Furthermore, likely because they are unaware of descriptive norms' influence, people in positions of power rarely use descriptive norms to encourage PEBs. For example, hotels commonly encourage guests to reuse their towels via environmental pleas or references to saved costs. Yet, Goldstein and colleagues (2007, 2008) found that using a normative message increased hotel towel reuse up to 44 percent on the first night, compared to only 30 percent when using an environmental plea. On a wider scale, descriptive norms could also be used to encourage the public to adhere to environmental regulation. Cialdini (2007) outlines that many regulatory agencies commit the common error of emphasizing the prevalence of bad behavior (a.k.a. negative descriptive norms). If they emphasized the positive behavior instead, it would cost the same but encourage better adherence to regulations.

Despite people's unawareness of the influence of descriptive norms, these norms still have a large impact on behavior. This impact makes descriptive

norms more useful than environmental pleas for encouraging desired PEBs. Additionally, the ability to utilize them effectively should be increased by a better understanding of how descriptive norms work.

How Do Descriptive (and Injunctive) Norms Work? Research on the processes behind the differential influence of descriptive and injunctive norms has been limited. In response, there have been calls in the literature for such research (Cialdini, 2012; Jacobson et al., 2011; Schultz et al., 2007), and recent studies have produced some interesting findings.

First, the importance of norm saliency has been reiterated in numerous studies (e.g. Cialdini et al., 1990; Kallgren et al., 2000; Reno et al., 1993). Two common methods to induce norm saliency are modeling the desired behavior and conveying normative messages. Role modeling was used in a series of three experiments by Cialdini et al. (1990) to manipulate descriptive norm saliency of littering behavior. They found that observers would respond to the salient norm by either littering more in a littered environment, or littering less in a clean environment. In a fifth experiment, Cialdini et al. (1990) switched to a series of normative messages delivered on handbills to manipulate anti-littering injunctive norms. Other studies that used written normative messages to manipulate norm saliency have examined environment theft (Cialdini, 2003), and reuse of hotel towels (Goldstein et al., 2008, 2007). Both found that normative messages could influence norm saliency, and thus behavior.

Arousal and focusing techniques have also been used to manipulate

norm saliency, but have only been used in one study each. Kallgren et al. (2000) found that arousal moderated the relationship between normative messages and behavioral outcomes. Individuals who were more aroused responded more strongly to the anti-littering messages they had been exposed to, whereas participants who were not aroused did not respond to the normative message in a systematic manner. Based on previous research (Berkowitz & Buck, 1967; Hockey & Hamilton, 1970), it was proposed that the increased arousal prompted participants to focus more intently on the dominant features of the situation, which was the normative anti-littering message. Kallgren et al. (2000) also utilized focusing techniques to either induce an inward, self-focus or an outward, external focus, thus inducing saliency for either the external social norms, or internal personal norms. When focus was placed on the social norms, rate of littering was about the same whether the individual had strong personal anti-littering norms or not. Conversely, when focus was inward, those with strong, personal anti-littering norms littered less than those with weak, personal anti-littering norms. Though less common than role modeling and normative messages, arousal and focusing techniques have been supported as inducing the saliency of norms.

Second, several studies indicate that injunctive norms operate through greater cognitive processing than do descriptive norms. To start, high personal involvement has been found to reduce the influence of descriptive norms, while increasing the influence of injunctive norms (Gockeritz et al., 2010). This result

has been attributed to greater personal involvement leading to the use of elaborative, central processing of the message instead of superficial, peripheral processing (Johnson & Eagly, 1989). Building on this finding, Jacobson et al. (2011) found that when self-regulatory capacity was depleted, individuals increased their adherence to descriptive norms, while reducing their adherence to injunctive norms. Because descriptive norms influence behavior using mental shortcuts, decreased self-regulatory functioning should make it more difficult to consider alternative options than to simply follow the norm. In comparison, injunctive norms require individuals to compare their immediate, personal interests against the standards of society. If depleted of their ability to self-regulate, they will choose their own interests over complying with society's wishes and the injunctive norm. Additionally, some studies have identified injunctive norms as influencing behavior through a cognitive assessment of the normative message, including its persuasiveness and its level of vividness congruency. Vividness-congruency is a measure of the alignment between the message and the image it provokes (Cialdini, 2003; Oceja & Berenguer, 2009). Overall, research has identified that injunctive norms influence behavior through greater cognitive processing, whereas descriptive norms influence behavior directly or through simpler processing.

By understanding the processes behind the influence, researchers will better understand how and when they get the behavioral outcomes that they do. Norms will have no systematic effect on behavior without norm saliency.

Additionally, research has indicated that injunctive norms require more cognitive processing to take effect than do descriptive norms. Thus, both types of norms have the power to influence behaviors, but descriptive norms are likely to influence behavior directly.

Summary of Research on Theory of Normative Conduct. In summation, descriptive norms have been found to influence a variety of PEBs in a variety of contexts. This process exhibits certain characteristics. First, the effect of a descriptive norm can be enhanced or reduced depending on whether it is aligned with relevant injunctive norms. Alignment of the two types of norms produces the best results, and can prevent unintended outcomes such as the boomerang effect. Second, people do not realize the effect that descriptive norms can have on their actions. This unawareness results in the underutilization of descriptive norms to encourage desired behavior. Third, a norm must be salient in order to have an influence on behavior. Research has found that saliency can be induced through role modeling, focusing techniques, normative messages, or arousal. Fourth, descriptive norms require less cognitive processing to influence behavior, allowing them to influence behavior more directly and to be used as heuristics. Combined, these four factors suggest that positive EGB descriptive norms within the workplace could be an effective and unnoticed way to shape behavior, and support the decision to focus on descriptive norms in this study.

#### The Theory of Planned Behavior

The Theory of Planned Behavior (TPB) is a rational choice model wherein

behavioral intention, and thus behavior, is influenced by the three predictors of subjective norms, attitudes, and perceived behavioral control (Ajzen, 1991).

Subjective norms are conceptualized in the model as the behavioral expectations of relevant others (i.e. injunctive norms rather than descriptive norms). Attitudes are conceptualized as evaluations about the intended behavior and its outcomes. Perceived behavioral control represents perceptions of personal control over performing the behavior. This model has been used to explain a wide range of PEBs including mode of travel (Bamberg & Schmidt, 2003), water use, purchasing energy-saving light bulbs, using unbleached paper (Harland, Staats, & Wilke, 1999), and general pro-environmental behavior (Kaiser, Wolfing, & Fuhrer, 1999).

Originally, TPB only included norms conceptualized as injunctive norms; however, more recent research has begun to include descriptive norms as a way to improve the variance explained by the model. Meta-analyses of the TPB have found that the three traditional predictors account for 39 percent of the variance in behavioral intention (Armitage & Conner, 2001; Ravis & Sheeran, 2003).

Although only a few studies have included descriptive norms as a part of the model, a meta-analysis of these studies found that including descriptive norms accounted for an additional 5 percent of variance in behavioral intention, after controlling for the other predictors (Ravis & Sheeran, 2003). Additionally, the correlation between descriptive and injunctive norms was only .38, lending support to their discriminant validity and indicating that the effect of descriptive

norms was not due to their similarity to injunctive norms. Thus, including descriptive norms improved the model and furthered the understanding of what influences the enactment of PEBs.

Examining the relationships among the variables of the TPB has also provided initial support for the processing differences identified in the literature on the Theory of Normative Conduct. Manning (2009) found that although injunctive norms were more strongly correlated with the other TPB predictors, descriptive norms had a slightly stronger relationship with behavior. Additionally, a direct path from descriptive norms to behavior significantly improved the TPB model. A second finding was that the effect of descriptive norms on behavior did not weaken as the time between cognition and behavior increased, whereas the effect of injunctive norms on behavior did. These results seem to support the idea that descriptive norms require less cognitive processing than do injunctive norms, and operate as a heuristic for effective decision-making.

Though research on descriptive norms and the TPB is minimal, inclusion of descriptive norms has been shown to improve the model and broaden our understanding of what factors influence enactment of PEBs. Analysis of the relationships among the variables in the model supports the idea that descriptive and injunctive norms are distinct, and that descriptive norms require less cognitive processing to influence behavior.

Summary of Research on the Theory of Normative Conduct and the Theory of Planned Behavior

Research on the TPB and research on the Theory of Normative Conduct are approached from different theoretical perspectives; however, the findings from both in regards to descriptive norms seem to be complementary. Under both theories, descriptive norms have been identified as a meaningful predictor of behavior, related to but distinct from injunctive norms. The boundaries of the influence of descriptive norms have been more fully explored under the Theory of Normative Conduct, but both theories suggest that descriptive norms operate directly on behavior and require less processing to influence behavior than do injunctive norms. As a meaningful influence on behavior, being able to properly measure descriptive norms would be beneficial for both organizations and researchers. However, measurement of PEB descriptive norms has been inconsistent within the psychological literature.

#### Previous Measurement of Pro-Environmental Behavior Descriptive Norms: In and Out of the Workplace

Pro-environmental behaviors have been studied minimally in the workplace (Ones & Dilchert, 2012b). A search of the scientific literature returned three studies that had used a descriptive norms scale to examine the relationship of PEB descriptive norms to other workplace phenomena. Evans, Russell, Fielding, and Hill (2012) were interested in the effects of an energy conservation intervention on organizational outcomes. They assessed the intervention's effects on energy-related descriptive norms through the single item, "Most staff save energy in the workplace." The item's content was dictated by the needs of



the study, and it was not intended to be a comprehensive representation of workplace PEB descriptive norms. Robertson and Barling (2013) were interested in capturing the environmental descriptive norms of organizational leaders. Due to a lack of existing measures, they developed their own 5-item scale composed of items such as, “Do your friends and/or family endorse environmentally-friendly programs?” Nag (2012) adapted items from Gärling, Fujii, Gärling, and Jakobsson (2003) to assess perceptions of the general public’s engagement in PEBs. Though both studies explored PEBs in the workplace, both assessed the influence of descriptive norms created by referents outside the workplace (i.e. friends and family, the general public). Thus, neither developed a multi-item measure capturing workplace-specific descriptive norms, which should be the descriptive norms with the most influence on behaviors in the workplace.

Outside of the workplace, there are a few PEB descriptive norm scales used in research in private and other public settings (e.g. Nolan et al., 2008; Smith et al., 2012). However, little attention has been paid to developing a multi-item, validated measure capturing this construct. One reason is linked to theory, in that any research grounded in the TPB model must adhere to two measurement requirements. First, any measured behavior must be clearly defined in terms of its Target, Action, Context, and Time (TACT; Ajzen, 2002). Second, any measured predictor variable must comply with the compatibility principle, which states that the measures of predictor variables must match the behavioral measures in specificity of TACT (Ajzen & Fishbein, 1977; Ajzen,

2002). This specificity is intended to improve the reliability of the information assessed by the items (Ajzen & Sexton, 1999; Ajzen, 2002). However, this requirement tends to produce highly specific single or dual item measures (e.g. Fornara et al., 2011). Such specific measures are inherently unreliable (Kaiser, Schultz, & Scheuthle, 2007) because they are unlikely to capture the entire domain of behavior. Trying to remedy this issue, while adhering to the two measurement rules, would require an extensive scale to capture all behavioral variations. This would be prohibitive and likely lead to participant fatigue.

A second reason for the lack of multi-item measures seems to be due to the debate surrounding the aggregation of behavioral-based scales. Within the research on PEBs, there is disagreement between researchers who propose that PEBs can be measured through a general scale, and those who propose that PEBs are different from and independent of one another (Kaiser, 1998). This disagreement is in part due to the wide range of possible PEBs and the variety of ways they could be aggregated. When it is assumed that PEBs do not generalize, it results in the use of very specific, single-item scales (Kaiser, 1998). Because descriptive norms are inherently tied to their referent behaviors, this same issue then plagues descriptive norm scales. For example, Thøgersen (2006) measured four different possible PEBs (e.g. buying organic milk, composting kitchen waste) when assessing his norm taxonomy. The norm for each behavior was assessed as a single item due to the inherent differences in behaviors.

A third reason is that, as with the scale by Evans et al. (2012), short descriptive norms scales are sometimes created to suit the exact needs and context of a specific study. For example, Nolan et al. (2008) created a 3-item descriptive norms scale that was specific to their study concerning energy conservation at home. An example item is, “How often do you think residents of your city try to conserve energy?” Frequently, these scales are used to check the effectiveness of an experimental manipulation. Oceja and Berenguer (2009) examined the normative influence of leaving bathroom lights on or off in a public bathroom. To assess whether manipulating the lighting norm affected normative perceptions, they used the single item, “To what extent do you think that most people leave the lights on when exiting a public bathroom?” Similarly, Smith et al. (2012) created a 3-item descriptive norms scale to assess an experimental manipulation concerning energy conservation norms. In these studies, scale content was dictated by the specific behaviors being examined. These situations, just like the aggregation disagreement and using TPB, result in the use of single or small groups of very specific scale items.

Compared to single-item, study specific descriptive norms scales, a multi-item, validated EGB descriptive norms scale would provide many methodological benefits. First, the use of multiple items to capture a phenomenon helps produce more consistent and stable responses, which make the scale more precise and reliable (Bowling, 2005). Second, the use of multiple items allows for item aggregation, which helps increase the generalizability and replicability of study

results (Epstein, 1983). Third, the availability of an EGB Descriptive Norms Scale would allow for comparison of EGB descriptive norms across studies and organizational contexts (Bowling, 2005). Finally, scale validation provides support to the assumption that the scale is measuring the intended construct (Schultz & Whitney, 2005). All these factors contribute to a more consistent, reliable, and comprehensive measurement of the phenomenon of interest.

Existing scales capturing PEB descriptive norms are limited due to theoretical, conceptual, and study-specific reasons. Additionally, the behavioral domain of EGBs is slightly different from PEBs. Thus, a multi-item, validated EGB Descriptive Norms Scale would provide methodological benefits, and would be useful for capturing the breadth of EGBs that could inform descriptive norms. To identify what these behaviors are requires an examination of the Green Five Taxonomy created by Ones and Dilchert (2012a).

### The Green Five Taxonomy of Employee Green Behaviors

To understand the normative influence of descriptive norms on EGBs, it is critical to identify what kinds of behaviors represent EGBs. Though a few studies in the PEB literature have looked at PEBs enacted at work, these have typically been narrowly focused on single behaviors, such as recycling (e.g. McDonald, 2011; Tudor, Barr, & Gilg, 2007). Although such behaviors may capture a component of green behaviors at work, they are not representative of the broad range of EGBs. Recently, Ones and Dilchert (2012a) addressed this limitation by

developing the Green Five Taxonomy.

The Green Five Taxonomy was developed using a critical incidents methodology (Ones & Dilchert, 2012a). Critical incidents addressing behaviors at work that either benefited or hurt the environment were collected from U.S. employees working in a multitude of job positions, organizations, and industries. Incidents were sorted to create behavioral categories, and these categories were confirmed on an additional set of critical incidents. Categories were then tested using critical incidents from employees in Europe to assess cross-cultural relevance and generalizability (Hill et al., 2011 as cited in Ones & Dilchert, 2012a). This process produced sixteen behavioral categories that were functionally distinct and internally homogenous.

Organizing the sixteen categories resulted in a three-tier taxonomy (Ones & Dilchert, 2012a). The top tier is a general factor titled General Green Performance. This tier was identified through the correlation of some of the categories, supported by both supervisory and self-reports. The second tier consists of five meta-categories: Working Sustainably, Avoiding Harm, Conserving, Influencing Others, and Taking Initiative. The third and lowest tier contains the original 16 categories. Each category belongs to a single meta-category and anywhere from two to four of these categories are subsumed under each meta-category. Each meta-category will be described in turn. See Figure 1 for a visual representation of the 2<sup>nd</sup> and 3<sup>rd</sup> tiers of the taxonomy.

The meta-category of Working Sustainably represents behaviors that help

work processes and products be more sustainable (Ones & Dilchert, 2012a). For example, a supervisor could order a desk made from sustainably grown oak trees or one made from endangered redwood trees. The four subsumed categories include Choosing Responsible Alternatives, Changing How Work is Done, Creating Sustainable Products and Processes, and Embracing Innovation for Sustainability. Choosing Responsible Alternatives involves choosing the more environmentally friendly option available, whereas Changing How Work is Done involves changing work processes to become more sustainable. These two categories reflect making modifications to existing products and processes. In comparison, Embracing Innovation for Sustainability and Creating Sustainable Products and Processes reflect creating and embracing new processes and products. Incidents of Choosing Responsible Alternatives were the most common behaviors for this meta-category. Psychologically, Working Sustainably represents adaptability.

The Avoiding Harm meta-category is bipolar and contains three categories (Ones & Dilchert, 2012a). Behaviors can either harm the earth and cause increasing damage, or can enhance the earth, making its ecosystems healthier. Psychologically, these behaviors are linked to altruism and responsibility on one end, and lack of responsibility and self-control on the other. The primary category under this meta-category is Polluting/Preventing Pollution, which captures behaviors that pollute the environment or prevent pollution. The other two categories of Monitoring Environmental Impact and Strengthening Ecosystems

support the primary category. Monitoring Environmental Impact represents observing and assessing the environment to understand how work activities are affecting it. Strengthening Ecosystems includes behaviors that help protect or repair ecosystems from the effects of industry and business.

The Conserving meta-category represents behaviors related to helping preserve resources and reduce waste (Ones & Dilchert, 2012a). A positive example would be double-sided printing, whereas a negative example would be leaving work computers on overnight. This meta-category, listed from highest environmental impact to lowest, contains the four categories of Reducing Use, Reusing, Repurposing, and Recycling. Reducing Use prevents the unnecessary use of new materials. Reusing involves multiple uses of the same materials for the same purpose, while Repurposing involves multiple uses of materials for new purposes. Recycling allows for old materials to become new products, but requires energy and additional resources to do so. Conserving EGBs comprised about half of the total behavioral incidents, with Reducing Use and Recycling being the most common behaviors within the Conserving meta-category. Psychologically, Conserving represents thrift or frugality.

The meta-category of Influencing Others moves from what the individual employee can accomplish to how individuals can influence each other to engage in environmental behaviors. Psychologically, Influencing Others is associated with spreading knowledge and helping others change their behaviors. Ones and Dilchert (2012a) note that it is the only meta-category that is explicitly social and

that the influence can extend to other stakeholders in the company, such as the local community. The two subsumed categories are Encouraging and Supporting Others, which includes behaviors that bolster and encourage other's EGBs, and Educating and Training for Sustainability, which includes behaviors that help others build their knowledge about environmentalism.

Taking Initiative, the last meta-category, captures behaviors that involve stepping outside the box, taking a risk, and encouraging environmentally-related change (Ones & Dilchert, 2012a). The focus is on *how* individuals encourage and promote environmentally-friendly behaviors, so the behaviors being encouraged might be included under the other meta-categories. For example, an employee could help initiate a policy (a Taking Initiative behavior) that requires others in the organization to buy sustainably produced printer paper (a Working Sustainably behavior). This meta-category includes the three categories of Putting Environmental Interests First, Initiating Programs and Policies, and Lobbying and Activism. Putting Environmental Interests First captures behaviors that help the environment at some personal cost to the individual. Initiating Programs and Policies involves pushing for new programs and policies within the environmental domain, whereas Lobbying and Activism capture behaviors that involve fighting for environmental causes.

Due to the thorough critical incidents technique and process used to develop the Green Five Taxonomy, there is strong evidence that the taxonomy represents the breadth of possible EGBs (Ones & Dilchert, 2012a). Using the



taxonomy as the foundation of the EGB Descriptive Norms Scale lends support to the scale capturing the full range of normative influence generated by these behaviors. As a result, the scale should help identify which meta-categories are being enacted, and how they are contributing to the overall strength of EGB descriptive norms in an organization. Additional analysis examining the construct validity of the EGB Descriptive Norms Scale will provide support for the assumption that the new scale is capturing the intended norms.

### The Present Study

In response to the lack of available measures and the recently created Green Five Taxonomy, an EGB Descriptive Norms Scale was developed and validity evidence was gathered. First, an initial item pool was developed based upon the Green Five Taxonomy of EGBs (Ones & Dilchert, 2012a) and Cialdini et al.'s (1990) definition of descriptive norms. Through pilot testing and an item retranslation task (Smith & Kendall, 1963), data were collected to assess subscale reliability and examine the content and clarity of initial scale items. Using this data, items were revised, replaced, or removed. Second, new data was collected on the refined scale and two additional constructs, a confirmatory factor analysis was conducted to identify whether the EGB Descriptive Norms Scale's structure mimicked the structure of the Green Five Taxonomy, and evidence for convergent and discriminant validity of the EBG Descriptive Norms Scale was gathered.

CHAPTER TWO  
DEVELOPMENT OF THE EMPLOYEE GREEN BEHAVIOR  
DESCRIPTIVE NORMS SCALE

Item Development

An initial pool of 40 items was developed using One's and Dilchert's (2012a) definition of EGBs, their Green Five Taxonomy, and Cialdini et al.'s (1990) definition of descriptive norms. To capture the range of possible behaviors influencing EGB descriptive norms, two to three items were written for each of the 16 behavioral categories that comprise the taxonomy's third and most specific tier. Thus, the five meta-categories comprising the second tier of the Green Five Taxonomy (i.e. the subscales of the EGB Descriptive Norms Scale) were represented by six to ten items each. All items represented possible EGBs that could be observed in an organizational environment; some of the items were adapted from Nag (2012). Items were assessed for clarity and reading level by two tenured professors and 12 undergraduate students enrolled at a mid-sized public university in southern California. Responses were used to make items easier to read and to reduce item ambiguity. Two versions of the initial survey were created. Both versions contained the same 40 items. One version was formatted as a 5-point, frequency response scale (1 = *never*, 5 = *always*). The other was formatted as a 5-point, Likert-style scale (1 = *strongly disagree*, 5 = *strongly agree*). Upon reverse coding negatively worded items, higher values

indicated stronger descriptive norms. The initial EGB Descriptive Norms Scale can be found in Appendix A.

## Instrument Refinement

### Pilot Test Procedure

A survey packet was created for each version of the initial scale. Each contained an informed consent, the 40-item scale, demographic questions, work- and industry-related questions, and a debriefing form. Surveys were distributed to undergraduate students enrolled in four classes at a mid-sized public university in southern California. Directions were to use either current work experience or a past work experience to answer the 40-item scale. If using a past work experience, participants were told to reference that same work experience when answering the demographic, work- and industry-related questions. At the discretion of the professor, participants received research credit or extra credit in the course for their participation. No identifying information was collected making the responses anonymous.

### Sample

The total pilot test sample consisted of 274 responses (142 frequency scale responses, 132 Likert scale responses). Of the 142 participants who responded to the frequency scale version, 81.0 percent were female ( $n = 115$ ) and the average age was 25.34 years ( $SD = 6.75$ ). The sample was 62.0 percent Hispanic ( $n = 88$ ), 21.8 percent White ( $n = 31$ ), 3.5 percent African-American ( $n =$

5), 2.8 percent Asian-American ( $n = 4$ ), 0.7 percent Pacific Islander ( $n = 1$ ), and 9.2 percent Other ( $n = 13$ ). On average, participants had been at their organization for 2.88 years ( $SD = 2.90$ ), worked either from ten to 19 hours per week (27.5%,  $n = 29$ ) or from 20 to 29 hours per week (25.4%,  $n = 36$ ), and was a non-management/hourly worker (58.5%,  $n = 83$ ). Industry type was not requested in this version of the survey.

Of the 132 participants who responded to the Likert scale version, 81.1 percent were female ( $n = 107$ ) and the average age was 24.86 years ( $SD = 6.70$ ). The sample was 57.6 percent Hispanic ( $n = 76$ ), 24.2 percent White ( $n = 32$ ), 5.3 percent African-American ( $n = 7$ ), 5.3 percent Asian-American ( $n = 7$ ), 2.3 percent Pacific Islander ( $n = 3$ ), and 5.3 percent Other ( $n = 7$ ). An average participant had been at his/her organization for 2.50 years ( $SD = 2.28$ ), worked 24.33 hours per week ( $SD = 11.56$ ), and was a non-management/hourly worker (62.1%,  $n = 82$ ). The most common industries were Sales and Related (19.7%,  $n = 26$ ) and Education/Training (18.2%,  $n = 24$ ), followed by Office/Administration (13.6%,  $n = 18$ ), Food Preparation/Serving (12.1%,  $n = 16$ ), Healthcare (8.3%,  $n = 11$ ), Transportation/Materials Moving (4.5%,  $n = 6$ ), Production (0.8%,  $n = 1$ ), and Other (11.4%,  $n = 15$ ).

#### Subscale Reliability Analysis

Basic data screening was performed on the pilot test data. Using a z-score criterion set at  $p < .001$ , three univariate outliers were removed from the frequency scale data and one univariate outlier was removed from the Likert

scale data. One multivariate outlier was removed from the Likert scale data based on a Mahalanobis distance criteria set at  $p < .001$ . Several items in each scale version were skewed based on a z-score criterion set at  $p < .001$ , but were not transformed for the sake of interpretation. No variable was missing more than 5 percent data, indicating the data was missing completely at random. Missing data were imputed using the expectation maximization algorithm, which is an accepted estimation method for data missing completely at random (Tabachnick & Fidell, 2013).

Reliability was assessed at the subscale/meta-category level of the EGB Descriptive Norms/Green Five Taxonomy. See Table 1 for results of the reliability analysis. With the Likert scale data, Cronbach's alpha was as follows: Working Sustainably ( $\alpha = .82$ ), Avoiding Harm ( $\alpha = .73$ ), Conserving ( $\alpha = .77$ ), Influencing Others ( $\alpha = .74$ ), and Taking Initiative ( $\alpha = .69$ ). Reliability could be improved for the Conserving, Influencing Others, and Taking Initiative subscales through the removal of five items. Specifically, the data suggests removing Item 3 from the Conserving subscale, Items 36 and 39 from the Influencing Others subscale, and Items 8 and 13 from the Taking Initiative subscale.

Examination of the frequency scale data revealed much lower reliability values for all subscales. Cronbach's alpha for Working Sustainably was .71, Avoiding Harm was .52, Conserving was .78, Influencing Others was .61, and Taking Initiative was .69. Reliability could be improved for all subscales through the removal of nine items. Specifically, the data suggests that reliability would be

improved by removing Item 32 from Working Sustainably, Items 19, 14, and 30 from Avoiding Harm, Item 3 from Conserving, Items 36 and 39 from Influencing Others, and Items 8 and 13 from Taking Initiative. However, even after removing these items, subscale reliability would still be lower than it was using the Likert scale data.

Overall, results suggest that using the Likert scale may be a better choice than using the frequency response scale. Using the Likert data, the five items identified as improving reliability through their removal were examined for possible revision. See Appendix B for initial scale items arranged by subscale/meta-category.

#### Item Retranslation Task

Using the process outlined by Smith and Kendall (1963), six subject matter experts independently retranslated the 40 items into the 16 behavioral categories identified and defined by Ones and Dilchert (2012a). Results of the retranslation task were reviewed for rater agreement. An acceptable hit rate was set at four out of six raters categorizing the item correctly (i.e. 67% correct categorization for each item). Eighteen items did not meet this threshold and, using the categorization data, were examined for revision. Twelve of the troublesome items were reverse-coded items. See Table 2 for a complete list of items and their corresponding hit rates. See Appendix C for retranslation task instructions and categories.

#### Final Revisions

Final revisions were made using item skewness data, the subscale reliability data, and the results of the retranslation task. In the end, four items were revised, one item was removed due to its highly varied retranslation task results, and six items were replaced resulting in a final scale with 39 items. As suggested by the subscale reliability analysis, a Likert response format was used in the refined scale. The refined scale can be found in Appendix D; bolded items were the revised or replaced items.

CHAPTER THREE  
CONFIRMING THE FACTOR STRUCTURE AND VALIDATING  
THE EMPLOYEE GREEN BEHAVIOR  
DESCRIPTIVE NORMS SCALE

Pilot test and retranslation task data provided preliminary evidence for a 39-item scale comprised of five reliable subscales. A new, larger sample was collected to test the expected scale structure through a confirmatory factor analysis (CFA). Data was also collected on two additional constructs to assess the convergent and discriminant validity of the EGB Descriptive Norms Scale.

Construct Validity

As explained by Shultz and Whitney (2005), evidence of construct validity can be gathered by examining the relationships between a newly developed scale and other constructs. Constructs that should relate and should not relate to the new scale are identified through theory and the results of previous research. The new scale is said to exhibit convergent validity when it relates to other constructs to which it is expected to relate, and to exhibit discriminant validity when it does not relate to other constructs to which it is not expected to relate. If the new scale's relationships to other constructs are supported by theory, it provides evidence that the new scale represents the intended construct and



exhibits construct validity (Schultz & Whitney, 2005). The new scale's relationships with other constructs are what form its nomological network. To begin exploring the nomological network of the EGB Descriptive Norms Scale and gathering evidence of construct validity, two constructs were identified through previous research.

### Ethical Leadership

Ethical leadership is promoting normatively appropriate behavior through role modeling, social interaction and communication, decision-making, and behavioral reinforcement (Brown, Treviño, & Harrison, 2005). The promoted behavior represents a range of ethical values including fairness, compassion, honesty, and altruism (Yukl, Mahsud, Hassan, & Prussia, 2013). To comply with these values, ethical leaders must exhibit an awareness of how their behaviors affect immediate others, their organization, and society at large (Kalshoven, Den Hartog, & De Hoogh, 2011). Thus, it is likely that ethical leaders would consider the environmental impact of their behaviors and, through their actions, would influence others to do the same. This tendency would contribute to the creation of descriptive norms around EGBs. However, leaders are not the only source of normative information within an organization, and environmental issues are not the only issues that ethical leaders can choose to champion. Thus, the two constructs are similar, but also distinct, and are expected to exhibit a moderate, positive relationship.

### Work-Family Culture

Thompson, Beauvais, and Lyness (1999) define work-family culture as “the shared assumptions, beliefs, and values regarding the extent to which an organization supports and values the integration of employees’ work and family lives” (p. 394). They propose the construct to have three dimensions. Dimension one, organizational time demands, refers to the amount of time an employee’s organization expects them to spend at work. The second dimension, managerial support for work-family balance, refers to the level of managerial support employees experience for balancing their work and family lives. Career consequences is the third dimension, and refers to employees’ perceiving negative career outcomes if they use work-family benefits. Overall, work-family culture is proposed to affect attitudes about the organization along with behaviors and/or perceptions related to employees’ handling their work and family lives (e.g. using work-family benefits; Mauno, Kinnunen, & Piitulainen, 2005). As such, work-family culture should not affect or relate to organizational norms concerning employee green behaviors, and the two constructs are expected to exhibit a weak correlation.

## Method

### Procedure

Participants were recruited through a Qualtrics.com professional recruiting panel after having met certain requirements. They were required to be English-speaking adults over the age of 18 who were working a least part-time (i.e. 20+

hours/week), were not students, and had been at their current company for at least one year prior to participation in this study. These requirements help ensure that participants have spent enough time at their organization to understand its norms related to EGBs and to be able to adequately answer questions about these norms. Each participant was offered a small, monetary incentive for his or her participation.

All participants completed the survey online through Qualtrics.com. Participants read an informed consent, completed the included scales and demographics form, and were debriefed and thanked for their participation. Surveys were completed individually and participants were assured of the confidentiality of their responses and the anonymity of their participation. Participants took a median of 15 minutes to complete the survey.

### Sample

A power analysis indicated that a sample size of 61 participants was needed to achieve a power level of .80 (Preacher & Coffman, 2006). This power analysis was based on the root-mean-square error of approximation (RMSEA) fit statistic and a test of the not-close hypothesis where null RMSEA = .05, alternative RMSEA = .01, alpha = .05, and  $df = 697$  (MacCallum, Browne, & Sugawara, 1996). Though such a small sample would ensure adequate power, a larger sample size was required to support the use of RMSEA as a measure of fit and to use maximum likelihood for parameter estimation (MacCallum et al., 1996). Referring to the scientific literature, a general rule of thumb for

determining sample size when conducting a CFA is to have a 10:1 ratio of indicator variables to participants (Nunnally, 1967) or a 5:1 ratio of free parameters to participants (Bentler & Chou, 1987). This approach would suggest a sample size of 390 or 415 participants. However, model simulations and Monte Carlo studies indicate that the relationship between parameters and sample size is not linear (Westland, 2010), and Westland (2010) proposes a formula,  $n \geq 50r^2 - 450r + 1100$ , to calculate sample size based on the ratio of indicator variables to latent variables ( $r = p/k$ ). This formula indicates that a sample size of 288 would be appropriate. Based on these three estimations, a sample size of 400 should suffice to conduct the needed CFA.

Four hundred surveys were completed. Survey completion included passing the demographic requirements and responding correctly to four careless responding items. After data screening, 367 usable cases remained. As can be seen in Table 3, the final sample was 51.5 percent female ( $n = 189$ ), an average 45 years old ( $SD = 11.8$ ), and predominantly White (78.7%,  $n = 289$ ), followed by African-American (8.4%,  $n = 31$ ), Hispanic/Latino (7.6%,  $n = 28$ ), Asian-American (3.3%,  $n = 12$ ), Native American (1.1%,  $n = 4$ ), and Bi-racial/Multi-racial (0.8%,  $n = 3$ ). The majority of participants held positions as non-management/hourly employees (26.4%,  $n = 97$ ), professionals (21.0%,  $n = 77$ ), or middle management (19.3%,  $n = 71$ ). They worked an average 41.4 hours per week ( $SD = 7.1$ ), had been at their current company for an average 10.2 years ( $SD = 9.0$ ) and 4.1 months ( $SD = 3.15$ ), and worked in industries such as

Office/administrative support (20.7%,  $n = 76$ ), followed by Other (18%,  $n = 66$ ), Sales and related (15.0%,  $n = 55$ ), Production (10.6%,  $n = 39$ ), Healthcare (10.4%,  $n = 38$ ), Construction (4.9%,  $n = 18$ ), Transportation/materials moving/warehouse (4.9%,  $n = 18$ ), and Food preparation/serving (4.4%,  $n = 16$ ). Average knowledge of other employees EGBs, maintenance-related work, production-related work, and construction-related work at their companies was “Some”. The majority of participants (56.4%,  $n = 207$ ) were not required to perform EGBs as a part of their job tasks.

### Survey Design

The final survey contained the refined 39-item EGB Descriptive Norms Scale, the Ethical Leadership Questionnaire, the Work-Family Culture Scale, several demographic, work-, and industry-related questions, and several scales not included in this study. The Ethical Leadership Questionnaire and Work-Family Culture Scale were selected to provide evidence of convergent and divergent validity respectively.

### Measures and Demographics

Ethical Leadership. Created by Yukl et al. (2013), the 15-item Ethical Leadership Questionnaire captures four core components of ethical leadership: communication of ethical standards, honesty and integrity, concern for others, and fairness. All items were measured using a 6-point Likert scale (1 = *strongly disagree*, 6 = *strongly agree*). An example item is: “My boss . . . insists on doing what is fair and ethical even when it is not easy.” Cronbach’s alpha from the

present study was .97. Ethical leadership is hypothesized to moderately, positively correlate ( $r = .3$  to  $.4$ ) with the EGB Descriptive Norms Scale. The Ethical Leadership Questionnaire can be found in Appendix E.

Work-Family Culture. Work-family culture was measured using the 20-item scale developed by Thompson et al. (1999). Cronbach's alpha from the present study was .90. This scale assesses three dimensions of work-family culture: organizational time demands (e.g. "To get ahead at this organization, employees are expected to work more than 50 hours a week, whether at the workplace or at home"), managerial support for work-family needs (e.g. "Middle managers and executives in this organization are sympathetic toward employees' child care responsibilities"), and career consequences associated with using work-family benefits (e.g. "Many employees are resentful when men in this organization take extended leave to care for newborn or adopted children"). Items were measured using a 7-point, Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) and higher scores represented a more supportive work-family culture. Work-family culture was not expected to have a relationship with EGB descriptive norms and to exhibit a weak correlation ( $r = .1$  to  $.2$ ). The Work-Family Culture Scale can be found in Appendix F.

Demographics. Demographic information was collected including age, gender, race/ethnicity, employment status, average hours worked/week, tenure, work position, and industry. One item assessed whether employee green behaviors are required as part of the participant's job tasks. One item each

assessed how much knowledge the participants have about maintenance-related work at their companies, production-related work at their companies, construction-related work at their companies, and other employees' green behaviors within the organizations.

### Confirmatory Factor Analysis Results

Before running the CFA, data ( $N = 400$ ) were screened to identify careless responding, missing data, univariate outliers, multivariate outliers, nonnormality, and multicollinearity. Any participant who completed the survey in less than half the median time was flagged for careless responding. Thus, 18 participants were excluded for completing the survey in seven minutes or less. No item was missing more than 5 percent data, indicating there was no pattern to the missing data and the data was missing completely at random (Tabachnick & Fidell, 2013). Item data was imputed using the expectation maximization algorithm after reverse-coding the reverse coded items. Scale scores were computed using the imputed data. Using a z-score criterion of  $p < .001$ , univariate outliers were evaluated at the scale level and ten participants were excluded from further analyses. Multivariate outliers were also evaluated at the scale level and five participants were removed based on a Mahalanobis distance criteria set at  $p < .001$ . Based on a z-score criterion set at  $p < .001$ , several items in each scale were negatively skewed indicating the need to use robust indices of fit (Tabachnick & Fidell, 2013). Multicollinearity of EGB descriptive norm scale items

and subscales was examined through condition indices and variance proportions. Belsely, Kuh, and Welsch (1980) propose that criteria for multicollinearity are a conditioning index greater than 30 combined with at least two variables exhibiting variance proportions greater than .50. Examining scale items revealed some large condition indices ( $>30$ ), but no two variance proportions greater than .50 for any single condition index, indicating no issue with multicollinearity among scale items. However, examining subscales revealed one large condition index ( $>30$ ) with two variance proportions greater than .50 and one condition index of 25 with two variance proportions close to .50. This indicated potential multicollinearity among the five factors the subscales are intended to represent.

Because the content of the 39-item scale was based on the Green Five Taxonomy, it was expected to mimic the structure of the Green Five Taxonomy as well. Thus, General Green Performance was expected to predict the five meta-categories, which were expected to predict the individual scales items. See Figure 2 for the expected scale structure. To test this structure, a second-order CFA was run using EQS 6.1 (Bentler, 2006). For the model to run, it was first necessary to set the disturbances for the Working Sustainably and Taking Initiative factors to .01 (i.e. constrain them just above zero). An examination of the item path coefficients revealed items with negative path coefficients as well as items with positive but insignificant path coefficients. Items 8, 13, 29, 31, and 38 were dropped because their negative path coefficients indicated that they did not represent the intended construct. Items 17, 19, 24, and 33 exhibited positive



but insignificant path coefficients, and the multivariate Wald test suggested dropping these paths to improve model fit. In response, these items were dropped one by one and model fit improved with each path dropped. Though not suggested by the Wald test, Items 3, 14, and 15 exhibited very high residuals with other items ( $> .25$ ) and were subsequently dropped as well. The twelve dropped items were evenly spread among the five first-order factors, thus content coverage of the construct was maintained. Due to the univariate nonnormality, as well as the multivariate nonnormality suggested by Mardia's coefficient (57.5), the Satorra-Bentler scaled chi-square, robust comparative fit index (CFI), and robust RMSEA were used to examine model fit (Tabachnick & Fidell, 2013). Good fit is indicated by a non-significant Satorra-Bentler scaled chi-square, CFI values greater than .95, and RMSEA values less than .05. However, the chi-square is affected by large sample sizes. With a large sample, even minimal differences between the sample and estimated population covariance matrices can lead to a significant chi-square. To help remove this dependence on sample size, the relative chi-square is a ratio of chi-square to degrees of freedom and a 3:1 ratio indicates acceptable model fit (Carmines & Mclver, 1981). Under the relative chi-square, the fit is acceptable at 705:321. Thus, the final model fit was good, Satorra-Bentler scaled  $\chi^2$  (321,  $N=367$ ) = 705.3,  $p < .001$ , robust CFI = .930, and robust RMSEA = .057. The final model, including standardized and raw path coefficients, is shown in Figure 3. All standardized path coefficients are greater than or equal to .400.

The path coefficients between the first-order factors and the second-order factor reveal that the variance associated with the Working Sustainably, Avoiding Harm, Influencing Others, and Taking Initiative factors is almost completely subsumed by the General Green Performance factor (Taub, 2001). This suggests that model fit might improve after removing these four factors and allowing the items to load directly onto the General Green Performance factor. However, when tested, this adjusted model exhibited basically the same fit, Satorra-Bentler Scaled  $X^2$  (323,  $N=367$ ) = 723.7,  $p < .001$ , robust CFI = .927, and robust RMSEA = .058, indicating that it did not significantly improve or degrade the model to remove the four subsumed factors. Thus, it was decided to keep them in the model for conceptual clarity.

### Construct Validity Results

Evidence of construct validity was gathered by correlating the overall scale score and the individual subscale scores of the EGB Descriptive Norms Scale with the scale scores of other conceptually similar and conceptually distinct constructs. Specifically, the relationships between EGB descriptive norms, work-family culture, and ethical leadership were examined using bivariate correlations. The reliability of the EGB Descriptive Norms Scale and its subscales was also examined using Cronbach's alpha. See Table 4 for these correlations and the results of the reliability analyses.

#### Ethical Leadership

Ethical leadership was hypothesized to exhibit a moderate positive correlation with the overall EGB Descriptive Norms Scale. The correlation was moderate,  $r = .43$ , as expected. Similarly to work-family culture, no specific relationships were hypothesized between ethical leadership and the five EGB subscales, but they also exhibited moderate to low-moderate correlations with ethical leadership. They ranged from  $r = .35$  for the Working Sustainably and Taking Initiative subscales up to  $r = .46$  for the Conserving subscale.

#### Work-Family Culture

Work-family culture was hypothesized to have a low, positive relationship with the overall EGB Descriptive Norms Scale. As expected, the correlation was low and positive,  $r = .23$ . No specific relationships were hypothesized among the EGB subscales and work-family culture. However, they were also weak to moderate, ranging from  $r = .13$  for the Taking Initiative subscale to  $.34$  for the Conserving subscale.

## CHAPTER FOUR

### DISCUSSION

#### General Discussion

Employees' behaviors are critical to the success of an organization's goals and programs (Daily, Bishop, & Govindarajulu, 2009; Fugate, Stank, & Mentzer, 2009). Thus, understanding EGBs and the factors that influence their enactment are critical to the success of an organization's environmental goals and programs. Identified in the environmental psychology literature, descriptive norms have been found to influence PEBs in both public and private settings (e.g. Cialdini et al., 1990; Kallgren et al., 2000). However, a lack of measurement tools severely limited researchers' ability to examine PEB descriptive norms in the context of the workplace. With the recent development of the Green Five Taxonomy (Ones & Dilchert, 2012a), the behavioral content of an EGB descriptive norms scale was made available, and the development of an EGB Descriptive Norms Scale was a meaningful next step in expanding the study of EGBs.

The present study developed an EGB Descriptive Norms Scale based on the structure of the Green Five Taxonomy. The results of the study supported the expected scale structure of a second-order General Green Performance factor and the five first-order factors of Working Sustainably, Avoiding Harm, Conserving, Influencing Others, and Taking Initiative. However, there is evidence

that the five first-order factors are not as distinct as the Green Five Taxonomy suggests. Additionally, the overall scale as well as the five subscales each exhibits good reliability, and the discriminant and convergent validity of the overall scale is supported by its correlations with work-family culture and ethical leadership. Taken together, these results indicate that the 27-item EGB Descriptive Norms Scale is a valid and reliable measure of EGB descriptive norms. See Appendix G for the final 27-item scale.

#### Structural Evidence of the Employee Green Behavior Descriptive Norms Scale

The results of the CFA support the proposed scale structure. Specifically, multiple fit indices support overall General Green Performance being comprised of the five factors of Working Sustainably, Avoiding Harm, Conserving, Influencing Others, and Taking Initiative. However, the data indicates that the five first-order factors may not be as distinct as the Green Five Taxonomy suggests. The Working Sustainably, Avoiding Harm, Influencing Others, and Taking Initiative factors exhibited such high standardized path coefficients ( $>.95$ ) that their variance was almost completely subsumed by the General Green Performance factor (Taub, 2001). Only the Conserving factor captured some unique variance. Yet, removing these four factors did not improve or degrade the fit of the model, and thus were kept for conceptual clarity.

One possible explanation for the lack of distinct variance among the meta-categories of EGBs is the presence of a halo effect. The halo effect is a

respondent's inability to discriminate among concepts or attributes. This causes the correlations among the affected items or scales to increase (Leuthesser, Kohli, & Harich, 1995) or causes the variance among categories to be low (Cooper, 1981). One way that the halo effect can be detected is by examining the factor structure of a group of categories. If the structure is dominated by a general factor that accounts for most of the variance in the categories (Cooper, 1981; Kafry, Jacobs, & Zedeck, 1979), as the structure in this study was, it indicates the presence of halo. While there are several sources that cause the halo effect (Cooper, 1981), it is likely that within this study the halo effect was due to limited knowledge of others' EGBs. On average, respondents indicated that they had "Some" knowledge of others' EGBs. Kozlowski, Kirsch, & Chao (1986) found that when respondents have limited knowledge on a topic they rely more heavily on their conceptual similarity schemata. This encourages respondents to perceive co-occurrence among categories even when it does not exist. Thus, instead of basing responses completely on their knowledge of EGBs, respondents were likely influenced by the conceptual similarities of the items' content and their beliefs about EGBs at work. These perceptions of similarity then reduced the variance among the first-order factors.

The presence of a halo effect could affect the scale in several ways. First, it may not be useful to examine the subscales of the EGB Descriptive Norms Scale. If respondents lack knowledge of a meta-category of EGBs, then their responses may not be specific enough to provide an accurate picture of norms

related to that meta-category. However, to help ensure that the breadth of norm forming behaviors is captured, it is still meaningful to include items that tap into each of the meta-categories of the Green Five Taxonomy. Second, there is the possibility that the presence of normative behaviors is being overestimated. If respondents are relying on their conceptual similarity schemata, then their responses may “capture” normative behavior that does not actually occur in the workplace. This could reduce the sensitivity of the scale to variations in EGBs. However, if the scale is used to capture overall perceptions of EGB descriptive norms in the workplace, then this is less of an issue. Third, it suggests that certain meta-categories of EGBs are not as prevalent in the workplace and may not be as relevant to EGB descriptive norms. When creating their Green Five Taxonomy, Ones and Dilchert (2012a) noted that the majority of critical incidents came from the Conserving meta-category of EGBs. As the only factor accounting for unique variance, it is likely that these common behaviors are most frequently seen and, thus, most likely to elicit knowledge-based responses.

#### Evidence of Construct Validity

The construct validity of the EGB Descriptive Norms Scale was supported by interscale correlations. Evidence of convergent validity was provided by the moderate, positive relationship between the overall EGB Descriptive Norms Scale and the Ethical Leadership Questionnaire. This relationship supports the idea that ethical leaders, through their concern for others and the consequences

of their actions, would likely support sustainability in their place of work (Kalshoven et al., 2011). However, as only one of many social issues that an ethical leader could choose to focus on, it may not be a high priority for all ethical leaders (Yukl et al., 2013).

Similarly, the low, positive relationship between EGB descriptive norms and work-family culture provides evidence of discriminant validity. Work-family culture addresses aspects of the workplace that impact how employees are able to handle their work and family lives (Thompson et al., 1999), not aspects of the workplace that affect whether EGBs are enacted. The fact that the relationship is positive is likely due to the fact that just as managerial support is a key component of positive work-family culture, it is also a predictor of employee willingness to enact environmental behaviors (Ramus, 2001). A supervisor who is supportive in one area may also be supportive in the other.

Taken together, these results provide initial support for the construct validity of the EGB Descriptive Norms Scale and its use as an appropriate measurement tool. As expected, EGB descriptive norms were found to have a moderate, positive relationship with ethical leadership and a weak, positive relationship with work-family culture. Though no explicit predictions were made, the correlations between each of the five subscales and the two outside constructs were similar in magnitude to the correlations between the overall scale and the two outside constructs.



## Implications

A well-designed, validated EGB Descriptive Norms Scale has application in both organizational and research settings. Organizations benefit when their environmental goals and their employees' behaviors are consistent (Ones & Dilchert, 2012a). Descriptive norms are a representation of how commonly others engage in the norm-forming behaviors. The EGB Descriptive Norms Scale is capturing employee perceptions of how often others engage in EGBs. So, by using the EGB Descriptive Norms Scale, organizations can get a sense for the perceived prevalence of EGBs, and whether there are strong descriptive norms to perform EGBs. Companies who find that they have weak EGB descriptive norms will have pinpointed an issue they would need to resolve if they are trying to implement company-wide environmental initiatives. Companies who find that they have strong EGB descriptive norms could be more confident in the success of their programs, or at least know that weak descriptive norms are not the cause of program-related issues they might be experiencing.

In terms of research, EGBs are a new, applied topic and well-developed, validated scales can help our understanding of this topic move forward. Organizations are interested in reducing their environmental impact (Darnall, Henriques, & Sadorsky, 2008), and descriptive norms have been shown to influence environmental behaviors outside the workplace (Cialdini et al., 1990; Schultz et al., 2007). However, research specifically on EGBs is quite new. By utilizing the Green Five Taxonomy as its foundation, the EGB Descriptive Norms

Scale better captures the breadth of EGB descriptive norms present in the workplace than do earlier PEB descriptive norms scales. Being able to measure this construct will allow researchers to begin exploring the relationship between EGB descriptive norms and meaningful organizational outcomes, such as company reputation and long-term profitability. By developing strong EGB norms, a company is more likely to be seen as an environmentally-friendly company, and having a reputation as a socially responsible company has been linked to attracting high quality job applicants (Greening & Turban, 2000). Similarly, engaging in EGBs has been linked to increased profitability through reduced energy use and waste production, process intensification, and development of environmentally-friendly products (Bansal & Roth, 2000). Using a well-developed scale to explore these relationships allows for consistency of measurement and comparison across studies. This provides a clearer sense of the phenomenon than using slightly different scales for each study, and it provides a point of reference for additional scale refinement.

### Future Research

It would be beneficial to explore the nomological network of EGB descriptive norms beyond the two constructs included in this study. Additional evidence of convergent and discriminant validity would clarify the construct represented by the EGB Descriptive Norms Scale, and further support its use in both research and applied settings. For example, it is likely that pro-

environmental concern would be positively related to EGB descriptive norms, and would provide evidence of convergent validity. Research has shown that job choice is influenced by person-organization fit, which is based on the alignment of a job applicant's values with the values of the organization (Cable & Judge, 1996; Judge & Bretz, 1992). Thus, it is likely that applicants with a high pro-environmental orientation would choose to work for an organization with strong EGB descriptive norms. Other possible constructs include aspects of the workplace, such as abusive leadership, and/or individual differences that influence job choice or job behaviors, such as the Big Five. Furthermore, examining the relationship between the EGB Descriptive Norms Scale and other available norms scales, descriptive or otherwise, would strengthen evidence of discriminant validity.

Examination of scale generalizability would also be meaningful. In the current study, the sample was considered generalizable because of the demographic diversity (e.g. gender, age, ethnicity) as well as the diversity in industry and job position. However, certain behaviors represented in the Green Five Taxonomy are more likely to be witnessed or known about in certain industries or job positions. For example, many of the behaviors included within the Avoiding Harm subscale reference a big-picture understanding of what a respondent's company does. Thus, it would be more likely for an employee in a managerial position or higher to know about such behaviors, and have a different concept of EGB descriptive norms than an hourly or non-management worker.

Similarly, items across subscales could be differentially meaningful depending on the industry. Adjusting workplace processes or product choice could potentially be more salient in an industry where a lot of physical material is moved (e.g. production or construction) compared to an industry where most of the work is electronic (e.g. education or administration). Thus, examining the results of the model when applied to specific job positions or industries would provide a better understanding of EGB descriptive norms and how they manifest.

It would also be informative to use this new scale to expand the research on EGBs by identifying antecedents and outcomes related to EGB descriptive norms. Though included for the purpose of construct validity, the relationship between EGB descriptive norms and ethical leadership is an interesting finding. Exploring this relationship would clarify how leadership and EGBs and their descriptive norms influence each another (Graves, Sarkis, & Zhu, 2013; Robertson & Barling, 2013). Meaningful outcomes could include performance of EGBs (Daily et al., 2009), cost-savings related to strong EGB descriptive norms, and public perceptions of the organization (Rindova, Williamson, & Petkova, 2005). Furthermore, with the development of additional measurement tools, the relationship between descriptive norms and injunctive norms could be explored in the workplace just as it has been explored in private and other public contexts.

### Limitations

One possible limitation is the existence of common method biases. The

source of these biases, common method variance, can influence study results by either inflating or deflating observed relationships (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Within this study, certain methodological aspects likely helped reduce the possibility of common method biases. First, scales with varying anchors and endpoints likely helped with anchoring effects and response consistency due to scale format (Podsakoff et al., 2003; Tourangeau, Rips, & Rasinski, 2000). Second, the anonymity of responses and asking about the behaviors of others within the EGB Descriptive Norms Scale should reduce evaluation apprehension and encourage more honest responses (Podsakoff et al., 2003). This reduces biases such as social desirability and leniency. Thus, when collecting data, the convenience of a single method of data collection must be balanced with consideration of reducing the effects of common method biases.

A second limitation was measuring a group level phenomenon (organizational norms) at the individual level. Interpreting aggregated individual data at the group level can lead to the atomistic fallacy, wherein inferences about group level variability are based on variability at a lower level of aggregation (Diez Roux, 2002). As a result, use of this new scale is limited to perceptions of EGB descriptive norms at the individual level, rather than measurement of EGB descriptive norms at the group or organization level. Future research would benefit from adjusting measurement of EGB descriptive norms to the group and organization level, and examining its relationship to other constructs using multi-

level modeling.

A third limitation is the possibility of a halo effect influencing item response. Since all three scales included in this study asked about the behaviors of others in the workplace, a lack of knowledge about these behaviors likely lead to the use of holistic impressions to inform item response (Cooper, 1981). Though no such data was collected on ethical leadership or work-family culture, four of the included demographic items assessed respondents' knowledge of item content included in the EGB Descriptive Norms Scale. On average, participants indicated that they had some knowledge of the behavioral content. While there is no clear cut-off for the minimum knowledge needed to infer typical behavior, a lack of knowledge would make realistic detail unavailable and would likely be replaced by the respondent's conceptual similarity schemata and beliefs about EGBs.

A fourth and last limitation is the possibility of volunteer bias in the study sample. All participants were people who agreed to be a part of Qualtrics' research panels and who volunteered to take the survey. Thus, there were two opportunities for volunteer bias to affect the demographic, attitudinal, and behavioral composition of the study sample. However, analysis of sample demographics indicates that the sample is relatively diverse and, thus, generalizable. Of course, application of the scale to additional samples would help further support its generalizability. Attitudinal differences, due to volunteering based on interest in the study topic, was likely mitigated through the

small incentive for participation. Additionally, the 2000 World Values Survey found that 85 percent of U.S. respondents endorsed a perspective favoring a more equal relationship with nature (as cited in Leiserowitz, Kates, & Parris, 2006). Thus, those interested in environmentalism should be highly represented to mirror national trends. Furthermore, the behaviors assessed in the survey were the behaviors of others in the workplace, not of the self-selected respondents.

### Conclusion

To better understand EGBs and the contextual factors that influence them, an EGB Descriptive Norms Scale was developed based on the Green Five Taxonomy of EGBs. The results of this study provide strong support for this scale's internal reliability and construct validity. Additionally, although respondents' limited knowledge of others EGBs may have created reduced discrimination among categories of EGBs, scale structure was found to mimic the structure of the Green Five Taxonomy. Using this new tool, organizations can better understand the state of their EGB descriptive norms and researchers can use it to expand our understanding of the EGBs. Overall, it will contribute to the growth of EGBs as a new and applied area of interest.

APPENDIX A

INITIAL EMPLOYEE GREEN BEHAVIOR DESCRIPTIVE NORMS SCALE



## INITIAL EMPLOYEE GREEN BEHAVIOR DESCRIPTIVE NORMS SCALE

Developed by Jacqueline C. McConnaughy.

**Directions:** Below are a series of statements about behaviors that can occur in the workplace. Read the question prompt and, for each item, use the response scale to indicate your experience of others in your workplace. Fill in the circle that corresponds to your preferred response option.

**Likert-Style Rating Scale:** (1) Strongly Disagree; (6) Strongly Agree

**Frequency Response Rating Scale:** (1) Never; (6) Always

How often do others at your organization (e.g. co-workers, supervisors, leaders) do the following while at work?

1. When there is a choice, choose products that are better for the environment
2. Fix maintenance issues to prevent unintended pollution and waste of resources
3. Utilize single-use, disposable products, such as paper towels (R)
4. Suggest ways for other employees to act in a more environmentally-friendly manner
5. Propose a new environmentally-friendly program for the company
6. Maximize the life span of office equipment through repair and maintenance
7. Design new, environmentally-friendly products
8. Voice concerns that acting pro-environmentally could hurt the company (R)
9. Discuss environmentally-related topics with other employees
10. Push the company's leaders to take a stronger position on environmental issues
11. Utilize new technologies that benefit the environment
12. Use supplies in new ways
13. Propose delaying an environmentally-related program for business reasons (R)
14. Buy company supplies without thought for environmental impact (R)
15. Not prioritize actions that would benefit the environment (R)
16. Reduce water consumption by turning off faucets when not in use
17. Use inefficient work processes that waste natural resources (R)
18. Monitor the environmental impact of workplace processes
19. Improperly handle hazardous materials (R)
20. Provide environmentally-related literature to other employees
21. Give praise to other employees for their environmentally-friendly behavior

22. Reject a desirable project because it would be bad for the environment
23. Change work processes to reduce negative impacts on the environment
24. Neglect to clean up after an environmentally-harmful accident or event (R)
25. Save extra supplies or materials for a future project
26. Help implement new policies that reduce the company's impact on the environment
27. Decrease energy consumption by turning off equipment when not in use
28. Choose a less convenient commute because it helps the environment
29. Recycle paper, plastic, metal cans, etc.
30. Knowingly cause unnecessary damage to the environment through work-related decisions (R)
31. Develop new work processes that use fewer natural resources
32. Design a new product that contains harmful components (R)
33. Throw recyclable materials into trash cans (R)
34. Knowingly choose technologies that are more harmful to the environment (R)
35. Through work, participate in projects that improve the local environment
36. Tease other employees for behaviors that benefit the environment (R)
37. Monitor workplace processes for potential sources of unintended pollution
38. Give materials a new use or purpose instead of throwing them away
39. Tell other employees that environmentally-friendly behaviors are ineffective (R)
40. Reduce waste by reusing items such as water bottles, paper, plastic, etc.

APPENDIX B  
INITIAL EMPLOYEE GREEN BEHAVIOR NORMS SCALE ITEMS  
ARRANGED BY META-CATEGORY

## INITIAL EMPLOYEE GREEN BEHAVIOR NORMS SCALE ITEMS

### ARRANGED BY META-CATEGORY

#### **Working Sustainably:**

1. When there is a choice, choose products that are better for the environment
7. Design new, environmentally-friendly products
11. Utilize new technologies that benefit the environment
14. Buy company supplies without thought for environmental impact (R)
17. Use inefficient work processes that waste natural resources (R)
23. Change work processes to reduce negative impacts on the environment
31. Develop new work processes that use fewer natural resources
32. Design a new product that contains harmful components (R)
34. Knowingly choose technologies that are more harmful to the environment (R)

#### **Avoiding Harm:**

2. Fix maintenance issues to prevent unintended pollution and waste of resources
18. Monitor the environmental impact of workplace processes
19. Improperly handle hazardous materials (R)
24. Neglect to clean up after an environmentally-harmful accident or event (R)
30. Knowingly cause unnecessary damage to the environment through work-related decisions (R)
35. Through work, participate in projects that improve the local environment
37. Monitor workplace processes for potential sources of unintended pollution

#### **Conserving:**

3. Utilize single-use, disposable products, such as paper towels (R)
6. Maximize the life span of office equipment through repair and maintenance
12. Use supplies in new ways
16. Reduce water consumption by turning off faucets when not in use
25. Save extra supplies or materials for a future project
27. Decrease energy consumption by turning off equipment when not in use
29. Recycle paper, plastic, metal cans, etc.
33. Throw recyclable materials into trash cans (R)
38. Give materials a new use or purpose instead of throwing them away
40. Reduce waste by reusing items such as water bottles, paper, plastic, etc.

#### **Influencing Others:**

4. Suggest ways for other employees to act in a more environmentally-friendly manner
9. Discuss environmentally-related topics with other employees
20. Provide environmentally-related literature to other employees
21. Give praise to other employees for their environmentally-friendly behavior

- 36. Tease other employees for behaviors that benefit the environment (R)
- 39. Tell other employees that environmentally-friendly behaviors are ineffective (R)

**Taking Initiative:**

- 5. Propose a new environmentally-friendly program for the company
- 8. Voice concerns that acting pro-environmentally could hurt the company (R)
- 10. Push the company's leaders to take a stronger position on environmental issues
- 13. Propose delaying an environmentally-related program for business reasons (R)
- 15. Not prioritize actions that would benefit the environment (R)
- 22. Reject a desirable project because it would be bad for the environment
- 26. Help implement new policies that reduce the company's impact on the environment
- 28. Choose a less convenient commute because it helps the environment

APPENDIX C  
RETRANSLATION TASK INSTRUCTIONS AND CATEGORIES

## RETRANSLATION TASK INSTRUCTIONS AND CATEGORIES

### **Background:**

In the workplace, environmentally-friendly behaviors are considered employee green behaviors (EGBs). Ones and Dilchert (2012a) define EGBs as “scalable actions and behaviors that employees engage in that are linked with and contribute to or detract from environmental sustainability” (p. 87). These behaviors can be performed as part of an employee’s job duties, outside of an employee’s job duties as organizational citizenship behaviors, or as counterproductive work behaviors that actually detract from the organization’s environmental performance. As “scalable” actions, they can vary in terms of how frequently or proficiently employees perform them. This in turn allows each employee’s contribution to the environmental performance of the organization to be quantified. Ones and Dilchert (2012a) further developed a content-based, three-tier Green Five Taxonomy of EGBs. The first tier consists of General Green Performance, followed by the five meta-categories of Working Sustainably, Avoiding Harm, Conserving, Influencing Others, and Taking Initiative in the second tier. The third tier consists of a further breakdown into 16 categories.

### **Translation Task:**

In the other word document attached to your email, you will find a list that contains the 16 categories of the Green Five Taxonomy of EGBs along with their definitions. They are organized by meta-category to help with understanding and interpretation. They have also been tagged with an abbreviated code (e.g. WS1 or C3). Please read the category definitions to familiarize yourself with the content of each category.

On the following pages you will find a list of all 40 items that are currently included in the norms scale I am developing for my thesis. They are split into two sets of 20 items. Each item represents an employee green behavior that could be observed in the workplace. Next to each item you will see a box. Please read the item and then place the abbreviated code of the category you think best fits the item into the item’s box. If you don’t think the item fits into any category, please put an NA in the box. I would also appreciate any feedback you might have about unclear items, items that don’t fit neatly into a category, or anything else you noticed while coding the items.

The 16 categories of employee green behaviors, organized by meta-category

**Working Sustainably:** behaviors that help work processes and products be more sustainable

- WS1 | *Choosing Responsible Alternatives:* behaviors wherein an employee chooses the work product or process option that is more environmentally friendly
- WS2 | *Changing How Work is Done:* behaviors wherein work processes are changed to become more sustainable
- WS3 | *Creating Sustainable Products and Processes:* behaviors wherein new products or processes are created that are more environmentally-friendly
- WS4 | *Embracing Innovation for Sustainability:* behaviors where in new, more sustainable technology is adopted at work

**Avoiding Harm:** behaviors that can either harm the earth and cause increasing damage, or can enhance the earth, making its ecosystems healthier

- AH1 | *Polluting/Preventing Pollution:* behaviors that cause or prevent pollution
- AH2 | *Monitoring Environmental Impact:* behaviors wherein work activities are monitored to assess and understand how they are affecting the environment
- AH3 | *Strengthening Ecosystems:* behaviors that help protect or repair ecosystems from the effects of industry and business

**Conserving:** behaviors intended to help preserve resources and reduce waste

- C1 | *Reducing Use:* behaviors that prevent the unnecessary use of new materials
- C2 | *Reusing:* behaviors wherein materials are used multiple times for the same purpose
- C3 | *Repurposing:* behaviors wherein materials are used multiple times for new purposes
- C4 | *Recycling:* behaviors wherein materials are recycled (aka end up at a recycling center)



**Influencing Others:** social behaviors used to influence others to engage in environmental behaviors

- IO1 | *Encouraging and Supporting Others:* behaviors that bolster and encourage other's employee green behaviors
- IO2 | *Educating and Training for Sustainability:* behaviors that help others build their knowledge about environmentalism

**Taking Initiative:** behaviors that involve stepping outside the box, taking a risk, and encouraging environmentally-related change

- T11 | *Putting Environmental Interests First:* behaviors that help the environment at some personal cost to the individual
- T12 | *Initiating Programs and Policies:* pushing for new programs and policies at work that would benefit the environment
- T13 | *Lobbying and Activism:* behaviors that involve fighting for environmental causes

APPENDIX D

REFINED EMPLOYEE GREEN BEHAVIOR DESCRIPTIVE NORMS SCALE

## REFINED EMPLOYEE GREEN BEHAVIOR DESCRIPTIVE NORMS SCALE

Developed by Jacqueline C. McConnaughy.

**\*Bolded items were revised or replaced from the initial scale\***

**Directions:** Below are a series of statements about behaviors that can occur in the workplace. Read the question prompt and, for each item, use the response scale to indicate your experience of others in your workplace. Fill in the circle that corresponds to your preferred response option.

**Rating Scale:** (1) Strongly Disagree; (6) Strongly Agree

Others at my organization (e.g. co-workers, supervisors, leaders):

1. When there is a choice, choose products that are better for the environment
2. Fix maintenance issues to prevent unintended pollution and waste of resources
3. **Throw disposable items away rather than reuse them (R)**
4. Suggest ways for other employees to act in a more environmentally-friendly manner
5. Propose a new environmentally-friendly program for the company
6. **Save extra materials from one project to supply a different project**
7. Design new, environmentally-friendly products
8. **Discourage the environmentally-friendly behavior of other employees (R)**
9. Discuss environmentally-related topics with other employees
10. **Push the company to stand behind an environmental cause**
11. Utilize new technologies that benefit the environment
12. Use supplies in new ways
13. **Propose a new company policy without addressing the environmental impact of the policy (R)**
14. Buy company supplies without thought for environmental impact (R)
15. Not prioritize actions that would benefit the environment (R)
16. Reduce water consumption by turning off faucets when not in use
17. Use inefficient work processes that waste natural resources (R)
18. Monitor the environmental impact of workplace processes
19. **Improperly dispose of trash and waste materials (R)**
20. Provide environmentally-related literature to other employees
21. Give praise to other employees for their environmentally-friendly behavior
22. **Use extra time or energy to perform an environmentally-friendly behavior over an environmentally-harmful behavior**
23. Change work processes to reduce negative impacts on the environment

24. Neglect to clean up after an environmentally-harmful accident or event (R)
25. Help implement new policies that reduce the company's impact on the environment
26. Decrease energy consumption by turning off equipment when not in use
27. Choose a less convenient commute because it helps the environment
28. Recycle paper, plastic, metal cans, etc.
29. Knowingly cause unnecessary damage to the environment through work-related decisions (R)
30. Develop new work processes that use fewer natural resources
31. Design a new product that contains harmful components (R)
32. Throw recyclable materials into trash cans (R)
33. Knowingly choose technologies that are more harmful to the environment (R)
- 34. Incorporate environmental protection into project ideas and development**
- 35. Lobby company leaders to donate to an environmental-friendly nonprofit**
36. Monitor workplace processes for potential sources of unintended pollution
37. Give materials a new use or purpose instead of throwing them away
- 38. Explain why environmentally-friendly behaviors may not be as effective as people think (R)**
39. Reduce waste by reusing items such as water bottles, paper, plastic, etc.

APPENDIX E  
ETHICAL LEADERSHIP QUESTIONNAIRE

## ETHICAL LEADERSHIP QUESTIONNAIRE

Yukl, G., Mahsud, R., Hassan, S., & Prussia, G. E. (2013). An improved measure of ethical leadership. *Journal of Leadership & Organizational Studies*, 20(1), 38-48. doi: 10.1177/1548051811429352

**Instructions:** This questionnaire is designed to study the relevance of ethics to effective leadership. The term “unit” refers to the team, department, division, or company for which your boss is the formal leader, and the term “members” refers to the people in the unit who report directly to your boss. Please indicate how well each of the following statements describes your current boss by selecting one of the following response choices. Write the number of the choice on the line provided. Leave the item blank if you do not know the answer.

**Rating Scale:** (1) Strongly Disagree; (6) Strongly Agree

My boss:

1. \_ Shows a strong concern for ethical and moral values.
2. \_ Communicates clear ethical standards for members.
3. \_ Sets an example of ethical behavior in his/her decisions and actions.
4. \_ Is honest and can be trusted to tell the truth.
5. \_ Keeps his/her actions consistent with his/her stated values (“walks the talk”).
6. \_ Is fair and unbiased when assigning tasks to members.
7. \_ Can be trusted to carry out promises and commitments.
8. \_ Insists on doing what is fair and ethical even when it is not easy.
9. \_ Acknowledges mistakes and takes responsibility for them.
10. \_ Regards honesty and integrity as important personal values.
11. \_ Sets an example of dedication and self-sacrifice for the organization.
12. \_ Opposes the use of unethical practices to increase performance.
13. \_ Is fair and objective when evaluating member performance and providing rewards.
14. \_ Puts the needs of others above his/her own self interest.
15. \_ Holds members accountable for using ethical practices in their work.

APPENDIX F  
WORK-FAMILY CULTURE SCALE

## WORK-FAMILY CULTURE SCALE

Thompson, C. A., Beauvais, L. L., & Lyness, K. S. (1999). When work-family benefits are not enough: The influence of work-family culture on benefit utilization, organizational attachment, and work-family conflict. *Journal of Vocational Behavior*, 54, 392-415.

**Instructions:** Following are several statements about how organizations handle the work and family needs of employees in less formal ways. Please read each item carefully and then indicate the extent to which you agree or disagree with each statement as it pertains to working in your organization.

**Rating Scale:** (1) Strongly Disagree; (5) Strongly Agree

1. In my work organization employees can easily balance their work and family lives.
2. In the event of a conflict, managers are understanding when employees have to put their family first.
3. In my work organization it is generally okay to talk about one's family at work.
4. Employees are often expected to take work home at night and/or on weekends. (R)
5. Higher management in my work organization encourages supervisors to be sensitive to employees' family and personal concerns.
6. Employees are regularly expected to put their jobs before their families. (R)
7. To turn down a promotion or transfer for family-related reasons will seriously hurt one's career progress in my work organization. (R)
8. In general, managers in my work organization are quite accommodating of family-related needs.
9. Many employees are resentful when women in my work organization take extended leaves to care for newborn or adopted children. (R)
10. To get ahead at my work organization, employees are expected to work more than 50 hours a week, whether at the workplace or at home. (R)
11. To be viewed favorably by top management, employees in my work organization must constantly put their jobs ahead of their families or personal lives. (R)
12. In my work organization employees who participate in available work-family programs (e.g., job sharing, part-time work) are viewed as less serious about their careers than those who do not participate in these programs. (R)
13. Many employees are resentful when men in my work organization take



- extended leaves to care for newborn or adopted children. (R)
14. In my work organization it is very hard to leave during the workday to take care of personal or family matters. (R)
  15. My work organization encourages employees to set limits on where work stops and home life begins
  16. Middle managers and executives in my work organization are sympathetic toward employees' child care responsibilities.
  17. My work organization is supportive of employees who want to switch to less demanding jobs for family reasons.
  18. Middle managers and executives in my work organization are sympathetic toward employees' elder care responsibilities.
  19. In my work organization employees who use flextime are less likely to advance their careers than those who do not use flextime. (R)
  20. In my work organization employees are encouraged to strike a balance between their work and family lives.

APPENDIX G  
FINAL, 27-ITEM EMPLOYEE GREEN BEHAVIOR  
DESCRIPTIVE NORMS SCALE

## FINAL, 27-ITEM EMPLOYEE GREEN BEHAVIOR

### DESCRIPTIVE NORMS SCALE

Developed by Jacqueline C. McConnaughy.

**Directions:** Below are a series of statements about behaviors that can occur in the workplace. Read the question prompt and, for each item, use the response scale to indicate your experience of others in your workplace. Fill in the circle that corresponds to your preferred response option.

**Rating Scale:** (1) Strongly Disagree; (6) Strongly Agree

Others at my organization (e.g. co-workers, supervisors, leaders):

1. When there is a choice, choose products that are better for the environment
2. Fix maintenance issues to prevent unintended pollution and waste of resources
3. Suggest ways for other employees to act in a more environmentally-friendly manner
4. Propose a new environmentally-friendly program for the company
5. Save extra materials from one project to supply a different project
6. Design new, environmentally-friendly products
7. Discuss environmentally-related topics with other employees
8. Push the company to stand behind an environmental cause
9. Utilize new technologies that benefit the environment
10. Use supplies in new ways
11. Reduce water consumption by turning off faucets when not in use
12. Monitor the environmental impact of workplace processes
13. Provide environmentally-related literature to other employees
14. Give praise to other employees for their environmentally-friendly behavior
15. Use extra time or energy to perform an environmentally-friendly behavior over an environmentally-harmful behavior
16. Change work processes to reduce negative impacts on the environment
17. Help implement new policies that reduce the company's impact on the environment
18. Decrease energy consumption by turning off equipment when not in use
19. Choose a less convenient commute because it helps the environment
20. Recycle paper, plastic, metal cans, etc.
21. Develop new work processes that use fewer natural resources
22. Throw recyclable materials into trash cans (R)
23. Incorporate environmental protection into project ideas and development
24. Lobby company leaders to donate to an environmental-friendly nonprofit
25. Monitor workplace processes for potential sources of unintended pollution

26. Give materials a new use or purpose instead of throwing them away
27. Reduce waste by reusing items such as water bottles, paper, plastic, etc.

## APPENDIX H

### TABLES

Table 1

*Pilot Data Reliability Analysis for the Subscales of the EGB Descriptive*

*Norms Scale*

Subscales	Cronbach's $\alpha$	
	Likert Scale	Frequency Scale
Working Sustainably	.82 (.82)	.71 (.72)
Avoiding Harm	.73 (.73)	.52 (.76)
Conserving	.77 (.80)	.78 (.82)
Influencing Others	.74 (.86)	.61 (.83)
Taking Initiative	.69 (.83)	.47 (.76)

*Note.* Cronbach's alpha includes all subscale items. Values in parentheses indicate the improved Cronbach's alpha after removing problem items.

Table 2

*Initial Scale Items with Hit Rates from Retranslation Task*

Item	Hit Rate
1. When there is a choice, choose products that are better for the environment	67%
2. Fix maintenance issues to prevent unintended pollution and waste of resources	67%
3. Utilize single-use, disposable products, such as paper towels	33%
4. Suggest ways for other employees to act in a more environmentally-friendly manner	83%
5. Propose a new environmentally-friendly program for the company	67%
6. Maximize the life span of office equipment through repair and maintenance	0%
7. Design new, environmentally-friendly products	83%
8. Voice concerns that acting pro-environmentally could hurt the company	17%
9. Discuss environmentally-related topics with other employees	67%
10. Push the company's leaders to take a stronger position on environmental issues	17%
11. Utilize new technologies that benefit the environment	83%
12. Use supplies in new ways	83%
13. Propose delaying an environmentally-related program for business reasons	17%
14. Buy company supplies without thought for environmental impact	17%
15. Not prioritize actions that would benefit the environment	17%
16. Reduce water consumption by turning off faucets when not in use	100%
17. Use inefficient work processes that waste natural resources	17%
18. Monitor the environmental impact of workplace processes	100%
19. Improperly handle hazardous materials	67%
20. Provide environmentally-related literature to other employees	83%
21. Give praise to other employees for their environmentally-friendly behavior	83%
22. Reject a desirable project because it would be bad for the environment	33%
23. Change work processes to reduce negative impacts on the environment	67%
24. Neglect to clean up after an environmentally-harmful accident or event	0%

25. Save extra supplies or materials for a future project	33%
26. Help implement new policies that reduce the company's impact on the environment	100%
27. Decrease energy consumption by turning off equipment when not in use	83%
28. Choose a less convenient commute because it helps the environment	50%
29. Recycle paper, plastic, metal cans, etc.	100%
30. Knowingly cause unnecessary damage to the environment through work-related decisions	17%
31. Develop new work processes that use fewer natural resources	83%
32. Design a new product that contains harmful components	17%
33. Throw recyclable materials into trash cans	50%
34. Knowingly choose technologies that are more harmful to the environment	33%
35. Through work, participate in projects that improve the local environment	17%
36. Tease other employees for behaviors that benefit the environment	67%
37. Monitor workplace processes for potential sources of unintended pollution	100%
38. Give materials a new use or purpose instead of throwing them away	83%
39. Tell other employees that environmentally-friendly behaviors are ineffective	33%
40. Reduce waste by reusing items such as water bottles, paper, plastic, etc.	83%

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*Note.* Hit rate threshold set at 67% (4 out of 6 subject matter experts correctly categorizing the item).

Table 3

*Final Sample Demographic Characteristics*

Characteristic	<i>n</i>	%	<i>X (SD)</i>	Range
Gender				
Female	189	51.5%	-	-
Male	178	48.5%	-	-
Age	-	-	45.0 (11.8)	20-72
Race/Ethnicity				
African-American	31	8.4%	-	-
Asian-American	12	3.3%	-	-
Bi-racial/Multi-racial	3	0.8%	-	-
Hispanic/Latino	28	7.6%	-	-
Native American	4	1.1%	-	-
White	289	78.7%	-	-
Job Position				
Non-management/Hourly	97	26.4%	-	-
Non-management/Salaried	39	10.6%	-	-
Entry-level manager	27	7.4%	-	-
Middle management	71	19.3%	-	-
Top level executive	21	5.7%	-	-
Professional	77	19.3%	-	-
Self-employed	31	8.4%	-	-
Other	4	1.1%	-	-
Industry				
Office/Admin. support	76	10.7%	-	-
Transportation/Warehouse	18	4.9%	-	-
Sales and related	55	15.0%	-	-
Food prep./Serving	16	4.4%	-	-
Healthcare	38	10.4%	-	-
Production	39	10.6%	-	-
Education/Training	41	11.2%	-	-
Construction	18	4.9%	-	-
Other	66	18.0%	-	-
Avg. hours worked/week	-	-	42.4 (7.1)	20-84
Tenure				



Years	-	-	10.2 (9.0)	1-57
Months	-	-	4.1 (3.2)	0-11
Job Requires EGBs				
Yes	131	35.7%	-	-
No	207	56.4%	-	-
Don't know	29	7.9%	-	-
Knowledge: EGBs	-	-	3.2 (1.1)	1-5
Knowledge: maintenance	-	-	3.1 (1.1)	1-5
Knowledge: production	-	-	3.3 (1.2)	1-5
Knowledge: construction	-	-	2.8 (1.3)	1-5

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*Note.* Demographic knowledge items are measured on a Likert scale

from 1 (*none at all*) to 5 (*a great deal*).

Table 4

*Scale Score Bivariate Correlations and Internal Reliability Analyses*

Scale	EGB Desc. Norms	WS Subscale	AH Subscale	C Subscale	IO Subscale	TI Subscale	WFC	EL	$\alpha$
EGB Desc. Norms	-								.96
WS Subscale	.94**	-							.88
AH Subscale	.93**	.86**	-						.86
C Subscale	.84**	.69**	.72**	-					.86
IO Subscale	.91**	.85**	.83**	.64**	-				.89
TI Subscale	.94**	.90**	.87**	.65**	.87**	-			.90
WFC	.23**	.16**	.20**	.34**	.17**	.13**	-		.90
EL	.43**	.35**	.41**	.46**	.38**	.35**	.61**	-	.97

∞

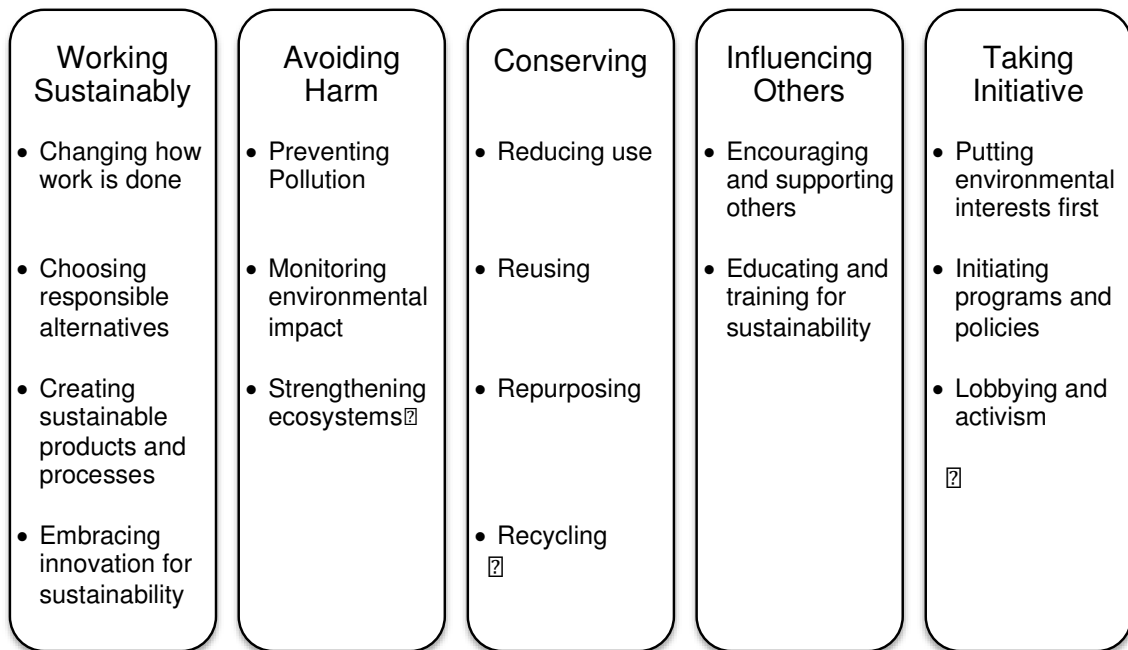
*Note.* WS = Working Sustainably. AH = Avoiding Harm. C = Conserving. IO = Influencing Others.

TI = Taking Initiative. WFC = Work-Family Culture. EL = Ethical Leadership

\*\*  $p < .01$

APPENDIX I  
FIGURES

## FIGURES



*Figure 1.* The 2<sup>nd</sup> and 3<sup>rd</sup> tiers of the Green Five Taxonomy of EGBs. Adapted from Ones and Dilchert (2012a).

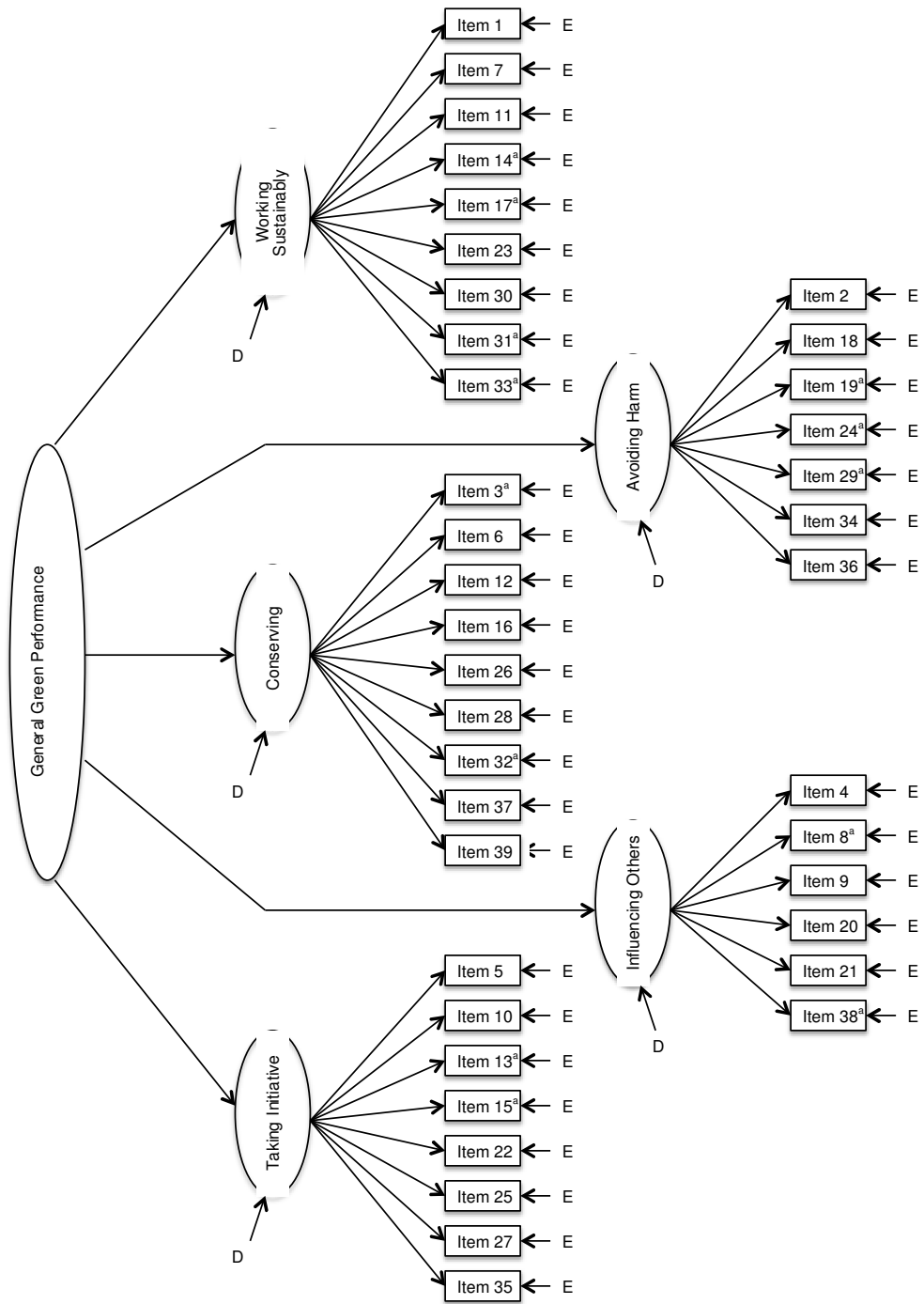


Figure 2. Expected structure of the EGB Descriptive Norms Scale based on the structure of the Green Five Taxonomy (Ones & Dilchert, 2012a).

<sup>a</sup>Reverse-coded items

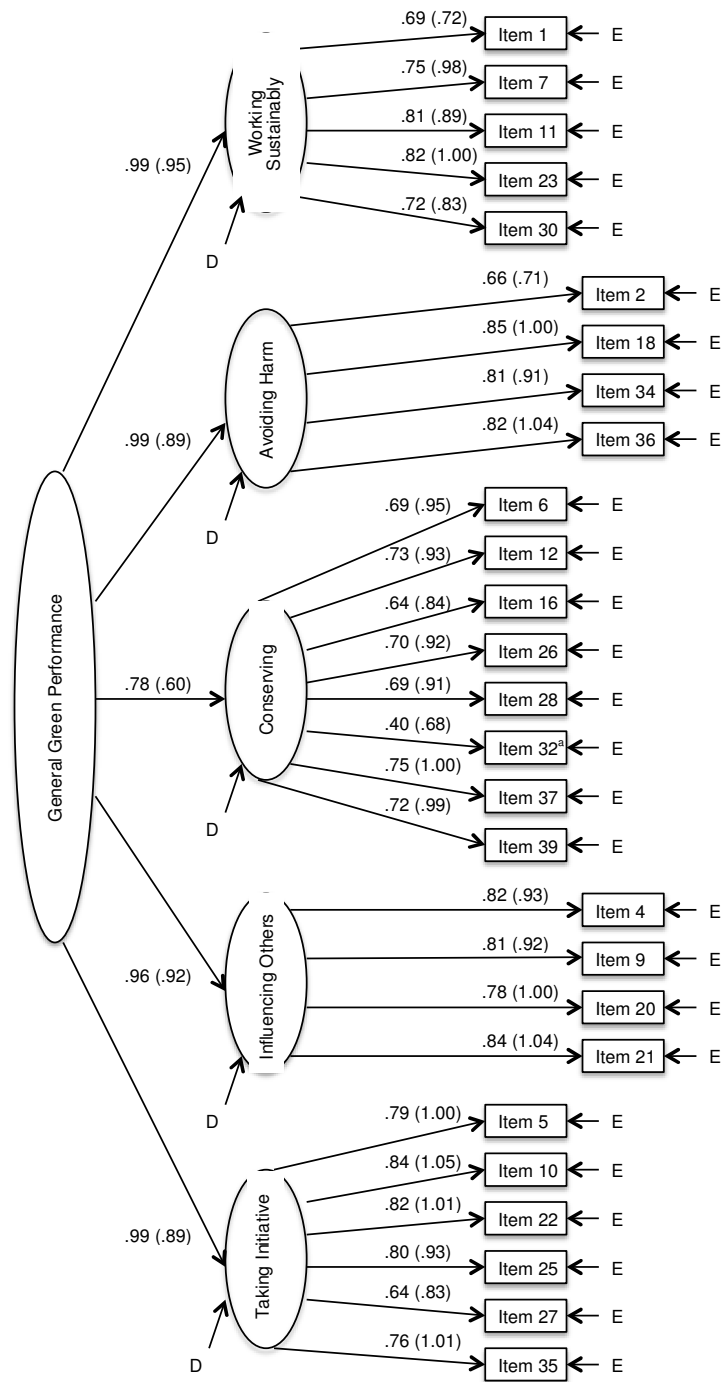


Figure 3. The final structure of the EGB Descriptive Norms Scale including standardized and raw path coefficients; raw path coefficients are in parentheses.

<sup>a</sup>Reverse-coded items

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