

The Focus Theory of Normative Conduct: Application to Pro-environmental
Grocery Shopping Behaviors

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Abstract

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Unsustainable food systems in the United States warrant adjusting food consumption behaviors to help mitigate negative environmental impacts. To effectively influence pro-environmental ('green') consumption behaviors, it is necessary to first understand purchasing behaviors. Existing research suggests that social normative influence is an important component in encouraging pro-environmental behavior. The Focus Theory of Normative Conduct provides insight as to the effectiveness of social normative influence. The importance of norm salience in affecting behavioral change is central to the focus theory of normative conduct; injunctive and descriptive norms affect behavior in a variety of contexts, but only if they are salient. The purpose of the present research is to identify which components of grocery shopping behaviors are perceived as important in lowering environmental impact and to determine what factors contribute to consumers' purchasing behaviors with regard to 'green' grocery products. In this study I investigated the role of social norms and motivations in influencing 'green' grocery purchasing choices. I sought to further the experimental findings of the focus theory of normative conduct by identifying the most influential, and thus most salient, norms in an applied

setting. I interviewed consumers, asking respondents which behaviors are most important in the context of 'green' consumption behavior. I used data from these interviews to construct a survey that contained questions about grocery shopping behavior, motivational factors, and descriptive and injunctive social norms. The survey was administered to customers at selected grocery stores in Washington State. Results indicate that social norms account for a significant amount of green grocery shopping behavior. Specifically, personal injunctive normative influence was a highly significant predictor of 'green' grocery shopping behavior. Social injunctive norms were also significant, but the effect was less pervasive throughout the various 'green' constructs. Descriptive normative influence was not a significant predictor. The results indicate that injunctive norms are salient in a 'green' grocery shopping setting, while descriptive norms do not appear to be salient in this particular situation. Motivational factors (e.g., taste) were also salient predictors of 'green' purchasing behaviors. These results emphasize the importance of social norms in the context of 'green' consumption behavior. I offer suggestions for ways to use motivations and social normative influence in social marketing campaigns to increase 'green' consumption behaviors and thereby lessen the environmental impact of food systems.

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1. INTRODUCTION

1.1 Focus Theory of Normative Conduct

Activation of social norms can be a powerful tool in promoting environmentally beneficial behavior (Cialdini, 2003). The focus theory of normative conduct emphasizes the importance of social normative influence in affecting behavior. A major component of the theory is the distinction between Injunctive and Descriptive social norms. Injunctive norms specify what is typically approved of, and therefore what 'ought' to be done. Descriptive norms refer to what people actually do, and consequently provide information as to what is typical or normal behavior (Kallgren, Reno & Cialdini, 2000). Both types of norms influence behavior, but do not do so in all situations. A primary tenet of the focus theory of normative conduct is the importance of norm salience in affecting behavior. Norms are in play primarily when they are salient, and people will act in ways that are consistent with socially acceptable behavior only when their attention is focused on the behavior that is occurring or that is commonly accepted (Cialdini, Reno & Kallgren, 1990). When considering ways to affect behavior change through normative influence, the issue of norm salience is critical. No matter how pervasive a norm is, it is unlikely that it will affect behavior if the norm is not salient.

Experimental studies have shed light on people's behavior in controlled settings, but there has been little exploration into the relative influence of the various types of norms on pro-environmental behavior (PEB). Despite the findings of Cialdini (2003) and Kallgren and colleagues (2000), most studies have focused on only one type of norm at a time. There is a need for studies that examine the differential influences, and thus saliency, of norms in particular applied settings. People often cite reasons other than norms for their decision to engage in

‘green’ consumption behaviors (Makatouni, 2002; Zanolli & Naspetti, 2002), so I also wanted to explore how consumers’ stated motivations compare to norms in influencing ‘green’ grocery purchasing behavior. Therefore, I conducted this study to verify the relative influence of different types of norms on ‘green’ purchasing behavior and to examine how normative influence compares to that of other motivations. Finally, I included analysis of demographic variables because previous research indicates that demographic variables, particularly political ideology and income, predict ‘green’ purchasing behavior (Gilg, Barr & Ford, 2005).

Research into the focus theory of normative conduct has yet to explore which norms are most salient in applied settings. Most studies focus on only one norm and do not compare the influence of different norm types on the same behavior. This constitutes a large gap with regard to the applicability of the focus theory of normative conduct in ‘green’ consumption settings. As such, it is important to identify which norms are most salient in an uncontrolled setting. Research by Cialdini (1990) indicates that whichever norm is most salient then becomes more influential. Presumably, then, whichever norm is more influential is more salient. I sought to address the gap between experimental findings and applications in the present study. Furthermore, there has been very limited research as to the relevance of the focus theory of normative conduct in the context of ‘green’ grocery shopping behavior. I explored whether and to what extent social norms influence behavior in a non-experimental grocery shopping setting. I offer ideas for future research and recommendations for ways the findings can be used in conservation efforts related to ‘green’ grocery purchasing behavior.

1.2 Background

There is a vast amount of knowledge regarding environmental degradation, the consequences of climate change, and the pivotal role human behavior plays in these issues (Anderegg, Prall, Harold & Schneider, 2010; Oreskes, 2004). However, relatively few people take the actions in their daily lives that are necessary to decrease environmental impact. There is a disconnect between scientific knowledge and behavioral change (Clayton, 2005; Kollmuss & Agyeman, 2010; Vermeir & Verbeke, 2006). Research indicates that consumers have exhibited an increasing level of environmental awareness and have expressed intent to purchase more 'green' products. However, 'green' products have not been as successful as would be expected based on consumers' growing levels of sympathy towards the environment (Kalafatis, Pollard, East & Tsogas, 1999).

Knowledge regarding the detrimental environmental impacts of industrial food production and consumption is far-reaching. Some examples of negative environmental impacts are illustrated below. Despite the knowledge surrounding the issue, purchase and consumption of 'green' food products is limited compared to consumption of those food products that are widely considered to be environmentally detrimental (Carlsson-Kanyama, 1998). Likewise, knowledge and awareness of environmental issues are poor predictors of PEB (Finger, 1994). It is critical to explore this discrepancy in order to inform efforts to increase 'green' grocery purchasing, thereby preserve resources, and prevent environmental degradation.

The effects of pollution, climate change and overall environmental degradation are becoming an ever-increasing problem, and food production and consumption are major contributors to many of the environmental problems that the world currently faces (Lockie, Lyons, Lawrence & Mummery, 2002). The ability to continue to produce food will be greatly

reduced if environmental degradation due to food production continues to progress at the same rate (Dalgaard, Hitchings, & Porter, 2003). Modern industrial agriculture relies heavily on factory farming, use of inorganic fertilizers and pesticides, and genetic manipulation of food crops and animals. As a whole, these components create a system that is problematic in the context of environmental conservation and sustainability of agriculture (Gliessman, 2000). The production and use of fertilizers and pesticides is highly resource intensive and contributes to severe pollution problems (Butler, 1969; Muller, 2009). Likewise, transportation of food utilizes valuable resources and creates pollution that contributes to climate change (Tanner & Kast, 2003). Conventionally produced food products also contribute to a variety of human health problems (Schafer, Shafer, Bultena & Hoiberg, 2007). To mitigate the sustainability problems associated with food production and consumption, it is important to understand consumption behaviors and encourage those behaviors that are more sustainable.

The production of fertilizers requires intense utilization of fossil fuels and mined mineral deposits (Gliessman, 2000). Once applied to crops, fertilizers and pesticides have a devastating impact on aquatic ecosystems (Conley et al., 2009; Diaz & Rosenberg, 2008). For example, hypoxia (oxygen-depleted water) is caused largely by fertilizer runoff from major agricultural areas and is becoming an increasing problem with the continued use of fertilizers and pesticides on crops. Hypoxia in marine coastal areas results in mortality and reproductive problems for many species, particularly fish and crustaceans (Gray, Wu & Or, 2002). These areas of mass marine mortality are also referred to as “dead zones”, the second largest of which is found in the Gulf of Mexico near the outflow of the Mississippi River (Rabalais, Turner & Wiseman, 2002).

Pesticide use can also have devastating effects on terrestrial ecosystems. Pesticides can be lethal to a range of species and therefore can result in modified food chains and reduced

species diversity within ecosystems (Butler, 1969). Pesticide use also contributes to reduced quality of soil, water, and air (Bedos et al., 2002; Kishimba et al., 2004; Worrall & Kolpin, 2004). A well-known example of pesticide lethality is the impact of DDT on raptors, which led to the near-extinction of Bald Eagles and other birds of prey (Butler, 1969; Pimentel & Edwards, 1982). Pesticide use lowers pest population in the short term, but simultaneously kills pest predators, causing pest populations to rebound and resulting in a continuous cycle of increased pests and increased chemical use. As a result, the amount of pesticides applied to major crops in the U.S. each year has doubled since 1962, while total crop losses to pests have stayed constant (Gliessman, 2000).

Organic food production refers to agriculture that does not use synthetic fertilizers or pesticides, and livestock that is raised without the use of drugs, antibiotics, and hormones that are commonly used in industrial farming operations (Seyfang, 2006). Organic agriculture reduces ecosystem contamination from pesticides and results in an overall decrease in ecosystem disruption when used in the place of non-organic or conventional agricultural practices (Reed, 2001). Organic fertilizers and natural pesticides do not have the detrimental environmental effects that are associated with nonorganic chemical treatments (Senesi, 1989). As such, it will be critical to decrease inorganic fertilizer and pesticide use on crops and instead use organic farming methods in order to prevent terrestrial ecosystems damage and increases in hypoxic areas (Rabalais et al., 2002). Purchasing organic produce, then, is an important component of green grocery shopping, as doing so promotes use of organic farming methods and does not support use of chemical fertilizers and pesticides.

Pesticides and fertilizers adversely affect not only ecosystems, but also human health. Children exposed to agricultural chemicals show increased risk for neurobehavioral effects and

respiratory diseases (Eskenazi, Bradman & Castorina, 1999). Exposure to pesticides is also related to increased risks of cancer, birth defects, and immune system function in people of all ages (Repetto & Baliga, 1996). Similarly, use of antibiotics in animals raised for meat production can pose health risks to the public (Schafer et al., 2007). Antibiotic-resistant bacteria are sometimes consumed by humans via contaminated meat or dairy, or produce that is contaminated by runoff from animal farms (Witte, 1998). One result of agricultural antibiotic and antimicrobial use is increased bacterial resistance to antibiotics, and consequent infections in humans that cannot be treated with typical antibiotics and sometimes cannot be treated at all (Shea, 2003; Smith et al., 2002).

Transportation of food also has a large impact on emissions and consequently contributes greatly to climate change (Carlsson-Kanyama & González, 2009; Coley, Howard & Winter, 2009). For example, food that is shipped across the Atlantic Ocean is eight times more negative, environmentally, than food that is grown domestically (Tanner & Kast, 2003). The use of fossil fuels is the main source of human-induced emissions, which contribute to climate change (Carlsson-Kanyama & González, 2009). Reducing the use of fossil fuels in food transportation via increased consumption of food that is more local will lead to decreased emissions and will therefore be an important component of a more sustainable food system (Stagl, 2002). As such, purchasing local produce is an important part of pro-environmental grocery shopping. Organic practices also improve sustainability through decreases in CO₂ emissions. Organic wheat production, for example, results in CO₂ emissions that are 50% lower than those for conventional wheat production (Stagl, 2002). Emissions reductions are primarily the result of decreased farm inputs. Specifically, organic food production does not utilize synthetic fertilizers or pesticides, both of which are produced using fossil fuels (Muller, 2009).

1.3 Justification for the Proposed Study

Given that natural resource degradation occurs, in part, because of energy- and chemical-intensive agriculture, there is a need to transition toward more sustainable agriculture. Doing so requires that individuals engage in consumption behaviors that help mitigate the negative effects on the environment and human health. To be able to influence consumption behaviors, we must first understand purchasing and consequent consumption behaviors. The major goal of this study is to explore the social-psychological and material circumstances that inform grocery purchasing and consequent consumption behaviors.

People rate environmental protection, societal benefits, concern for future generations, and saving money as the biggest motivators for engaging in pro-environmental behaviors (Corral-Verdugo, 1997; DeYoung, 1986; Oskamp et al., 1991). However, a desire to protect the environment does not, in and of itself, act as a significant motivator of pro-environmental behavior, even for those who believe that their primary motivation for conservation is environmental concern (Nolan et al., 2008). This raises the question, which I attempt to address, as to what factors most effectively influence pro-environmental grocery purchasing and consequent consumption behaviors.

Consumers play a critical role in the current state of environmental degradation. Purchase and consequent consumption of food products that are not sustainable contribute to climate change and pollution and create environmental hazards. Grocery shoppers are an ideal target for marketing and are subject to constant pressures to purchase more. If there is to be a move toward increased sustainability, it is vital that consumption of unsustainable grocery products is curbed. Understanding the behavior of grocery shoppers has the potential to play a large role in

conservation efforts. With the understanding of grocery shopping behavior comes an understanding of ways to encourage desired behaviors through emphasis on appropriate factors. Specifically, if we are able to clarify the role of social normative influence and motivational factors, resources can be allocated appropriately so as to capitalize on the most likely behavioral change elements. Use of appropriate normative messages has been successful in inciting behavioral change in the context of household energy use (Schultz et al., 2007). Capitalization of common motivational factors has been successful in increasing stewardship among farmers (Chouinard, Paterson, Wandschneider & Ohler, 2008). Insight into normative and motivational messages that are appropriate in the context of 'green' grocery purchasing may allow for analogous applications to grocery shopping behavior change efforts. Through the present research, I seek to provide some of the insight necessary to construct potential behavioral change tools in a 'green' grocery consumption context.

The knowledge about climate change and resource depletion is comprehensive and abundant, yet actions on the part of individuals to try to curb resource use and depletion are extremely lacking (Carlsson-Kanyama, 1998; Kalafatis et al., 1999). This fact reveals a disconnect between knowledge and social action, particularly among individuals. My intent in conducting this research is to help bridge that gap and identify those factors that are most likely to motivate a shift toward a more pro-environmental nature of grocery purchasing. Identification of factors that most strongly influence grocery shoppers' behavior would provide a tool to help tailor messages and efforts to increase green grocery purchasing behavior. Once identified, influential methods can be applied to specific efforts to encourage PEB in different situations. If widely distributed, the information gained from this research can be used at various grocery stores in efforts to increase purchase and consumption of 'green' grocery products.

In the following pages, I discuss existing literature on ‘green’ purchasing behavior, social normative influence, and motivations. I then describe the methods of measurement and analysis and explain the results of this study. Through addressing the objectives set for this study, I built on the current research surrounding social normative influence. Specifically, I analyzed the summative influence of social norms, as well as the unique roles of personal and social injunctive norms. Finally, I used scale measurement to explore, assess, and explain the process of ‘green’ grocery purchasing. The findings of the study constitute additions to the literature regarding the influence of social norms on environmentally significant behavior by focusing explicitly on green grocery-shopping. Given these findings, I offer ideas for future research and applications of ‘green’ consumption behavior research.

2. LITERATURE REVIEW

2.1 Pro-Environmental ('Green') Grocery Shopping

Human behavior plays a critical role in the current rate of environmental degradation (Arrow et al., 1995; Jorgenson, 2003; Tilman & Lehman, 2001; Wang, Qian, Cheng & Lai, 2000). A large part of this comes from individual consumer choices (González, Frostell & Carlsson-Kanyama, 2011). A key question is how to promote 'green' grocery purchases through decreased consumption of environmentally detrimental products and adjust grocery shoppers' behavior toward making purchasing choices that have a low environmental impact. A large portion of what we consume is food and this study focuses on consumer purchasing behaviors in grocery shopping settings.

'Green' buying or 'green' grocery shopping refers to purchasing products that are environmentally beneficial (or not environmentally harmful) (Mainieri, Barnett, Valdero, Unipan & Oskamp, 1997). For the purposes of this research, I focus on behaviors that are perceived to be 'green' and are marketed as such. The 'green' grocery shopping behaviors of particular interest for this research are purchase of food products that are organic, raised or grown locally, not genetically modified, and free of hormones and antibiotics. These actions can have a significant environmental impact, do not require major lifestyle changes to perform, and yet are not widespread (Kalafatis et al., 1999). Together, these behaviors deal with issues that are critical with regard to preventing environmental damage due to conventional agricultural processes. Problems associated with conventional agriculture include contamination from agricultural chemicals (Pimentel & Edwards, 1982; Rabalais et al., 2002), pollution from transportation (Kanyama & González, 2009), and food contamination and antibiotic resistance (Schafer et al.,

2007). Given their wide-ranging nature, the above-mentioned 'green' grocery shopping behaviors compose a comprehensive assessment of 'green' consumption.

There exists some degree of 'green' grocery purchasing among consumers, and when asked why they engage in these behaviors, individuals rate environmental protection, societal benefits, taste, and saving money as the most salient motivators (Nolan et al., 2008; Soil Association, 2003). Such findings appear to support the view that education about environmental issues and promotion of environmental concern are the best avenues for increasing green grocery purchasing. However, research suggests that a desire to save the environment does not, in and of itself, act as a significant motivator of green grocery purchasing (Mainieri et al., 1997). This holds true even for those who believe that their primary motivation for conservation is environmental concern (Nolan et al., 2008). Despite large-scale campaigns aimed at increasing awareness and concern, a widespread increase in 'green' grocery purchasing among grocery shoppers has yet to occur (Kalafatis et al., 1999). This raises the question as to what factors will be most effective in influencing green grocery purchasing and, consequently, consumption behaviors.

2.2 Social Norms

Before laws and regulation, compliance with socially acceptable behavior was enforced through threat of rejection from society (Triandis, 1994). Social norms continue to be an important part of societal function, even when laws and regulations are in place (Posner, 1997). In fact, social norms often act independently of the legal system, and consequences for deviating from social norms come from individuals' social networks rather than the legal system (Cialdini & Trost, 1998).

As mentioned above, two types of norms have been shown to influence environmentally significant behaviors. Descriptive norms involve individuals' perceptions of what behaviors are typically being performed and give an indication of which behaviors are 'normal'. Injunctive norms refer to beliefs about what behaviors are socially approved of, or what "ought" to be done (Cialdini et al., 1990; Kallgren et al., 2000). There is a personal aspect to injunctive norms, as well as a social component. Personal injunctive norms, also called moral norms, are related to feelings of moral obligation and deal with personal beliefs about right and wrong (Dean, Raats & Shepherd, 2008). Social injunctive norms refer to the rules and expectations that come from friends and family members, as well as other members of society (Lee, Geisner, Lewis, Neighbors & Larimer, 2008).

Kilty's (1978) findings provide support for the influence of injunctive norms in a study designed to test the role of social norms on drinking behavior. Kilty measured behavioral intentions, self-reported drinking behavior, and attitudes toward drinking. Normative measures included 4 types of normative expectations – personal, family, friends, and religion. In all groups studied, behavioral intentions or self-reported drinking behavior could be predicted by normative measures. Accurate predictions were most strongly based on personal injunctive normative beliefs.

Henry and others (2000) investigated the influence of normative beliefs about aggression on aggressive behaviors in elementary school classrooms. They found that direct and indirect injunctive personal norms were significant predictors of aggression. In older children injunctive norms affected beliefs and aggressive behavior, while in young children beliefs alone were predicted by injunctive norms. Classroom-level rejection of aggression was strongly positively associated with decreased individual aggression, further illustrating the influence of injunctive

norms. Descriptive norms, however, were not found to be significant in this study. Both of the above studies provide evidence for the strength of injunctive norms in affecting behavior.

There is evidence that both personal and social injunctive norms are important components in influencing environmentally significant behavior among consumers. Previous research indicates that personal injunctive norms influence behavioral commitment to environmental protection, as well as beliefs about the role of industry in environmental protection (Stern, Dietz & Black, 1986). Schultz and colleagues (2007) identified the importance of social injunctive norms in the context of home energy use. People gravitate towards the descriptive norm (what others are doing), even if doing so entails increasing energy use. There is an overall tendency for people to avoid deviating from what others are doing. However, in the case of home energy use, Schultz et al (2007) found that invoking social injunctive norms that emphasize social expectations to reduce energy use resulted in a decreased likelihood that participants would increase their energy use. This was the case even when decreasing energy use moved consumers further away from the norm of what other participants were doing.

There is also evidence that personal norms are a significant factor in consumers' choices to purchase 'green' products (Dean et al., 2008). Dean and colleagues analyzed the influence of personal injunctive norms alone and found that personal injunctive norms influenced consumers' decisions to purchase 'green' products. However, none of the researchers mentioned above explored the effects of both personal and social injunctive norms on a single behavior. It is important to explore the roles of personal and social norms separately, as the influence of each may be discrepant. I addressed this issue by examining both personal and social injunctive normative influence in the context of 'green' grocery shopping, so as to gain a greater understanding of injunctive normative influence. Additionally, the 'green' products in the

grocery study by Dean and colleagues were limited to organic foods, specifically apples and pizza. Organic foods are an important component of 'green' green grocery consumption, but purchasing of organic foods does not represent the entirety of 'green' grocery purchasing. It is important to determine, as I do in the present research, which other behaviors are considered 'green' and to what degree social normative influence applies to those behaviors.

Descriptive norms motivate behavior by providing evidence as to what actions are likely to be effective in a given situation (Cialdini, 1990). The results of the studies discussed above did not indicate any significant influence of descriptive norms on behavior. However, there is evidence that descriptive social norms play an influential role in increasing PEB for some types of environmentally significant behavior, such as reuse of hotel towels (Goldstein, Cialdini, & Griskevicius, 2008) and home energy use (Nolan et al., 2008).

The role of descriptive norms in influencing behavior was explored by Cialdini, Reno, and Kallgren (1990) in a study of littering behavior. In the study, subjects unaware of the study walked into a parking lot that was either clean (antilittering norm) or littered (littering norm). Subjects littered significantly more in a littered than in a clean parking lot and when they observed another person litter in the parking lot. In addition, there was an increased likelihood of littering when there were more pieces of litter in the parking lot. This study offers strong support for the role of descriptive norms in affecting behavior, as the presence or absence of litter, as well as the presence or absence of another litterer, provided a strong descriptive norm as to what other people were doing in a similar situation to that of the study subject. The study also offers strong implications with regard to the importance of norm salience in affecting behavior. A clean parking lot made salient the social injunctive norm of not littering, which overshadowed the descriptive norm for littering that was demonstrated by the littering researcher.

Goldstein and others (2008) investigated the relationship between descriptive normative influence and conservation behavior among hotel patrons. In an attempt to increase towel reuse and thereby decrease water and energy consumption, hotels place signs in rooms to encourage reuse of towels. The researchers in this study placed one of two signs in each room. One sign encouraged people to “help save the environment” by reusing towels. The other asked people to “join your fellow guests in helping to save the environment” and stated that 75% of other hotel patrons reuse their towels (descriptive norm condition). Analysis of rates of participation in the towel reuse program showed a significantly higher rate of reuse in the descriptive norm condition, providing another strong piece of evidence in support of the influence of norms.

There is also evidence that descriptive norms are effective in decreasing energy consumption. Nolan and others (2008) found that descriptive social norms were the biggest determinant in motivating consumers to decrease energy use, despite the fact that consumers cited the behavior of others as the least influential factor in their choice to use less energy. It appears that people were either unaware of the influence of the behavior of others on their own behavior or were not willing to admit that they performed a behavior simply because others were doing so. A large part of this may be due to the fact that people are often reluctant to admit that they are performing an activity primarily because others perform that activity. However, there is evidence that people follow the lead of others even if they are not aware that they are doing so (Pronin, Berger & Molouki, 2007). The theory of introspection illusion provides some insight as to potential causes for this behavioral tendency.

Introspection illusion refers to the tendency of individuals to focus on internal information at the expense of behavioral information in making self-assessments, but not other-assessments (Pronin et al., 2007). Introspection illusion is a manifestation of the fundamental

attribution error, in which people overlook situational influences (e.g., social norms) on their behavior and believe instead that they acted based on their own internal states (Woodside, 2006). One example, cited by Pronin and others (2007), centers on a person's justification for purchasing a barbeque that is popular in their neighborhood. According to introspection illusion, the purchaser would likely cite internal information (e.g., interest in high *Consumer Report* ratings) as justification for the purchase of that particular grill, and would deny that the behavior of neighbors influenced the purchasing decision. In the present study, I explore consumers' stated reasoning for engaging in 'green' behavior, as well as the influence of social norms in attempt to gain insight into the role of introspection illusion in the context of 'green' grocery purchasing behavior.

Induction of social norms has also been successful in efforts to promote smoking cessation (Zhang, Cowling & Tang, 2011) and is shown to have a significant effect on gambling (Larimer & Neighbors, 2003) and prejudicial behavior (Crandall, Eshleman & O'Brien, 2002). Given that social norms have been shown to influence behavior a vast array of different contexts, it is reasonable to expect that social norms could have a strong effect on green grocery purchasing behavior as well. Based on the widespread influence of social norms in varying situations, it is likely that grocery shoppers will change their purchasing behavior to conform to what they believe the majority of other people are doing, regardless of personal level of environmental concern or knowledge about conservation.

The findings discussed above emphasize the powerful influence of social norms and indicate the potentially significant role that social norms could play in pro-environmental grocery purchasing behavior as well. However, most of the previously mentioned studies have looked at the influence of one norm individually or at social norms as a whole. Previous research has

provided very limited analysis as to which norm has the most influence over performance of a single behavior. Additionally, research exploring the effects of social normative influence on 'green' purchasing behavior is very limited. The present study, which addresses the role of personal injunctive, social injunctive, and descriptive norms in the context of 'green' grocery purchasing, constitutes an important addition to the existing social normative influence literature.

Research by Cialdini and colleagues (1990) and Kallgren and others (2000) illustrates the difference between descriptive and injunctive norms both in terms of the mechanisms through which the norms are invoked and the differing effects on behavior. In the present study I investigate the relative influence of both injunctive and descriptive norms on grocery shoppers' 'green' purchasing behavior through survey methods and extensive statistical analysis to explore motivations and parse out correlations between the behavior of participants and that of important others. In addition, I explored both personal and social injunctive norms in relation to consumption behavior. These dimensions have not yet been explored comparatively, and it is likely that the distinction between the two types of injunctive norms is an important one.

2.3 Motivations

Beyond the role of social norms, there are other factors that motivate consumers to perform environmentally significant behavior. Individual and social values that revolve around health are often found to be influential motivating factors for purchasing and consuming 'green' foods (Makatouni, 2002; Zanolli & Naspetti, 2002). Environmental concerns, animal welfare, and food enjoyment are also important factors (Makatouni, 2002; Zanolli & Naspetti, 2002). Consumers may also be motivated to purchase 'green' products as an ego-defense and enhancement mechanism. Ego defense and enhancement refers to strategies that individuals use

in order to maintain self-image and cope with anxiety and/or social sanctions associated with particular behaviors (Markin, 1979; Valiant, 1992; “Defense Mechanisms”, n.d.). There is evidence that consumers sometimes purchase products that provide ego support or enhancement by way of supporting a particular self-image (Woods, 1960). In a grocery shopping setting, consumers who are concerned about their environmental or social impact may purchase ‘green’ products as a way to maintain their self-image or relieve themselves of any guilt they feel. Questions were included in the present study which addressed the potential motivational impact of ego-defense and enhancement on ‘green’ grocery purchasing behavior.

There is evidence, however, that consumers’ expressed reasons for engaging in pro-environmental behaviors may not be the primary reason that they engage in those behaviors. This relates to introspection illusion (discussed above), which refers to a general tendency to fail to recognize outside influences on one’s own behavior (Pronin, Gilovich & Ross, 2004). This phenomenon often makes people unable to accurately justify their behaviors. Social norms, in particular, may play a more prominent role in influencing individuals’ behavior than consumers realize (Sherif, 1937). As such, it is of interest to further explore the relationship between reported motivations, social normative influence, and ‘green’ grocery purchasing behavior, which I do in the present study.

There has been limited focus on purchasing behavior specifically related to grocery shopping, leading to a dearth of information concerning the effects of social norms and motivations on pro-environmental behavior among consumers. To contribute to filling this gap, I investigated factors that affect consumers’ engagement in green grocery purchasing behavior. Specifically, I explored the role of social normative influence and motivations in the context of ‘green’ grocery purchasing behavior.

2.4 Research Questions and Objectives

My main goal in conducting this study was to explore the factors that influence ‘green’ grocery purchasing behavior among consumers. Of particular interest are the roles of social norms and motivations in encouraging green grocery purchasing behavior. The following questions are of specific interest in this study:

- How well do social norms predict grocery shoppers’ decisions to purchase and consume ‘green’ food products?
 - Do personal injunctive, social injunctive, and descriptive norms uniquely predict ‘green’ grocery purchasing behaviors?
- What factors motivate grocery shoppers to purchase ‘green’ grocery products?
 - How does the influence of other motivations compare to that of norms?
- What are the implications of the answers to the above questions with regard to efforts to encourage ‘green’ consumption behavior?

I used interviews and questionnaires, followed by various analyses, to address my research questions. I began by conducting interviews with a convenience sample of the general public in order to develop questionnaires to test the ability of social norms and motivations to predict ‘green’ grocery purchasing behavior. Following completion and analysis of interviews, I developed a questionnaire to address the research questions.

Data analysis, described in detail below, was performed to analyze relationships between social normative influence, motivations, and ‘green’ grocery purchasing behavior. I used principal components analysis to reduce the data sets and assess participants’ conceptualization

of 'green' behavior and social normative influence. Whether and to what extent norms and motivations predict 'green' grocery behavior was tested in a regression model. A second regression model was run to test whether and to what extent social injunctive, personal injunctive, and descriptive norms predict 'green' grocery behavior. Finally, a third regression model tested whether and to what extent the components of motivations predict 'green' grocery behavior.

3. METHODS

3.1 Interviews

In the spring of 2011 I conducted exploratory interviews with a convenience sample of individuals who shop for groceries (n=10). The primary function of these interviews was to understand grocery shoppers' construction of green grocery consumption and to use that construct to develop a scale for measuring 'green' grocery consumption. There is not a standardized scale for measuring 'green' grocery consumption, so input from grocery shoppers was critical. In these interviews, I inquired about what participants believed to be the most important green consumption behaviors, as well how they themselves define 'green' consumption. I also asked participants what types of grocery products they considered to be 'green', what factors encourage them to purchase 'green' grocery products (motivations), and whether other people in their life engage in 'green' consumption (social norms).

I conducted the in-person interviews in a variety of public spaces, in locations of interviewees' choosing, and recorded the interviews with a digital voice recorder. Participants were not asked to provide any identifying information, which ensured anonymity. I transcribed these interviews and then used the transcripts to identify factors that would be important to include in scales assessing 'green' grocery shopping, motivations, and social norms. Common, recurring themes were then included in the construction of a scale to measure 'green' consumption. Interviews conducted in this study constitute exploratory research in the field, so I used inductive analysis in this stage of the study, letting common themes emerge from the interview data. Through the interviews, people suggested behaviors that constitute 'green' grocery purchasing behavior and those behaviors were included in the 'green' consumption scale in the survey. It was important to include interview data that illustrated ways in which consumers

structure ‘green’ consumption when constructing scales, since no existing scales were available to measure ‘green’ consumption. Information from existing literature regarding ‘green’ behavior was also considered in the development of the scale.

3.2 Surveys

Questionnaire

I used Likert scales to measure behavior frequency, motivations, and social norms. I focused on behaviors related to the purchase of different types of groceries that are considered ‘green’ or not ‘green’, including fruits, vegetables, meats, seafood, dairy, eggs, grains, and commodity items (chocolate, coffee, and tea). While analyzing interview data it became clear that separate scales were necessary for the purchase of fruits, vegetables, meats, seafood, dairy, eggs, grains, and commodity items. This is important because the types of grocery products people buy is a major outcome variable with regard to ‘green’ grocery shopping. I also included questions regarding demographic variables (race/ethnicity, age, income, education, and gender). See Appendix A for a copy of the survey instrument.

Green Consumption Scale

The scales for fruits, vegetables, and grains each include questions about the frequency with which respondents purchase fruits, vegetables, and grains that are local, organic, and not genetically modified. The scale for dairy includes questions about the frequency with which respondents purchase dairy products that are local, organic, hormone-free, antibiotic-free, and rBST-free. Questions for the egg scale are the same as those for the dairy scale with the addition of questions about the purchase of eggs from hens that were certified humane raised and handled,

hens that were cage-free, and hens that were pastured. Seafood scales includes questions about the frequency of purchase of seafood that is farmed, organic, sustainable, and local. The meat scale contains questions about the frequency of purchase of meat that is organic, local, antibiotic-free, hormone-free, pastured, free range, and vegetarian-fed. Finally, the scale regarding edible commodity items includes questions about the frequency with which respondents purchase coffee, tea, and chocolate that is fair trade, organically grown, shade grown (coffee only), and meets rainforest alliance qualifications. The survey contained 57 frequency items, all of which were retained after reliability and factor analyses. Each item contained a five point scale that ranged from 1 (“never”)-to-5 (“always”), as well as an N/A option. The N/A option was included to account for those participants that do not purchase or consume a particular food item or do not know about the food item they purchase.

Social Norms

The social norms scale contained questions about what the participants’ friends, family members, and neighbors do, as well as their own normative values about ‘green’ purchasing. Distinct questions were developed to measure the influence of social and personal injunctive norms and descriptive norms. The questions were adapted from survey instruments used by Tanner and Kast (2003), Dietz and colleagues (1986), and Rimal and Real (2005). They were adjusted to apply to ‘green’ grocery shopping behavior. There were 21 items in the social norms scale, all of which were retained following reliability analysis and 16 of which were retained following factor analysis. The response options included a five-point response scale ranging from 1 (“strongly disagree”)-to-5 (“strongly agree”).

Demographics

The questionnaire contained a brief optional section containing questions about demographic information. I asked participants to report the highest level of education completed, total annual household income, political ideology, whether they own/drive a car, race/ethnicity, age, and gender. The response options for education were as follows: 1 = some high school, 2 = graduated from high school/GED, 3 = some college, 4 = graduated from college, 5 = some graduate school, 6 = graduate or professional degree. The response options for annual household income were: 1 = under \$19,999, 2 = \$20,000 to \$44,999, 3 = \$45,000 to \$69,999, 4 = \$70,000 to \$94,999, 5 = \$95,000 to \$119,999, 6 = \$120,000 or over, 7 = prefer not to answer. The response options for political ideology included a five-point response scale ranging from 1 (“very liberal”)-to-5 (“very conservative”). Response options for whether or not participants own/drive a car were “yes” (coded as 1) or “no” (coded as 2). The response options for race/ethnicity were: 1 = American Indian or Alaskan Native, 2 = Black or African American, 3 = Asian, 4 = Native Hawaiian or Pacific Islander, 5 = White or Caucasian, 6 = Hispanic or Latino. The response options for age were: 1 = 17 or younger (this was used to identify potential participants who, despite being informed of age restrictions, might have chosen to take the survey – no “1” responses were recorded), 2 = 18-20, 3 = 21-29, 4 = 30-39, 5 = 40-49, 6 = 50-59, 7 = 60 or older. Gender was coded as follows: female = 1, male = 2, NA = 0. See Appendix B for a summary of the demographic data.

Sampling

In the summer and fall of 2011 I recruited participants to complete a survey of ‘green’ grocery shopping behavior. Potential participants consisted of grocery shoppers at four grocery

stores in King County. I selected stores where anecdotal evidence suggested a high likelihood of reaching green consumers – stores that sell ‘green’ produce. A survey of the general public may have inadvertently included individuals who are not involved in purchasing grocery items and therefore would not be representative of the desired population of consumers.

Grocery stores were selected based on store type and demographic criteria. A sample of primarily cooperative, or “specialty”, markets was selected to explore grocery shopping behavior. Grocery shoppers from one chain grocery store were included. Shoppers from other chain stores could not be reached because those stores denied my request to recruit their customers to participate in this study.

I recruited participants at PCC, Whole Foods Market, and Safeway stores. I chose to sample customers at PCC and Whole Foods stores because they specifically sell ‘green’ products and so promote ‘green’ consumption among their shoppers. This was an important consideration, as the study focuses on ‘green’ grocery shopping behavior, so it was valuable to include participants who engage in ‘green’ behavior. PCC and Whole Foods both sell primarily organic produce, as well as a variety of foods that cannot easily be found at chain grocery stores. In addition, these stores can be found in regions with varied demographic attributes alongside popular chain grocery stores and are prevalent in the region of study. I spoke with customers at PCC stores in Green Lake and Seward Park in Washington State, and at a Whole Foods store in Redmond, Washington. These specific PCC and Whole Foods locations were also chosen based on a convenience sample of those stores that allowed me to speak with customers. I included participants from one Safeway store in Auburn, Washington as well, which provided data that reflected consumer behavior at non-specialty stores. A number of PCC, Whole Foods, and

Safeway locations were not included due to refusal to allow recruitment or failure to respond to requests for permission to recruit customers.

I used a combination of internet and mail-based surveys so as to maximize the demographic diversity of available respondents. Specifically, I sought to minimize the selection bias that could occur with the use of internet-based surveys alone. Participants were selected using a convenience sample of customers at cooperative and specialty grocery stores. Potential participants were asked to assist in this research by filling out a survey about their shopping habits. Administration of an electronic survey via email was chosen as the primary survey mode based on a number of factors. Electronic surveys are more convenient for data collection and analysis, and it is easier to send reminders through email than through the mail. Survey delivery and collection are also less costly via electronic modes. Additionally, most participants preferred to provide an email address rather than a mailing address.

Customers were approached as they entered or exited the grocery store. I told them about the project, including the consent and IRB process, and asked if they would provide an email address, where a link to the electronic survey would be sent. If a person did not want to provide an email address or did not have computer access I gave them the option of providing a mailing address and completing a hard copy of the survey. In these instances, a hard copy of the survey was sent to the participant, along with a self-addressed stamped return envelope. Approximately 40% of customers who were approached consented to participate in the survey. If an email address was provided, I sent the participant an email with a link to the survey, which they filled out and returned at their leisure. When a mailing address was provided, I sent the participant a letter containing a paper version of the survey, which they filled out and sent back in a pre-paid envelope. See Appendix C for a copy of the cover letter sent with the web- and mail-based

surveys. Email-based surveys were first sent in mid-November. Seven reminder emails were sent over the course of the following 4 weeks. Mail-based surveys were sent in early December. No reminders were sent for mail-based surveys due to resource constraints and invalid mailing addresses. The final response was received in early January. This study was reviewed and approved by the UW IRB (#40271 and #41160) (See Appendices E and F).

3.3 Data Analysis

Interview Analysis

I began my analysis by transcribing the interviews and conducting a thematic analysis of the interview data. I used Microsoft Word to transcribe the interviews directly from the recording device. This allowed me to pause, rewind, and fast-forward the sound files to aid in transcription. Using a word document I transcribed the interviews verbatim and then conducted a thematic analysis. Not knowing what the interviews would produce, I identified common themes as they arose in the transcripts. Thematic analysis consisted of identifying participants' definitions of 'green' consumption and the most frequently stated reasons for purchasing or not purchasing green products. In addition, I identified those factors that participants felt had the greatest influence on their behavior. Once it became clear that the stated themes were present in the interview data, I coded statements as belonging to each of those categories (definition of 'green' consumption, reasons for purchase, perceived motivations). I did not compare emergent themes to any existing criteria for categorization, as this research is exploratory and no such comparison criteria exist. I used data from the analysis to create Likert scales to measure 'green' consumption and motivation constructs for the questionnaire.

Health, environmental concern, and concern for future generations were common recurring themes that emerged from the data as motivations for 'green' behavior. Respondents defined 'green' consumption based on the following criteria: organic, pesticide-free, local, meat from animals that are treated humanely, and meat that is 'natural'. Criteria related to agricultural practices were the most common themes that emerged throughout the interviews and informed the definition of 'green' for the construction of scales. Other themes, such as packaging and recyclability, were not frequently present in the interviews. For the purposes of this study, 'green' was used to refer specifically to agricultural practices and locations and does not include post-agricultural factors such as packaging.

Analyses of Scales

For each scale, I performed Principal Components Analysis (PCA) to reduce the data set into a more manageable set of composites for regression analysis. I first conducted PCA on the social norms scale. I conducted a second PCA on the motivations scale. I conducted a third PCA on the 'green' consumption scale so as to identify different dimensions of 'green' consumption, as recognized by consumers. For all analyses, I retained those factors with loadings equal to or greater than 0.45. I conducted PCA to obtain the minimum number of factors needed to represent the original set of data. My goal was to reduce the number of variables in the data set in order to conduct regression analyses. I used Varimax rotation so as to provide the clearest separation of factors. Once I identified emergent factors, I computed summated ratings for each component, which I then used for subsequent regression analyses.

Principal Components Analysis was also an important step due to the exploratory nature of this research. As there were no pre-existing scales to measure 'green' consumer behavior, it

was essential to understand how consumers structure ‘green’ consumption and ensure that the scale used in the study was consistent with how consumers conceptualize and categorize ‘green’ behavior.

I computed reliability scores for each of the main scales, as well as each subscale (factor). I tested each scale for reliability using the following formula for Cronbach’s Alpha, where α is the measure of internal consistency, k is the number of components/questions, and r is variance:

$$\alpha = \frac{k}{k-1} \left[1 - \frac{k}{k+2(\sum r)} \right]$$

Regression

I tested whether and to what extent social norms and motivations predict green grocery purchasing behaviors using linear regression. Linear regression provided the best method with which to predict green grocery shopping behavior based on measures of social normative influence and motivations. This method provided information regarding the strength of the predictor variables (social norms and motivations) in predicting the outcome variable of green grocery shopping.

I used the following linear regression equations to analyze the data:

$$Y_i = \beta_0 + \beta_1 y_1 + \beta_2 y_2$$

Y_{ii} = 'Green' Consumption (Summative Rating)

β_0 = Estimate of baseline level of 'green' consumption, holding Norms and

Motivations constant

β_1 = Estimate of the effect of Norms on 'green' consumption, holding Motivations

constant

β_2 = Estimate of the effect of Motivations on 'green' consumption, holding Norms

constant

y_1 = Norms (Summative Rating)

y_2 = Motivations (Summative Rating)

$$Y_{ii} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3$$

Y_{ii} = 'Green' Consumption (Summative Rating)

β_0 = Estimate of baseline level of 'green' consumption, holding Personal Injunctive

norms, Social Injunctive norms, and Descriptive norms constant.

β_1 = Estimate of the effect of Personal Injunctive norms on 'green' consumption, holding

Social and Descriptive norms constant

β_2 = Estimate of the effect of Social Injunctive norms on 'green' consumption, holding

Personal and Descriptive norms constant

β_3 = Estimate of the effect of Descriptive norms on 'green' consumption, holding

Personal and Social Injunctive norms constant.

x_1 = Personal Injunctive Norms (Summative Rating)

x_2 = Social Injunctive Norms (Summative Rating)

x_3 = Descriptive Norms (Summative Rating)

$$Y_{iii} = \beta_0 + \beta_1 y_1 + \beta_2 y_2$$

Y_{iii} = 'Green' Consumption (Summative Rating)

β_0 = Estimate of baseline level of 'green' consumption, holding Environmental Concern and Ego-Defense and Enhancement constant.

β_1 = Estimate of the effect of Environmental Concern on 'green' consumption, holding Ego-Defense and Enhancement constant

β_2 = Estimate of the effect of Ego-Defense and Enhancement on 'green' consumption, holding Environmental Concern constant

y_1 = Environmental Concern (Summative Rating)

y_2 = Ego-Defense and Enhancement (Summative Rating)

4. RESULTS

4.1 Response Rate and Reliability

I sent a total of 267 surveys via email and received 160 responses, for a response rate of 59.9%. I sent a total of 36 mail-based surveys and received 21 responses, for a response rate of 58.3%. Reliability scores for all three subscales were very high, ranging from 0.92 to 0.96 (Tables 1, 2, and 3).

4.2 Factor Analysis

The Rotated Component Matrix resulted in three factors accounting for a combined 62.10% of the total variance explained. Factor 1 contains eight items that clearly reflect personal injunctive norms. Factor 2 contains seven items that reflect descriptive norms. Factor 3 contains five items that reflect social injunctive norms. This three-factor model appears to reflect adequately the underlying factor structure of the 21-item social norm inventory (See Table 1).

Table 1. Constitutive statements and respective loadings, means, standard deviations (SD), and Cronbach's α for the dimensions of social norms

Dimensions of Social Norms	Factor Loading	Mean	SD	α
Personal Injunctive Norms		3.59	0.76	0.94
I feel responsible for helping protect the environment by purchasing green grocery products	0.805			
I feel guilty when I purchase grocery products that are not green when alternatives are available	0.711			
People have a responsibility to contribute to environmental conservation by purchasing	0.863			

green grocery products				
People should promote green food production by buying green grocery products	0.809			
I feel morally obligated to purchase green grocery products	0.782			
Buying green grocery products feels like the morally right thing to do	0.853			
I feel obligated to bear the environment in mind when I shop for groceries	0.791			
Descriptive Norms		3.27	0.49	0.87
People I am close to purchase green grocery products	0.749			
People with whom I am close place a high value on purchasing green grocery products	0.752			
Purchasing green grocery products is important to the people I know best	0.749			
My friends purchase green grocery products	0.760			
My family members purchase green grocery products	0.535			
People like me purchase green grocery products	0.681			
Social Injunctive Norms		3.96	0.58	0.66
My friends expect me to purchase green grocery products	0.507			
My neighbors expect me to purchase green grocery products	0.777			
My family members expect me to purchase green grocery products	0.529			

The Rotated Component Matrix for the motivations scale presents three rotated factors, accounting for a combined 52.35% of the variance. Factor one contains nine items that reflect motivations associated with environmental concern and was thus labeled ‘environmental concern’. Factor two contains seven items that reflect motivations associated with guilt relief and self-esteem, and was labeled ‘ego-defense and enhancement’. Factor three contains three items

that reflect motivations associated with the quality of ‘green’ products and was thus labeled ‘quality’ (See Table 2).

Table 2. Constitutive statements and respective loadings, means, standard deviations (SD), and Cronbach’s α for the dimensions of motivations

Dimensions of Motivations	Factor Loading	Mean	SD	α
Environmental Concern		3.75	0.83	0.91
I feel like I am contributing to something much larger than myself	0.743			
I am concerned about the state of our environment	0.894			
I feel compassion towards improving environmental conditions	0.858			
It is important to buy green grocery products	0.808			
Allows me to do something for a cause that is important to me	0.800			
Purchasing green grocery products enables me to live a healthier life	0.656			
I think environmental problems are likely to occur	0.613			
Purchasing green grocery products is an important part of environmental conservation	0.747			
Conserving the environment is important to me	0.742			
Ego Defense and Enhancement				
No matter how bad I have been feeling, purchasing green products makes me forget about it	0.696	2.24	0.61	0.89
Purchasing green grocery products is a way for me to work through my own personal problems	0.795			
Purchasing green products relieves me of some of the guilt about being more fortunate than others	0.781			
Purchasing green grocery products makes me feel important	0.824			
Buying green grocery products makes me feel better about myself	0.763			
Purchasing green grocery products increases	0.760			

my self-esteem				
Purchasing green products makes me feel good	0.501			
Quality		3.51	0.19	(0.47)
Green grocery products are readily available	0.639			
Green grocery products preserve well	0.719			
I like the taste of most green grocery products	0.494			

The Rotated Component Matrix for the 'green' consumption scale presents 12 rotated factors, all with eigenvalues greater than 1. The 12 factors account for a combined 74.47% of the total variance. Factor one contains items specific to the purchase of eggs ('eggs'). Factor two contains items specific to the purchase of meat ('meat'). Factor three contains items specific to the purchase of dairy ('dairy'). Factor 4 contains items specific to the purchase of grains ('grains'). Factor five contains items specific to the purchase of tea and chocolate ('tea and chocolate'). Factor six contains items specific to the purchase of local and seasonal fruits and vegetables ('seasonal'). Factor seven contains items specific to the purchase of coffee ('coffee'). Factor eight contains items specific to the purchase of foods from local farmers' markets ('farm'). Factor nine contains items specific to the purchase of Non-GMO foods ('non-gmo'). Factor 10 contains items specific to the purchase of seafood ('seafood'). Factor 11 contains items specific to the purchase of organic foods ('organic'). Factor 12 contains items specific to the purchase of items that are Rainforest Alliance certified ('rainforest alliance'). This 12-factor model appears to reflect adequately the underlying factor structure of the 59-item 'green' consumption inventory (See Table 3).

Table 3. Constitutive statements and respective loadings, means, standard deviations (SD), and Cronbach's α for the dimensions of 'green' consumption

Dimensions of 'Green' Consumption	Factor Loading	Mean	SD	α
Eggs		3.34	0.13	0.93
Organic eggs	0.695			
Cage free eggs	0.807			
Free range eggs	0.784			
Eggs from hens that were certified humane raised and handled	0.725			
Eggs from naturally raised chickens	0.739			
Eggs from pastured chickens	0.606			
Eggs from hormone-free chickens	0.693			
Eggs from antibiotic-free chickens	0.659			
Eggs from vegetarian-fed chickens	0.614			
Eggs that were produced locally	0.626			
Meat		3.21	1.08	0.91
Organic meat	0.630			
Free range meat	0.733			
Hormone-free meat	0.685			
Pastured meat	0.607			
Natural meat	0.686			
Antibiotic-free meat	0.751			
Vegetarian-fed meat	0.630			
Meat that was raised locally	0.666			
Meat from a local farmers market	0.503			
Dairy		3.71	0.56	0.89
Organic dairy products	0.465			
Dairy products from rBST-free cows	0.810			
Antibiotic-free dairy products	0.797			
Hormone-free dairy products	0.838			
Grains		2.50	0.67	0.85
Locally grown grains	0.786			
Grains from a cooperative farm	0.774			
Grains from a local farmers market	0.650			
Sustainably grown grains	0.787			
Tea and Chocolate		2.51	0.63	0.86
Organic chocolate	0.700			
Fair trade chocolate	0.778			
Rainforest Alliance chocolate	0.510			
Organic tea	0.638			
Fair trade tea	0.726			
Local/Seasonal Fruits and Vegetables		3.32	0.81	0.86

Local fruits	0.572			
Fruit that is in season	0.805			
Fruit from a local farmers market	0.603			
Local vegetables	0.697			
Vegetables that are in season	0.815			
Vegetables from a local farmers market	0.687			
Coffee		2.35	0.55	0.87
Organic coffee	0.798			
Fair trade coffee	0.839			
Shade grown coffee	0.784			
Rainforest Alliance coffee	0.689			
Farmers Market		2.52	0.52	0.80
Fruit from a local farmers market	0.547			
Vegetables from a local farmers market	0.588			
Dairy products from a local farmers market	0.682			
Eggs from a local farmers market	0.701			
Meat from a local farmers market	0.525			
Non-GMO		3.41	0.49	0.90
Fruit that was not genetically engineered (non-GMO)	0.864			
Vegetables that are not genetically engineered (non-GMO)	0.869			
Grains that were not genetically engineered (non-GMO)	0.591			
Seafood		2.98	0.59	0.78
Organic seafood	0.522			
Farmed seafood	0.617			
Sustainable seafood	0.663			
Local seafood	0.801			
Seafood from a local farmers market	0.678			
Organic		3.55	0.56	0.87
Organic fruits	0.746			
Organic vegetables	0.724			
Organic grains	0.415			
Organic dairy products	0.572			
Organic eggs	0.458			
Rainforest Alliance		1.73	0.26	0.78
Rainforest Alliance chocolate	0.687			
Rainforest Alliance coffee	0.609			

Following PCA analysis, I calculated summative ratings for each of the factors. ‘Green’ grocery shopping was calculated using a mean summative rating of all components of the ‘green’ consumption scale. For each of the factors identified using PCA, I calculated a summative rating of the variables that comprised each factor. I then used these components to conduct regression analyses of the data.

4.3 Regression

Assumptions of normality homoscedasticity, and linearity were tenable for all regression models.

Norms and Motivations

The predictors (norms and motivation) accounted for a significant amount of variance in green grocery shopping, $R^2 = 0.28$, $F(2,164) = 32.33$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.27$. Norms were a unique predictor of green consumption behavior. Motivations were also uniquely predictive of green consumption behavior. See Table 4.

Table 4. Simple linear regression analysis of norms and motivations on ‘green’ consumption

Dependent Variable: ‘Green’ Consumption				
R ² : 0.28				
Adj. R ² : 0.27				
F: 32.33				
	β	SE	<i>t</i>	<i>p-Value</i>
Constant		0.30	3.19	0.002
Norms	0.31	0.10	3.07	0.003
Motivations	0.26	0.14	2.56	0.01

Social Normative Influence

Social normative influence was a significant predictor of ‘green’ grocery shopping behavior. The normative predictors (personal injunctive norms, descriptive norms, and social injunctive norms) accounted for a significant amount of variance in ‘green’ grocery shopping, $R^2 = 0.29$, $F(3,163) = 21.61$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.27$. Both personal injunctive norms and social injunctive norms had a unique positive effect on ‘green’ grocery shopping. Descriptive norms, on the other hand, were not uniquely predictive of ‘green’ grocery shopping. See Table 5.

Table 5. Simple linear regression analysis of personal, social, and descriptive norms on ‘green’ consumption

Dependent Variable: ‘Green’ Consumption				
R ² : 0.29				
Adj. R ² : 0.27				
F: 21.61				
	β	SE	<i>t</i>	<i>P-Value</i>
Constant		0.25	6.59	<0.001
PERSONAL	0.42	0.07	4.67	<0.001
SOCIAL	0.23	0.10	2.13	0.03
DESCRIPTIVE	-0.08	0.13	-0.72	0.47

Motivations

Overall, the motivation predictors (environmental concern, ego-defense and enhancement, and quality) accounted for a significant amount of variance in ‘green’ grocery shopping, $R^2 = 0.35$, $F(4,162) = 21.96$, $p < .05$, $R^2_{\text{adjusted}} = 0.34$. Environmental concern and product quality both had a unique positive effect on ‘green’ grocery shopping behavior. Self-esteem enhancement was not uniquely predictive of ‘green’ grocery shopping behavior. See Table 6.

Table 6. Simple linear regression analysis of environmental concern, ego-defense and enhancement, and quality on ‘green’ consumption

Dependent Variable: ‘Green’ Consumption				
R ² : 0.30				
Adj. R ² : 0.28				
F: 22.93				
	β	SE	<i>t</i>	<i>P-Value</i>
Constant		0.33	1.99	0.05
Environmental Concern	0.44	0.07	5.62	<0.001
Ego-defense and Enhancement	0.01	0.07	0.19	0.85
Quality	0.16	0.10	2.17	0.03

Analysis of Individual Green Components

Separate regressions were conducted to test the ability of norms and the ability of motivations to predict behavior for each component of the green behavior scale. The analysis

was conducted using composite scores based on the factors identified from the results of the ‘Green’ behavior scale PCA. As such, the following analyses reflect data based on the way in which consumers structured ‘green’ consumption behaviors. See Tables D1 and D2 in Appendix D.

Eggs

Social norms accounted for a significant amount of variance in the eggs component of the ‘green’ purchasing scale, $R^2 = 0.17$, $F(3,162) = 10.79$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.15$. Personal injunctive norms had a unique positive effect on ‘green’ egg purchasing behavior ($\beta = 0.57$, $SE = 0.14$), $t(162) = 3.97$, $p < 0.05$. However, neither descriptive norms ($\beta = -0.03$, $SE = 0.23$), $t(162) = -0.13$, $p > 0.05$, nor social injunctive norms ($\beta = -0.10$, $SE = 0.17$), $t(162) = 0.58$, $p > 0.05$ were uniquely predictive of ‘green’ egg purchasing behavior.

The motivation predictors (environmental concern, ego-defense and enhancement, and quality) accounted for a significant amount of variance in the egg component of the ‘green’ purchasing scale, $R^2 = 0.18$, $F(3, 163) = 12.19$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.17$. Environmental concern had a unique positive effect on the egg component of ‘green’ purchasing ($\beta = 0.39$, $SE = 0.13$), $t(163) = 4.56$, $p < 0.05$, $R^2 = 0.18$. However ego-defense and enhancement ($\beta = -0.02$, $SE = 0.12$), $t(163) = -0.27$, $p > 0.05$, and quality ($\beta = 0.09$, $SE = 0.17$), $t(163) = 1.1$, $p > 0.05$ were not uniquely predictive of the egg component of ‘green’ grocery shopping behavior.

Meat

Social norms accounted for a significant amount of variance in the meat component of the ‘green’ purchasing scale, $R^2 = 0.15$, $F(3,162) = 9.69$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.14$. Personal

injunctive norms had a unique positive effect on ‘green’ meat purchasing behavior ($\beta = 0.45$, $SE = 0.13$), $t(162) = 0.33$, $p < 0.05$. However, neither descriptive norms ($\beta = -0.16$, $SE = 0.21$), $t(162) = -0.79$, $p > 0.05$, nor social injunctive norms ($\beta = 0.23$, $SE = 0.15$), $t(162) = 1.47$, $p > 0.05$ were uniquely predictive of ‘green’ meat purchasing behavior.

The motivation predictors accounted for a significant amount of variance in the meat component of the ‘green’ purchasing scale, $R^2 = 0.16$, $F(3,163) = 10.62$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.15$. Environmental concern had a unique positive effect on the meat component of ‘green’ purchasing ($\beta = 0.33$, $SE = 0.12$), $t(163) = 3.84$, $p < 0.05$. However, neither self-esteem enhancement ($\beta = 0.02$, $SE = 0.11$), $t(163) = 0.20$, $p > 0.05$, nor quality ($\beta = 0.12$, $SE = 0.16$), $t(163) = 1.42$, $p > 0.05$ were uniquely predictive of the meat component of ‘green’ grocery shopping behavior.

Dairy

Social norms accounted for a significant amount of variance in the dairy component of the ‘green’ purchasing scale, $R^2 = 0.15$, $F(3,162) = 9.25$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.13$. Personal injunctive norms had a unique positive effect on ‘green’ dairy purchasing behavior ($\beta = 0.36$, $SE = 0.15$), $t(162) = 2.40$, $p < 0.05$. However, neither descriptive norms ($\beta = -0.44$, $SE = 0.24$), $t(162) = 1.84$, $p > 0.05$, nor social injunctive norms ($\beta = -0.04$, $SE = 0.18$), $t(162) = -0.25$, $p > 0.05$ were uniquely predictive of ‘green’ dairy purchasing behavior.

The motivation predictors accounted for a significant amount of variance in the dairy component of the ‘green’ purchasing scale, $R^2 = 0.15$, $F(3,163) = 9.81$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.14$. Environmental concern had a unique positive effect on the dairy component of ‘green’ purchasing ($\beta = 0.35$, $SE = 0.14$), $t(163) = 4.00$, $p < 0.05$. However, neither ego-defense and

enhancement ($\beta = -0.08$, $SE = 0.13$), $t(163) = -1.06$, $p > 0.05$, nor quality ($\beta = 0.19$, $SE = 0.19$), $t(163) = 1.47$, $p > 0.05$, were uniquely predictive of the dairy component of 'green' grocery shopping behavior.

Grains

Social norms accounted for a significant amount of variance in the grains component of the 'green' purchasing scale, $R^2 = 0.23$, $F(3,162) = 16.14$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.22$. Personal injunctive norms had a unique positive effect on 'green' grain purchasing behavior ($\beta = 0.48$, $SE = 0.11$), $t(162) = 4.20$, $p < 0.05$. Social injunctive norms also had a unique positive effect on 'green' grain purchasing behavior ($\beta = -0.31$, $SE = 0.13$), $t(162) = 2.28$, $p < 0.05$. Descriptive norms were not uniquely predictive of 'green' grain purchasing behavior ($\beta = -0.21$, $SE = 0.18$), $t(162) = -1.15$, $p > 0.05$.

The motivation predictors accounted for a significant amount of variance in the grains component of the 'green' purchasing scale, $R^2 = 0.19$, $F(3,163) = 12.82$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.18$. Environmental concern had a unique positive effect on the grains component of 'green' purchasing ($\beta = 0.30$, $SE = 0.11$), $t(163) = 3.58$, $p < 0.05$. However, neither ego-defense and enhancement ($\beta = 0.03$, $SE = 0.10$), $t(163) = 0.33$, $p > 0.05$, nor quality ($\beta = 0.19$, $SE = 0.14$), $t(163) = 2.36$, $p > 0.05$, were uniquely predictive of the grains component of 'green' grocery shopping behavior.

Tea and Chocolate

Social norms accounted for a significant amount of variance in the tea and chocolate component of the 'green' purchasing scale, $R^2 = 0.21$, $F(3,162) = 18.55$, $p < 0.05$, $R^2_{\text{adjusted}} =$

0.20. Personal injunctive norms had a unique positive effect on ‘green’ tea and chocolate purchasing behavior ($\beta = 0.31$, $SE = 0.13$), $t(162) = 2.36$, $p < 0.05$. Social injunctive norms also had a unique positive effect on ‘green’ tea and chocolate purchasing behavior ($\beta = -0.57$, $SE = 0.16$), $t(162) = 3.67$, $p < 0.05$. Descriptive norms were not uniquely predictive of ‘green’ tea and chocolate purchasing behavior ($\beta = -0.28$, $SE = 0.21$), $t(162) = -1.35$, $p > 0.05$.

The motivation predictors accounted for a significant amount of variance in the tea and chocolate component of the ‘green’ purchasing scale, $R^2 = 0.24$, $F(3,163) = 17.33$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.28$. Environmental concern had a unique positive effect on the tea and chocolate component of ‘green’ purchasing ($\beta = 0.35$, $SE = 0.12$), $t(163) = 4.23$, $p < 0.05$. Quality also had a unique positive effect on the tea and chocolate component of ‘green’ purchasing ($\beta = 0.23$, $SE = 0.16$), $t(163) = 2.93$, $p < 0.05$. However, ego-defense and enhancement ($\beta = -0.01$, $SE = 0.11$), $t(163) = -0.16$, $p > 0.05$, was not uniquely predictive of the tea and chocolate component of ‘green’ grocery shopping behavior.

Fruits and Vegetables

Social norms accounted for a significant amount of variance in the local fruit and vegetable component of the ‘green’ purchasing scale, $R^2 = 0.07$, $F(3,162) = 4.18$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.06$. Personal injunctive norms had a unique positive effect on ‘green’ fruit and vegetable purchasing behavior ($\beta = 0.23$, $SE = 0.09$), $t(162) = 2.45$, $p < 0.05$. However, neither descriptive norms ($\beta = -0.06$, $SE = 0.15$), $t(162) = -0.39$, $p > 0.05$, nor social injunctive norms ($\beta = 0.07$, $SE = 0.11$), $t(162) = 0.67$, $p > 0.05$ were uniquely predictive of ‘green’ fruit and vegetable purchasing behavior.

Motivation predictors accounted for a significant amount of variance in the locally purchased fruit and vegetable component of the 'green' purchasing scale, $R^2 = 0.06$, $F(3,163) = 3.57$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.04$. Environmental concern ($\beta = 0.21$, $SE = 0.09$), $t(163) = 2.32$, $p < 0.05$, was a unique positive predictor of local fruit and vegetable purchasing behavior. However, neither ego-defense and enhancement ($\beta = 0.10$, $SE = 0.08$), $t(163) = 1.18$, $p > 0.05$, nor quality ($\beta = -0.04$, $SE = 0.12$), $t(163) = -0.44$, $p > 0.05$, were uniquely predictive of local fruit and vegetable purchasing behavior.

Coffee

Social norms accounted for a significant amount of variance in the coffee component of the 'green' purchasing scale, $R^2 = 0.12$, $F(3,162) = 7.56$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.11$. Personal injunctive norms had a unique positive effect on 'green' coffee purchasing behavior ($\beta = 0.32$, $SE = 0.15$), $t(162) = 2.08$, $p < 0.05$, $sr^2 = 0.12$. However, neither descriptive norms ($\beta = -.08$, $SE = 0.24$), $t(162) = -0.35$, $p > 0.05$, nor social injunctive norms ($\beta = 0.34$, $SE = 0.18$), $t(162) = 1.89$, $p > 0.05$ were uniquely predictive of 'green' coffee purchasing behavior.

The motivation predictors accounted for a significant amount of variance in the coffee component of the 'green' purchasing scale, $R^2 = 0.20$, $F(3,163) = 9.86$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.18$. Environmental concern had a unique positive effect on the coffee component of 'green' purchasing ($\beta = 0.34$, $SE = 0.14$), $t(163) = 3.95$, $p < 0.05$. However, neither ego-defense and enhancement ($\beta = -0.02$, $SE = 0.13$), $t(163) = -0.25$, $p > 0.05$, nor quality ($\beta = 0.07$, $SE = 0.18$), $t(163) = 0.87$, $p > 0.05$, were uniquely predictive of the coffee component of 'green' grocery shopping behavior.

Farmers Market

Social norms accounted for a significant amount of variance in the farmers' market component of the 'green' purchasing scale, $R^2 = 0.05$, $F(3,162) = 2.82$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.03$. Personal injunctive norms ($\beta = 0.22$, $SE = 0.12$), $t(162) = 1.88$, $p > 0.05$, descriptive norms ($\beta = -0.07$, $SE = 0.19$), $t(162) = -0.36$, $p > 0.05$, and social injunctive norms ($\beta = 0.10$, $SE = 0.14$), $t(162) = 0.74$, $p > 0.05$ were not uniquely predictive of farmers' market purchasing behavior.

The motivation predictors accounted for a significant amount of variance in the farmers' market component of the 'green' purchasing scale, $R^2 = 0.08$, $F(3,163) = 4.66$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.06$. Ego-defense and enhancement had a unique positive effect on the farmers' market component of 'green' purchasing ($\beta = 0.23$, $SE = 0.10$), $t(163) = 2.83$, $p < 0.05$. Neither Environmental concern ($\beta = 0.09$, $SE = 0.11$), $t(163) = 1.04$, $p > 0.05$, nor quality ($\beta = -0.002$, $SE = 0.14$), $t(163) = -0.21$, $p > 0.05$, were not uniquely predictive of the farmers' market purchasing behavior.

Non-GMO

Social norms accounted for a significant amount of variance in the non-GMO component of the 'green' purchasing scale, $R^2 = 0.16$, $F(3,162) = 10.03$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.14$. Personal injunctive norms had a unique positive effect on 'green' non-GMO purchasing behavior ($\beta = 0.52$, $SE = 0.18$), $t(162) = 2.98$, $p < 0.05$. Social injunctive norms also had a unique positive effect on 'green' non-GMO purchasing behavior ($\beta = 0.47$, $SE = 0.21$), $t(162) = 2.62$, $p < 0.05$. Descriptive norms were not uniquely predictive of 'green' non-GMO purchasing behavior ($\beta = -0.31$, $SE = 0.28$), $t(162) = -1.12$, $p > 0.05$.

The motivation predictors accounted for a significant amount of variance in the non-GMO component of the ‘green’ purchasing scale, $R^2 = 0.16$, $F(3,163) = 10.13$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.14$. Environmental concern had a unique positive effect on the non-GMO component of ‘green’ purchasing ($\beta = 0.37$, $SE = 0.16$), $t(163) = 4.25$, $p < 0.05$. However, neither ego-defense and enhancement ($\beta = -0.05$, $SE = 0.15$), $t(163) = -0.58$, $p > 0.05$, nor quality ($\beta = 0.08$, $SE = 0.22$), $t(163) = 1.01$, $p > 0.05$, were uniquely predictive of the non-GMO component of ‘green’ grocery shopping behavior.

Seafood

Social norms did not account for a significant amount of variance in the seafood component of the ‘green’ purchasing scale.

The motivation predictors accounted for a significant amount of variance in the seafood component of the ‘green’ purchasing scale, $R^2 = 0.07$, $F(3,163) = 4.13$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.05$. Quality had a unique positive effect on seafood purchasing behavior ($\beta = 0.21$, $SE = 0.16$), $t(163) = 2.49$, $p < 0.05$. Environmental concern ($\beta = 0.10$, $SE = 0.12$), $t(163) = 1.07$, $p > 0.05$ and ego-defense and enhancement ($\beta = -0.03$, $SE = 0.11$), $t(163) = -0.35$, $p > 0.05$ were not uniquely predictive of the seafood purchasing behavior.

Organic

Social norms accounted for a significant amount of variance in the organic component of the ‘green’ purchasing scale, $R^2 = 0.24$, $F(3,162) = 16.72$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.22$. Personal injunctive norms had a unique positive effect on organic purchasing behavior ($\beta = 0.38$, $SE = 0.12$), $t(162) = 3.30$, $p < 0.05$. However, neither descriptive norms ($\beta = 0.22$, $SE = 0.18$), $t(162) =$

1.22, $p > 0.05$, nor social injunctive norms ($\beta = 0.14$, $SE = 0.14$), $t(162) = 1.01$, $p > 0.05$ were uniquely predictive of organic purchasing behavior.

The motivation predictors accounted for a significant amount of variance in the organic component of the 'green' purchasing scale, $R^2 = 0.29$, $F(3,163) = 21.63$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.27$. Environmental concern had a unique positive effect on the organic component of 'green' purchasing ($\beta = 0.44$, $SE = 0.10$), $t(163) = 5.49$, $p < 0.05$. Quality also had a unique positive effect on the organic component of 'green' purchasing ($\beta = 0.19$, $SE = 0.14$), $t(163) = 2.49$, $p < 0.05$. Ego-defense and enhancement ($\beta = -0.05$, $SE = 0.09$), $t(163) = -0.67$, $p > 0.05$, was not uniquely predictive of the seafood purchasing behavior.

Rainforest Alliance

Social norms accounted for a significant amount of variance in the Rainforest Alliance Certification component of the 'green' purchasing scale, $R^2 = 0.08$, $F(3,162) = 4.86$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.07$. Personal injunctive norms ($\beta = 0.11$, $SE = 0.15$), $t(162) = 0.78$, $p > 0.05$, descriptive norms ($\beta = 0.08$, $SE = 0.23$), $t(162) = 0.34$, $p > 0.05$, and social injunctive norms ($\beta = 0.28$, $SE = 0.17$), $t(162) = 1.62$, $p > 0.05$ were not uniquely predictive of Rainforest Alliance purchasing behavior.

The motivation predictors accounted for a significant amount of variance in the Rainforest Alliance component of the 'green' purchasing scale, $R^2 = 0.10$, $F(3,162) = 5.95$, $p < 0.05$, $R^2_{\text{adjusted}} = 0.08$. Environmental concern ($\beta = 0.31$, $SE = 0.18$), $t(162) = 3.46$, $p < 0.05$, had a unique positive effect on the rainforest alliance component of 'green' purchasing. Ego-defense and enhancement ($\beta = -0.06$, $SE = 0.17$), $t(162) = -0.71$, $p > 0.05$, and quality ($\beta = 0.04$, $SE = 0.24$),

$t(162) = 0.52, p > 0.05$, were not uniquely predictive of the Rainforest Alliance purchasing behavior.

Demographics

Income was not a significant predictor of ‘green’ grocery shopping behavior ($\beta = 0.006$, $SE = 0.04$), $t(149) = 0.15, p > 0.05$. Political preference was the only significant demographic variable in predicting “green” consumer behavior, with participants who identified as more liberal being more likely to engage in ‘green’ behavior ($\beta = -0.17, SE = 0.06$), $t(149) = -2.08, p < 0.05, R^2 = 0.08$. Gender, age, and education level were not significant predictors of ‘green’ consumer behavior (See Table 7). For a summary of demographic data, see Table 8 in Appendix B.

Table 7. Simple linear regression analysis of demographic variables on ‘green’ consumption

Dependent Variable: ‘Green’ Consumption				
R ² : 0.08				
Adj. R ² : 0.05				
F: 2.46				
	β	SE	<i>t</i>	<i>p-Value</i>
Constant		0.41	7.35	<0.001
Education	0.14	0.06	1.55	0.12
Income	0.01	0.04	0.15	0.88
Age	0.04	0.05	0.52	0.61
Gender	-0.06	0.14	-0.68	0.50
Political Preference	-0.17	0.06	-2.08	0.04

5. DISCUSSION

5.1 Principal Components

Because there were not any existing scales to measure ‘green’ grocery shopping, it was essential to understand how consumers structure ‘green’ consumption. I designed a scale based on commonly accepted ideas of ‘green’ products, according to consumers who were interviewed for this study. Principle components analysis was necessary to ensure that my conceptualization was consistent with that of consumers. PCA confirmed the groupings and clarified which factors were most strongly indicated in ‘green’ grocery shopping. This finding is important in the context of ‘green’ consumption research because it indicates that the behaviors cited by interviewees, and that I subsequently organized into scales, are consistent with groupings that are designated by the large sample of grocery shoppers who responded in this study. The consistency with which the ‘green’ components were factored indicates that the grouping of components may be widespread and is thus likely to be an accurate representation of the constructs. As such, application of the ‘green’ factors used in this study would be appropriate for future research into ‘green’ grocery shopping behavior.

The literature regarding the effects of normative influence on behavior is more prevalent than that on ‘green’ grocery purchasing, so there was a stronger theoretical framework from which to construct scales to measure normative influence for this study. Even so, social norms had not been explored in the context of ‘green’ grocery shopping, so PCA was helpful in clarifying distinctions between the factors. It was important to see that participants grouped the normative factors into clear categories representing personal injunctive, social injunctive, and descriptive norms. Previous research into normative influence utilized categorical groupings

based on researchers' conceptualizations of which behaviors fit the appropriate injunctive or descriptive normative categories (Kallgren et al., 2000). It is important to notice that the findings from the existing literature on experimental explorations of norms were replicated in this study of self-reported behavior in an applied setting. Respondents' norm categorization was consistent with the theoretical categorization. The results of the PCA in the present study show that, at least in the context of 'green' purchasing behavior, consumers group normative constructs in a way that is consistent with the existing theoretical framework for norm categorization.

5.2 Social Norms

The results confirmed that both personal and social injunctive norms predict 'green' grocery purchasing behavior. The findings are consistent with previous research indicating that injunctive norms affect environmentally significant behavior (Dean, et al., 2008; Thøgersen, 1999; Schultz et al., 2007; Stern et al., 1986). Personal injunctive norms refer to an individual's belief that acting in a particular way is right or wrong (Bamberg, Hunecke & Blöbaum, 2007; Dean et al., 2008). Social injunctive norms refer to an individual's perception of what others believe is right or wrong (Lee et al., 2008). The present study extends the applications of injunctive norms with the finding that personal injunctive norms and social injunctive norms each uniquely predict 'green' purchasing behavior.

The findings of the present research are unique in that they illustrate the distinct predictive power of personal and social injunctive norms when applied to a single set of behaviors in a particular setting. The difference between these two subcategories of injunctive norms has likely implications for strategies to promote 'green' grocery purchasing behavior. In the current study I explored the role of personal and social injunctive norms and found that the

two norm types appear to have a significantly different predictive power with regard to ‘green’ consumer behavior.

Personal injunctive norms had the strongest and most consistent influence on ‘green’ consumer behavior. This makes sense, given the strong predictive power of environmental concern as a motivation for ‘green’ behavior. This implies that those who place a high value on environmental concern likely have a strong personal norm to engage in behavior that is consistent with that concern (in this case, ‘green’ behavior). The findings are consistent with the focus theory of normative conduct and offer insight into ways the focus theory can be utilized in applied settings. Given that personal injunctive norms were the most significant predictors of ‘green’ consumption behavior, it follows that they were also the most salient in this setting. Personal injunctive norms may have been activated by the presence of ‘green’ food products or, in the case of PCC and Whole Foods customers, by the act of shopping in a store that specialized in selling ‘green’ products.

The results also make sense in the context of the study design. Respondents were asked about theirs and others beliefs and behaviors. It follows that their own beliefs and behaviors would be the most salient and accessible and therefore the most likely to be reported.

The results of regressions conducted on each factor of ‘green’ grocery purchasing were consistent with the results of regressions conducted on the composite score of ‘green’ grocery purchasing. Personal injunctive norms, in particular, were highly significant throughout the various factors representing ‘green’ consumption. Social injunctive norms were also significant predictors of ‘green’ behavior, but the relationship was not as strong or as pervasive throughout the various factors representing ‘green’ grocery shopping behavior. This reflects the

pervasiveness of injunctive normative influence as a predictor of ‘green’ consumer behavior throughout multiple dimensions of the construct.

Descriptive normative influence was not a significant predictor of ‘green’ grocery shopping behavior. Based on existing literature, descriptive norms appear to influence environmentally significant behavior in various domains, including littering (Cialdini et al., 1990) and home energy use (Nolan, 2008). Based on previous findings, I expected descriptive norms to be a significant predictor of ‘green’ grocery shopping behavior. There are some possible explanations for why this was not the case. First, the results indicating a significant effect of descriptive norms on PEB were based on findings from experimental data, while the present study was conducted in an applied setting. This concept has important implications when utilizing the focus theory of normative conduct in applied settings.

According to the focus theory of normative conduct, norms influence behavior only when they are salient (Cialdini et al., 1990). In the littering and energy use studies mentioned above, subjects’ attention was directed to descriptive normative messages (behavioral or written messages) to ensure that the norm was salient. These studies are highly valuable in the context of isolating the effects of norm salience on behavior. Through the findings of these studies, we have been made aware that whichever norm is more salient (descriptive or injunctive) is more influential. It can then be inferred that the reverse is also true: whichever norm is more influential is also more salient. The present research furthers the applications of the focus theory of normative conduct by utilizing the findings to identify which norms are more influential, and thus more salient, when applied to settings that are not experimentally controlled. Accordingly, descriptive norms do not appear to be salient in a ‘green’ grocery shopping context, as descriptive normative influence was not predictive of ‘green’ grocery shopping behavior. Due to

the fact that descriptive norms are not salient in this setting, social marketing efforts could be better spent focusing on messages that target injunctive normative influence.

It may also be the case that the predictive power of descriptive norms was not apparent due to the way the questions were asked. Descriptive norms may be better tested in studies where behavior of others is visible rather than asking about the behavior of others in previous instances. Due to recall error, in which people tend to inaccurately recall information from previous situations (Wright & Pescosolido, 2002), it may be difficult for respondents to remember what others did at the grocery store and to what extent that influenced their own behavior. Consequently, perceived influence may be strongest in the moment for descriptive normative influence. While consumers are often aware of what 'should' be done (injunctive norms), descriptive norms may be salient only when they are observed. Respondents were asked to report on the past behavior of others, and that information may not be retained very well.

Alternatively, grocery shoppers may be more strongly influenced by the behavior of other shoppers than by the behavior of friends, family, and neighbors. Participants in this study were only asked about the behavior of friends, family, and neighbors, and not about the actions of other shoppers in the same store. It is the case with many products that 'green-ness' is visible only based on stickers and in-store labeling. Once the products are brought home, it is difficult to discern the difference between 'green' and conventional products. Consequently, shoppers may be influenced more by actions that take place in-store, as the behavior of others and their own behaviors are more visible and obvious and therefore more likely to conform to the requirements of descriptive normative influence.

Finally, it may be the case that descriptive norms are simply not influential in the realm of 'green' grocery shopping behavior. This could be because the behavior of others is not salient

among consumers. Overall, it appears that descriptive norms simply weren't salient in this situation. Previous research into the focus theory was experimental, and the descriptive norm was made obvious/salient. In practice, the saliency may be quite different, as evidenced by the results of this research into applications of the focus theory. It is also possible that 'green' grocery shopping is not yet subject to the social sanctions associated with social normative behavior. 'Green' grocery shopping is still a relatively new concept and descriptive norms therefore may not yet be influential in a 'green' consumption context.

5.3 Motivations

The findings regarding motivations have implications for allocation of resources and optimization of behavior-change techniques. Motivations had an overall positive predictive relationship with 'green' consumption behavior. However, motivations were not as strong of a predictor as social norms, indicating that consumers' behavior may be influenced more strongly by social norms than by their own reported motivations.

Consistent with findings from previous research (Blend & Ravenswaay, 1999; Chan, 1996), environmental concern was a strong predictor of 'green' consumer behavior. This is a logical finding, given that consumers will often act in accord with their strongest values (Shaw & Shiu, 2003). As such, and given the results of this study, it may be valuable to emphasize the "green-ness" of certain items. This would provide consumers with a clear knowledge of which products align with their values. At the same time, it will be important to target those individuals who do not have a strong sense of environmental concern. Quality of 'green' items was also a significant predictor of 'green' grocery purchasing behavior. This is an important finding and indicates that consumers express an interest in 'green' products based on factors other than

environmental concern. Implied is the idea that consumers who do not possess a strong degree of environmental concern may still be inclined to purchase 'green' items.

5.4 Demographic Variables

Analysis of the predictive power of demographic variables provided interesting findings, some of which were expected and others that were unexpected. McCright and Dunlap (2011) found that, among white males, conservative political beliefs were associated with greater denial of climate change. Likewise, there is a considerable amount of evidence that those who identify as politically liberal express a greater degree of environmental concern (Hamilton, 2008; Malka, Krosnick & Langer, 2009; McCright & Dunlap, 2011). Using a similar logic, it is likely that individuals who are less concerned about environmental problems will hold weak personal norms for environmental conservation and will therefore be less likely to purchase 'green' products. Whereas, those individuals who are concerned about environmental problems will hold strong personal norms related to environmental issues and will consequently be more likely to purchase 'green' products.

The results of the present study are consistent with the above-mentioned research and support a connection between political preference, environmental concern, and 'green' purchasing behavior. Findings indicate that those individuals who identify themselves as more politically liberal reported an increased likelihood of purchasing 'green' grocery products. Likewise, those who identified as more politically conservative reported that they were less likely to purchase 'green' products.

Contrary to expectations, income was not a significant predictor of 'green' purchasing behavior. Income is frequently cited as a factor influencing consumers' intention to purchase

'green' food products (Hjelmar, 2011; Smith, Huang & Lin, 2009; Yin, Wu, Du & Chen, 2010). This is a logical finding, since organic food products are frequently more expensive than their conventionally-grown counterparts (Batte, Hooker, Haab & Beaverson, 2007; Ureña, Bernabéu & Olmeda, 2008; Zhang, Epperson, Huang & Houston, 2009). The results of the present study appear to contradict these findings. However, there is also some evidence that income does not always predict 'green' grocery purchasing behavior. Zapeda and Li (2007) found that income was not a significant predictor of grocery shoppers' decision to purchase organic food. The findings of the present study support the results indicating that income is not significantly related to 'green' purchasing decisions. Given the controversial results regarding the effects of income on 'green' purchasing behavior, it is possible that a relationship does exist and was not captured in the present sample. However, given the strong predictive power of other factors (social normative influence, motivations), I propose that income level is not as important of a consideration in promoting 'green' consumption behavior as are the other factors discussed in this study.

5.5 Applications

The fact that normative influence was a significant predictor of 'green' purchasing behavior provides a basis for the use of community-based social marketing in promoting 'green' purchasing behavior (McKenzi-Mohr & Smith, 1999). The goal of social marketing is to use persuasive strategies to influence behavior so as to improve individuals' personal welfare and the welfare of the society (Andreasen, 1994). It can be argued that environmental conservation is important in promoting the welfare of society and individuals within society (McMichael, Woodruff & Hales, 2006; Patz, Campbell-Lendrum, Holloway & Foley, 2005; Vörösmarty,

Green, Salisbury & Lammers, 2000). It is therefore important to find ways to affect behavior, and thereby promote environmental conservation, among consumers. This includes those consumers that do not place high personal moral value on environmental issues. Using social marketing strategies provides a way of doing so. A primary focus of marketing is the idea that it is useful to discover the wants and needs of a target audience and then create the services to satisfy that audience (Kotler & Zaltman, 1971).

It is clear from the present research that many consumers possess strong moral norms for environmental conservation, and that those norms influence 'green' purchasing behavior. Presumably, there are consumers who are concerned about the environment but do not always engage in 'green' purchasing behavior. Among these consumers, social marketing strategies that focus on activating personal injunctive norms could be effective in influencing behavior. Reinforcement of norms is a major tenet of community-based social marketing and can be used to invoke injunctive normative influence (McKenzi-Mohr & Smith, 1999). Many social marketing tools are geared towards activating personal norms (Kennedy, 2010). The use of signs to highlight personal and social norms follows from Goldstein and colleague's (2008) use of signs to activate descriptive norms, and can be tailored for injunctive normative activation. In this case, signs citing the environmental protection benefits of a particular 'green' product could be placed near the product. Social injunctive norms were also found to be predictive of 'green' purchasing behavior, and social marketing strategies similar to those used for personal injunctive influence can be applied to social injunctive influence. Signs could be placed near 'green' items that activate widely perceived social norms for purchasing that item. For example, a sign might be placed near local apples, saying "most shoppers at this grocery store believe it is important to

help the conserve the environment by purchasing local produce.” Such a sign would make salient the social norm for environmental conservation and purchase of ‘green’ products.

If further research into descriptive normative influence indicates that descriptive norms are influential, it may be the case that descriptive norms could be used to affect behavior. This finding would indicate that people want to conform with the behavior of others, even if they don’t openly acknowledge that fact (introspection illusion). Social marketing would say that highlighting the normative aspects of ‘green’ behavior would fulfill that want and consequently encourage ‘green’ behavior.

The value of social marketing strategies is further evident when considering the fact that many people do not feel a great degree of environmental concern (Hirsh, 2010). Current efforts to increase the purchase of ‘green’ products primarily target individuals who hold strong personal norms for environmental conservation (Dutta, 2011). However, a large subset of the population does not place environmental well-being at the top of their list of priorities when considering which products to buy (Memery, Megicks & Williams, 1998). For these individuals, it is important to identify specific factors that influence their purchasing decisions. The results of the motivations component of this study provide information as to what approach might be effective in encouraging ‘green’ behavior among consumers who do not have strong pro-environmental values. Motivations, though not as strong as norms, was a significant predictor of ‘green’ grocery purchasing behavior. Quality of ‘green’ items was a significant predictor of ‘green’ grocery shopping behavior. Given these findings, it could be highly beneficial, from an environmental conservation standpoint, to emphasize the desirable taste, preservation, and availability aspects of ‘green’ grocery items.

Targeting customers who do not possess a strong degree of environmental concern, but who may prefer 'green' products based on other merits would provide a way to encourage a broader segment of the consumer population to engage in 'green' consumption behavior. Existing 'green' marketing strategies, in which the 'green' merits of a product are identified for consumers (Ottman, 2011; Savale, Sharma & Patil, 2012), could be applied to advertising in this domain. For example, signs identifying organic apples in a store could also provide information that emphasizes the superior taste of the product. As availability of 'green' products was also predictive of 'green' purchasing choices, it would be advantageous to ensure that 'green' products are easily identifiable and therefore clearly available for purchase.

Given that political ideology was a significant predictor of 'green' grocery consumption, efforts can be made to increase 'green' consumption behavior among those individuals who identify as politically conservative. This is one area in which the findings regarding motivations could be applied. As illustrated above, politically conservative shoppers are less likely to be concerned about the environment and are therefore less likely to purchase 'green' grocery products. However, as the present study indicates, product quality is also a significant motivator for 'green' purchasing behavior. Those findings, combined with the results regarding political ideology, indicate a possible application for advertisement and social marketing. Increased emphasis of the components that exemplify the high quality of 'green' products, as opposed to just the 'green-ness' of those products, may lead to increased 'green' purchasing among politically conservative individuals.

5.6 Future Research

The results of this study provide strong implications for future research in the field, particularly with regard to the role of descriptive norms. Given the non-significant findings for descriptive normative influence, it would be valuable to conduct field experiments to test the effects of descriptive norms in a grocery store setting. Previous research has provided evidence of the influence of descriptive norms on environmentally significant behavior (Goldstein et al., 2008, Nolan et al., 2008). Going forward, similar methods could be used to attempt to replicate those findings in a grocery shopping setting. In the present study, the 'green' behavior of other consumers was not salient for study participants. Presumably, signs highlighting the 'green-ness' of grocery items made salient personal injunctive norms, as injunctive norms appeared to influence 'green' purchasing behavior.

Future studies could test the influence of descriptive norms by utilizing signage in areas where shoppers make decisions as to whether to purchase 'green' or conventional items. Consistent with community-based social marketing strategies (McKenzi-Mohr & Smith, 1999), signs emphasizing the behavior of other shoppers would be placed in the vicinity of the target products. This would include signs with general statements highlighting the environmental benefits of purchasing a particular 'green' item, as well as signs indicating that a majority of other shoppers choose to purchase the 'green' item. The behavior of shoppers in the different conditions could then be compared to measure the influence of the descriptive norms.

It would also be of interest to perform observational studies in a grocery shopping study to examine normative sanctions for particular behaviors. Norms are relative to a particular culture and society, and individuals engage in norm-consistent behavior because failure to do so results in consequences that come from other members of that society (Marshall & Scott, 2009).

In a grocery-shopping setting it would be valuable to observe what sanctions, if any, are imposed by other grocery shoppers in response to consumers' decisions to purchase or not purchase 'green' products. Future research in this area could also explore sanctions imposed by consumers' peers and social group members in response to non-'green' grocery purchases. Observation of possible social sanctions could offer insight into the role of social norms in general, and descriptive norms in particular, in a 'green' grocery shopping setting.

5.7 Limitations

This study provides useful contributions to understanding consumer behavior and future directions for further research into promoting 'green' grocery shopping. However, there are some limitations to consider when interpreting results. The sample population was restrictive. For the purposes of this study, it was valuable to obtain results primarily from 'specialty' stores (PCC and Whole Foods). This ensured that there was motivational feedback from those who actually engaged in the behavior of interest. However, future research in the same area would benefit from a wider spectrum of participants. Doing so would add to the present findings and potentially offer more insight into social normative influence and motivations in settings that are not predisposed to more 'green' purchasing behavior. Farmers markets were not included, as they are not always held year-round and many farmers' market shoppers also shop at larger grocery stores. It would be beneficial to include farmers markets in future research in order to gain insight from consumers who shop at these locations, which are often perceived as being 'green'.

It is also important to note that the demographic distribution of the sample population is limited. Income and racial/ethnic background are not representative of the population in the

geographic region of study. This may be due to the locations at which participants were recruited. Sampling at a greater number of stores and/or a more diverse selection of grocery stores may provide a more representative sample. Future research in this area would benefit from a more representative sample of the population.

Finally, the self-report nature of this study may have affected results. Introspection illusion refers to the idea that people will believe that they act based on their own internal states (Woodside, 2006). The theory may be applicable in this study, as participants were asked to respond directly about their own behavioral motivations. In doing so, they may have attributed 'green' behaviors inaccurately, emphasizing internal motivations and failing to acknowledge other factors that influence their behavior. Future observational studies, as mentioned above, would be valuable in addressing introspection illusion problems associated with self-report bias.

6. CONCLUSION

Current agricultural practices contribute to environmental degradation through pollution, deforestation, and marine and terrestrial ecosystem destruction. Consumers, though often aware of environmental problems, generally do not take the necessary actions to prevent further harm. The focus theory of normative conduct offers insight into ways in which social norms can promote pro-environmental behavior. However, there exists limited research into the role of the focus theory in an applied 'green' consumption setting. Previous studies have also failed to examine social injunctive, personal injunctive, and descriptive norms in tandem. The present research fills that gap, contributing to the understanding of normative influence and the comparative salience of personal, social, and descriptive norms in a 'green' grocery consumption setting. The objectives of this study were to examine the relative influence of various norms on 'green' grocery purchasing behavior and to explore how the influence of norms compares to that of other motivations.

Results implicate injunctive norms as being highly significant predictors of 'green' consumption behavior, with personal norms being the strongest predictor. Social injunctive norms were also significant, while descriptive normative influence was not a significant predictor of 'green' consumption behavior. The present study extends the applications of previous social norm research with the finding that personal and social injunctive norms uniquely predict 'green' purchasing behavior. The predictive power of injunctive norms indicates that, at least in a 'green' grocery purchasing setting, those norms were salient. On the contrary, descriptive norms were not predictive and thus appear not to be salient in this particular setting. Motivations were predictive of 'green' behavior as well, though the predictive power was not as strong as that of social norms. In particular, environmental concern and quality were

significantly predictive of 'green' consumption. The significance of motivations indicates that there is potential for additional methods of encouraging 'green' consumption behavior.

The findings of this study have strong implications for utilization of focus theory of normative conduct principles in applied 'green' grocery shopping settings. I suggest utilizing community-based social marketing strategies to make injunctive norms regarding environmental conservation more salient in grocery shopping settings. A similar strategy could be used to capitalize on findings regarding motivations. By emphasizing the 'quality' components that consumers identify as desirable, it may be possible to increase consumption of 'green' products among individuals who do not express a great degree of environmental concern. Applying these strategies would likely increase 'green' purchasing behavior and would thereby contribute to increased environmental conservation.

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APPENDIX A: Survey Instrument

In an effort to improve your overall grocery shopping experience we would like to learn a little bit about your purchasing choices.

How many times, on average, do you shop for groceries each week? _____

What is your favorite grocery item?

Are you the primary decision-maker regarding grocery purchases for your household?

Yes _____

No _____

Green Behavior

Please indicate how often you purchase the following types of fruit:	Never				Always	
1. Organic fruits.	1	2	3	4	5	N/A
2. Local fruits.	1	2	3	4	5	N/A
3. Fruit that is in season.	1	2	3	4	5	N/A
4. Fruit from a local farmer's market.	1	2	3	4	5	N/A
5. Fruit that was genetically engineered (GMO)	1	2	3	4	5	N/A

Please indicate how often you purchase the following types of vegetables:	Never				Always	
1. Organic vegetables.	1	2	3	4	5	N/A
2. Local vegetables.	1	2	3	4	5	N/A
3. Vegetables that are in season.	1	2	3	4	5	N/A
4. Vegetables from a local farmer's market.	1	2	3	4	5	N/A
5. Vegetables that are genetically engineered (GMO)	1	2	3	4	5	N/A

Please indicate how often you the following types of grain:	Never				Always	
1. Organic grains.	1	2	3	4	5	N/A
2. Locally grown grains.	1	2	3	4	5	N/A
3. Grains from a cooperative farm.	1	2	3	4	5	N/A
4. Grains from a local farmer's market.	1	2	3	4	5	N/A
5. Sustainably grown grains.	1	2	3	4	5	N/A
6. Grains that were genetically engineered (GMO)	1	2	3	4	5	N/A

Please indicate how often you purchase the following types of dairy products:	Never				Always	
1. Organic dairy products.	1	2	3	4	5	N/A
2. Natural dairy products.	1	2	3	4	5	N/A
3. Dairy products from cows treated with rBST.	1	2	3	4	5	N/A
4. Antibiotic-free dairy products.	1	2	3	4	5	N/A
5. Hormone-free dairy products.	1	2	3	4	5	N/A
6. Dairy products that were produced locally.	1	2	3	4	5	N/A
7. Dairy products from a local farmer's market.	1	2	3	4	5	N/A

Please indicate how often you purchase the following types of eggs:	Never				Always	
1. Organic eggs.	1	2	3	4	5	N/A
2. Free range eggs.	1	2	3	4	5	N/A
3. Eggs from hens that were certified	1	2	3	4	5	N/A

humane raised and handled.						
4. Eggs from naturally raised chickens.	1	2	3	4	5	N/A
5. Eggs from hormone-free chickens.	1	2	3	4	5	N/A
6. Eggs from antibiotic-free chickens.	1	2	3	4	5	N/A
7. Eggs from vegetarian-fed chickens.	1	2	3	4	5	N/A
8. Eggs that were produced locally.	1	2	3	4	5	N/A
9. Eggs from a local farmers market.	1	2	3	4	5	N/A
10. Cage free eggs.	1	2	3	4	5	N/A
11. Eggs from pastured chickens.	1	2	3	4	5	N/A

Please indicate how often you purchase the following types of dairy products:	Never				Always	
8. Local seafood.	1	2	3	4	5	N/A
9. Seafood from a local farmers market.	1	2	3	4	5	N/A
10. Organic seafood.	1	2	3	4	5	N/A
11. Farmed seafood.	1	2	3	4	5	N/A
12. Sustainable seafood.	1	2	3	4	5	N/A

Please indicate how often you purchase the following types of meat:	Never				Always	
1. Organic meat.	1	2	3	4	5	N/A
2. Free range meat.	1	2	3	4	5	N/A
3. Natural meat.	1	2	3	4	5	N/A

4. Hormone-free meat.	1	2	3	4	5	N/A
5. Antibiotic-free meat.	1	2	3	4	5	N/A
6. Vegetarian-fed meat.	1	2	3	4	5	N/A
7. Meat that was raised locally.	1	2	3	4	5	N/A
8. Meat from a local farmer's market.	1	2	3	4	5	N/A
9. Pastured Meat	1	2	3	4	5	N/A

Please indicate how often you purchase the following items:	Never				Always	
1. Organic chocolate.	1	2	3	4	5	N/A
2. Fair trade chocolate.	1	2	3	4	5	N/A
3. Rainforest alliance chocolate.	1	2	3	4	5	N/A
4. Organic coffee.	1	2	3	4	5	N/A
5. Fair trade coffee.	1	2	3	4	5	N/A
6. Shade grown coffee.	1	2	3	4	5	N/A
7. Rainforest alliance coffee.	1	2	3	4	5	N/A
8. Organic tea.	1	2	3	4	5	N/A
9. Fair trade tea.	1	2	3	4	5	N/A

Norms

To what extent do you agree with the following statements:	Strongly Disagree				Strongly Agree
1. My family members expect me to purchase green grocery products.	1	2	3	4	5

2. My neighbors purchase green grocery products.	1	2	3	4	5
3. I feel responsible for helping protect the environment by purchasing green grocery products.	1	2	3	4	5
4. My friends expect me to purchase green grocery products.	1	2	3	4	5
5. I feel guilty when I purchase grocery products that are not green when there are green alternatives available.	1	2	3	4	5
6. My friends purchase green grocery products.	1	2	3	4	5
7. My family members purchase green grocery products.	1	2	3	4	5
8. My neighbors expect me to purchase green grocery products.	1	2	3	4	5
9. Purchasing green grocery products is the right thing to do.	1	2	3	4	5
10. People like me purchase green grocery products.	1	2	3	4	5
11. Buying green grocery products instead of conventional grocery products would go against my principles.	1	2	3	4	5
12. I would feel guilty if I purchased green grocery products instead of conventional grocery products.	1	2	3	4	5
13. People have a responsibility to contribute to environmental conservation by purchasing green grocery products.	1	2	3	4	5
14. People should promote green food production by buying green grocery products.	1	2	3	4	5
15. I feel morally obligated to eat food that is produced sustainably.	1	2	3	4	5
16. Buying green grocery products feels like the morally right thing to do.	1	2	3	4	5
17. I feel obliged to bear the environment in mind when I shop for groceries.	1	2	3	4	5
18. People I know best want me to purchase green grocery products.	1	2	3	4	5
19. People with whom I am close place a high value on purchasing green grocery products.	1	2	3	4	5

To what extent do you agree with the following statements?	Strongly Disagree				Strongly Agree
1. My neighbors purchase green grocery products	1	2	3	4	5
2. My family members expect me to purchase green grocery products.	1	2	3	4	5
3. No matter how bad I have been feeling, purchasing green products makes me forget about it.	1	2	3	4	5
4. By purchasing green products I feel like I am contributing to something much larger than myself.	1	2	3	4	5
5. Purchasing green grocery products is a way for me to work through my own personal problems.	1	2	3	4	5
6. Purchasing green products relieves me of some of the guilt about what we have done to our environment.	1	2	3	4	5
7. Purchasing green products relieves me of some of the guilt about being more fortunate than others.	1	2	3	4	5
8. I am concerned about the state of our environment.	1	2	3	4	5
9. I feel compassion towards improving environmental conditions.	1	2	3	4	5
10. I feel it is important to buy green grocery products.	1	2	3	4	5
11. Buying green grocery products allows me to do something for a cause that is important to me.	1	2	3	4	5
12. Purchasing green grocery products makes me feel important.	1	2	3	4	5
13. Buying green grocery products makes me feel better about myself.	1	2	3	4	5
14. Purchasing green grocery products increases my self-esteem.	1	2	3	4	5
15. Purchasing green grocery products enables me to live a healthier life.	1	2	3	4	5

To what extent do you agree that each of the following factors influence your decision whether or not to purchase green grocery	Strongly Disagree				Strongly Agree
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products:					
1. I don't have time to figure out which products are green.	1	2	3	4	5
2. Other people/groups are better able to address environmental issues.	1	2	3	4	5
3. Green grocery products are readily available.	1	2	3	4	5
4. I like the taste of most green grocery products.	1	2	3	4	5
5. People will look down on me for purchasing green grocery products.	1	2	3	4	5
6. My friends purchase green grocery products.	1	2	3	4	5
7. Green grocery products preserve well.	1	2	3	4	5
8. It is difficult to know which grocery products are green.	1	2	3	4	5
9. Purchasing green products makes me feel good.	1	2	3	4	5
10. Purchasing green grocery products is an important part of environmental conservation.	1	2	3	4	5
11. People like me do not purchase green grocery products.	1	2	3	4	5
12. I prefer non-green grocery products.	1	2	3	4	5
13. Green grocery products are too expensive.	1	2	3	4	5
14. Most grocery products that claim to be green are not really green.	1	2	3	4	5
15. Green grocery products are difficult to find.	1	2	3	4	5
16. I am used to buying non-green grocery products (habit).	1	2	3	4	5
17. My family members purchase green grocery products.	1	2	3	4	5
18. I think environmental problems are likely to occur.	1	2	3	4	5
19. Conserving the environment is important to me.	1	2	3	4	5

How frequently do you shop at the following grocery stores?	Never				Always
1. Safeway	1	2	3	4	5
2. QFC	1	2	3	4	5
3. PCC	1	2	3	4	5
4. Albertson's	1	2	3	4	5
5. Costco	1	2	3	4	5
6. Fred Meyer	1	2	3	4	5
7. Whole Foods	1	2	3	4	5
8. Local Neighborhood Grocery Store	1	2	3	4	5
9. Walmart	1	2	3	4	5
10. Sam's Club	1	2	3	4	5
11. Thriftway	1	2	3	4	5
12. Local Farmer's Market	1	2	3	4	5

Demographics

What is the highest level of education you have completed?

Some High School

Graduated from High School/GED

Some College

Graduated from College

Some Graduate School

Graduate or Professional Degree

Please indicate your total household income before taxes for last year:

- Under \$19,999
 \$20,000 to \$39,999
 \$40,000 to \$59,999
 \$60,000 to \$79,999
 \$80,000 to \$99,999
 \$100,000 to \$119,999
 \$120,000 or over
 Prefer not to answer

Generally speaking, do you consider yourself to be:	Very Liberal				Very Conservative
	1	2	3	4	5

Do you own/drive a car?

- Yes
 No

Which of the following best describes your race or ethnicity?

- American Indian or Alaskan Native
 Black or African American
 Asian
 Native Hawaiian or Pacific Islander
 White or Caucasian
 Hispanic or Latino
 Other

Do you consider yourself female or male?

- Female Male

Which category below includes your age?

17 or Younger 30-39 60 or older

18-20 40-49

21-29 50-59

APPENDIX B: Demographic Data

Table 8. Summary of demographic data from questionnaire respondents

	Demographic Characteristics	Cases	%
Gender	Female	97	58.1
	Male	68	41.2
Age	18-20	6	3.6
	21-29	22	13.2
	30-39	37	22.2
	40-49	39	23.4
	50-59	32	19.2
	60 or older	29	17.4
Race/Ethnicity	American Indian or Alaskan Native	5	2.4
	Black or African American	5	3
	Asian	6	3.6
	Native Hawaiian or Pacific Islander	3	1.8
	White or Caucasian	141	84.4
	Hispanic or Latino	6	3.6
Income	Under \$19,999	12	7.2
	\$20,000 to \$44,999	15	9
	\$45,000 to \$69,999	28	16.8
	\$70,000 to \$94,999	26	15.6
	\$95,000 to \$119,999	19	11.4
	\$120,000 or over	39	23.4
	Prefer not to answer	19	11.4
Education	Some High School	2	1.2
	Graduate from High School/GED	7	4.2
	Some College	44	26.3
	Graduated from College	58	34.7
	Some Graduate School	9	5.4
	Graduate or Professional Degree	44	26.3

APPENDIX C: Participant Letter



UNIVERSITY of
WASHINGTON

Hello [Participant Name],

You signed up at [PCC/Whole Foods/Safeway] to complete a survey about grocery shopping. In an effort to learn more about grocery purchases for my Masters Thesis, I am conducting a research study with grocery shoppers from PCC and Whole Foods Markets. We estimate that it will take approximately 10 minutes to complete the survey.

Please complete the enclosed survey and return in the addressed and stamped envelope provided.

Your input is very important to us and will be kept strictly confidential.

Thank you in advance for your participation.

Sincerely,

Ellen Frohning
Graduate Student
University of Washington
ellenf3@uw.edu

APPENDIX D: 'Green' Grocery Subscales

Table D1. Simple linear regression analysis of social norm components on 'green' consumption components

	Personal Injunctive				Social Injunctive				Descriptive			
	β	SE	<i>t</i>	<i>P</i> - <i>Value</i>	β	SE	<i>t</i>	<i>P</i> - <i>Value</i>	β	SE	<i>t</i>	<i>P</i> - <i>Value</i>
Eggs	0.37	0.14	3.97	<0.001	0.07	0.17	0.58	0.56	-0.02	0.23	-0.13	0.90
Meat	0.33	0.13	3.48	0.001	0.17	0.15	1.47	0.14	-0.10	0.21	-0.79	0.43
Dairy	0.21	0.14	2.24	0.27	-0.02	0.17	-0.19	0.85	0.23	0.23	1.91	0.06
Grains	0.38	0.11	4.20	<0.001	0.26	0.13	2.28	0.24	-0.13	0.18	-1.15	0.25
Teachoc	0.22	0.13	2.36	0.02	0.42	0.16	3.67	<0.001	-0.16	0.21	-1.35	0.18
FVLS	0.24	0.09	2.45	0.02	0.08	0.11	0.67	0.50	-0.05	0.15	-0.39	0.70
Coffee	0.20	0.15	2.08	0.04	0.23	0.18	1.89	0.06	-0.04	0.24	-0.35	0.73
Farm	0.19	0.12	1.88	0.06	0.09	0.14	0.74	0.46	-0.05	0.19	-0.36	0.72
NGMO	0.28	0.18	2.98	0.003	0.27	0.21	2.26	0.03	-0.13	0.28	-1.12	0.27
Sea	0.18	0.14	1.73	0.09	0.05	0.16	0.37	0.72	-0.04	0.21	-0.31	0.76
Org	0.30	0.12	3.30	0.001	0.11	0.14	1.01	0.31	0.14	0.18	1.22	0.22
RAC	0.08	0.15	0.78	0.44	0.20	0.17	1.62	0.11	0.04	0.23	0.34	0.74

Table D2. Simple linear regression analysis of motivation components on 'green' consumption components

	Environmental Concern				Ego-Defense and Enhancement				Quality			
	β	SE	<i>t</i>	<i>P-Value</i>	β	SE	<i>t</i>	<i>P-Value</i>	β	SE	<i>t</i>	<i>P-Value</i>
Eggs	0.39	0.13	4.56	<0.001	-0.02	0.12	-0.27	0.78	0.09	0.17	1.10	0.27
Meat	0.33	0.12	3.84	<0.001	0.02	0.11	0.20	0.85	0.12	0.16	1.41	0.16
Dairy	0.35	0.14	4.00	<0.001	-0.08	0.13	-1.06	0.29	0.12	0.19	1.47	0.14
Grains	0.30	0.11	3.58	<0.001	0.03	0.10	0.33	0.74	0.19	0.14	2.36	0.02
Teachoc	0.35	0.12	4.23	<0.001	-0.01	0.11	-0.16	0.87	0.23	0.16	2.93	0.004
FVLS	0.21	0.09	2.32	0.02	0.10	0.08	1.18	0.24	-0.04	0.12	-0.44	0.66
Coffee	0.34	0.14	3.95	<0.001	-0.02	0.13	-0.25	0.80	0.07	0.18	0.87	0.39
Farm	0.09	0.11	1.04	0.30	0.23	0.10	2.83	0.005	-0.002	0.14	-0.02	0.98
NGMO	0.37	0.16	4.25	<0.001	-0.05	0.15	-0.58	0.56	0.08	0.22	1.01	0.31
Sea	0.10	0.12	1.07	0.29	-0.03	0.11	-0.35	0.73	0.21	0.16	2.49	0.01
Org	0.44	0.10	5.49	<0.001	-0.05	0.09	-0.67	0.51	0.19	0.14	2.49	0.01
RAC	0.16	0.013	1.81	0.07	0.06	0.12	0.67	0.50	0.12	0.18	1.40	0.16

APPENDIX E: Human Subjects Review Interviews

Date: February 22, 2011

PI: Ms. Ellen Frohning, Graduate Student
Forest Resources

CC: Dr. Stanley T. Asah

Re: Certificate of Exemption #40271,
“Green Consumption: Roles of Barriers and Social Norms”

Dear Ms. Frohning,

The Human Subjects Division received the above-named Request for Determination of Exempt Status on 2/17/2011. Please respond to the Subcommittee’s request for the following additional information. A final determination is contingent on your satisfactory response to the concerns listed below. Please do not send a revised application.

Additional information requested:

1. It is our understanding that you are requesting approval for the interviews only at this time, and that the surveys will be on a separate form. Is this correct?
2. Will the surveys and interviews take place with the same population? Please explain.
3. Please explain how you will prevent minors from taking part in the research. For example, will the consent process include a statement that subjects must be 18 or older to participate?

4. Does the list of interview questions included with the Exemption show the complete range of questions that may be asked? If not, please submit the additional questions as an attachment to a return email.

5. Could disclosure of the subjects' responses outside the research reasonably place them at risk of civil or criminal liability, or be damaging to their financial standing, employability or reputation? Please explain your answer. Note this question is about the risks to subjects if accidental disclosure were to occur, and not about how you will maintain confidentiality.

Please respond by return e-mail to the above questions. Be sure to reference the Exempt Determination Request number and investigator on all communication with our office. Please note that you may not recruit subjects or conduct this activity until you have received notification of a final determination.

If you have further questions or concerns, feel free to contact me.

Best regards,

Laurie E. Berger

Human Subjects Review Coordinator

(206) 543-3033

lberger@u.washington.edu

APPENDIX F: Human Subjects Review Surveys

Date: July 14, 2011

PI: Ms. Ellen Frohning, Student
Forest Resources

CC: Dr. Stanley Asah

Re: Exempt Status Request #41160,
"The Influence of Social Norms on Green Consumption Behavior"

Dear Ms. Frohning,

The Human Subjects Division received the above-named Exempt Status Request on 7/8/2011. Please respond to our request for the following additional information. A final determination is contingent on your satisfactory response to the concerns listed below. Please do not send a revised application.

Additional information requested:

1. Because you will be obtaining identifiable information about subjects, we need to understand your confidentiality procedures. Please explain what measures will be taken to protect the confidentiality of the data, including subject identifiers?

Please respond by return e-mail to the above questions. Be sure to reference the Exempt Status Request number and investigator on all communication with our office. Please note that you may not recruit subjects or conduct this activity until you have received notification of a final determination.

If you have further questions or concerns, feel free to contact me.

Best regards,

Laurie E. Berger

Human Subjects Review Coordinator

(206) 543-3033

lberger@u.washington.edu