A Roadmap to Mindful Consumption Through Informative Labeling Practices: The Effects of Sustainability Disclosure Formats on Consumer Product Evaluations

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A Roadmap to Mindful Consumption Through Informative Labeling Practices: The Effects of Sustainability Disclosure Formats on Consumer Product Evaluations

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ABSTRACT

Despite the interest of consumers in sustainable and environmentally friendly products, only a limited number of studies have focused on sustainability level disclosures for consumer packaged goods. The general overarching purpose of this dissertation is to extend the internal reference point and information processing literatures to better understand how consumers will process sustainability disclosures. Applying the theoretical lens of assimilation bias in conjunction with self-enhancement offers an important extension to prior work. Across two retail lab studies and four online experiments, I demonstrate that the perceived sustainability utility (i.e., the difference between a specific brand’s level of sustainability and category-level perceptions of sustainability) affect product evaluations and choices. Overall, findings generally suggest that the provision of sustainability labeling may effectively communicate sustainability information and affect product evaluations, but there are boundary conditions that should be considered. The moderating roles of latitude of judgment and perceived consumer efficacy further our understanding of sustainability information processing. These findings offer implications for consumer packaged goods marketers and retailers, as well as governmental and nongovernmental organizations concerned with sustainability.
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CHAPTER 1

Introduction
INTRODUCTION

Industrialized societies are currently consuming more resources than can be replenished by the planet (Consumers International 2012), and as emerging markets have increased consumption, strains on these resources have escalated (Consumer Goods Forum 2013). Global consumption is 50% greater than the level that is sustainable, and if the current trend continues, two planets worth of resources will not be enough to support human activities by 2030 (Consumers International 2012; WWF 2012). The United States alone accounts for 5% of the world’s population, but produces 70% of the world’s solid waste and 20% of greenhouse gases, and consumes 30% of the world’s resources (EPA 2013). Additionally, as emerging markets are increasing consumption, strains on natural resources are expected to escalate at an ever-accelerating rate (Consumer Goods Forum 2011). The consequences of mindless consumption worldwide are predicted to be associated with many direct and indirect effects, including issues related to consumer health, food supplies, natural disasters (e.g., drought, wildfires, storm severity, flooding), and changes to biological systems. The impetus for mindful consumption practices, however, remains strong as firms and consumers show increasing attention and interest in sustainability initiatives and environmental concerns.

Changes in consumer behavior and considerable actions by the private and public sectors are needed to cope with consequences of increasing consumption levels. As such, scholars, firms, and consumers have shown an increased interest in both environmental concerns and product sustainability (Sheth, Sethia, and Srinivas 2011; Prothero et al. 2011). Recently, France was the first country to mandate environmental laws, which provide “the right for consumers to have information on the environmental performance of products at the point of sale” (Vergez 2012). According to this law, all products are required to display environmental impacts of products,
similar to the existing system used for the nutrition disclosures for food. By informing consumers about their environmental impacts of purchases, consumers can be encouraged to make sustainable consumption decisions, one necessary condition for mindful behaviors. As part of the Decade of Education for Sustainable Development (2005-2014), the United Nations (2013) identified this overarching goal: “to help people to develop the attitudes, skills and knowledge to make informed decisions for the benefit of themselves and others, now and in the future.” Despite this critical goal to develop consumers’ “skills and knowledge to make informed decisions,” which has lead to more sustainable choices and the new Grenelle environmental laws in France, it seems that, in general, consumers do not have readily-accessible information available at the point of purchase to incorporate into product evaluations and choice behavior.

For example, when making a purchase, consumers often do not consider the initial stages of the product life cycle at the point of purchase, including extracting and processing of raw material, manufacturing, packaging, and disposing (Tobler, Visschers, and Siegrist 2011). By providing information about the product life cycle, such as resources consumed (i.e., energy, water, and waste), consumers can become more aware and mindful of the environmental impacts associated with their transactions. With appropriate disclosures, consumers have an opportunity to make more informed and thoughtful purchase decisions that could conserve natural resources, thereby lessening the damage to the environment. Prothero et al. (2011) acknowledge the importance of and lack of research dealing with awareness of the full consumption cycle. Given that sustainability life cycle analyses for product categories are becoming available, combined with “smart disclosure,” increased sustainability information directed at consumers (e.g., the Higg Index) is expected in the near future (The Sustainability Consortium 2013; Thaler 2013). To gain insight into how consumers may be influenced by sustainability labeling when it
becomes accessible in the marketplace, this dissertation uses a series of controlled experimental
designs and retail lab studies to further our understanding of sustainability information
processing.

**Need for Sustainability Communication Tool for Consumers**

Both theory and previous studies indicate that appropriate knowledge is a prerequisite
for environmentally conscious behaviors (e.g., Thøgersen 2000). That is, consumers presently
lack knowledge to distinguish environmentally friendly products from those that are less so,
partially because sustainability labeling disclosures are absent at retail shelves (Thøgersen 2005).
If consumers do not understand the declarations, environmental disclosures intended to assist
consumers to choose environmentally friendly products may be useless and create confusion in
the marketplace. Gaining consumer attention and assisting them through sustainability
information disclosures is a primary opportunity to enhance mindful consumer behavior
(Andrews 2011; Incardona and Pocibo 2007). However, if labeling information provided in the
retail setting is too complex, consumers are less likely to use this information and can be
overwhelmed (Andrews, Netemeyer, and Burton 1998). Furthermore, with all the varieties of
labels available for manufacturers (i.e., third-party certification, manufactures’ voluntary pledges,
and the government mandated labels), label complexity becomes even more overwhelming,
exacerbating consumer confusion (Mintel 2011c). There is clearly a need for a more effective
and less confusing uniformed sustainability disclosure system to communicate with consumers
about the environmental consequences of purchases (Fairley and Jerschefske 2011).

Understanding both the appropriate method used to communicate the environmental
consequences of consumers’ purchases and how this information impacts consumer decision
making are essential first steps in developing effective labels (Zeller 2011). However, creating a
practical and functional way to disclose sustainability information has been a challenge. Tracking the entire production system (e.g., life cycle assessment) to measure the overall environmental impact is difficult because the extent to which the environmental impact of different product types influences consumers and society is diverse, complex, and not well-understood (Bhaskaran et al. 2006). In addition, there are a wide variety of environmental standards issues, such as labor practices and waste generated at different stages of the supply chain that make it difficult to create a cohesive and integrated sustainable label (e.g., Mendleson and Polonsky 1995).

Although there is not a standardized labeling scheme across major retailers, manufacturers, and countries at present, there is some research available to guide the design of alternative forms of sustainability labels. For instance, the Sustainable Apparel Coalition group composed of companies such as Walmart, Target, and Nike, the Environmental Defense Fund, and the Environmental Protection Agency have been collaborating to provide a voluntary sustainability index label on consumer products (Westervelt 2012). It is expected that in the near future, consumers will be provided with sustainability information to make more informed purchase decisions.

Despite the interest of consumers in sustainable and environmentally friendly products, prior literature has not thoroughly examined how labeling products as sustainable influences product evaluations and purchasing decisions. In addition, there are few studies in the literature addressing the effects of increasing the availability of sustainability information for brand alternatives at the category level (i.e., at the point of purchase). Given that consumers currently are not provided with information on environmental impacts of their purchases at the point of purchase, it is very unlikely that many consumers reflect upon and consider the environmental
impact of brand alternatives at the retail shelf. This research aims to examine how consumers may be influenced by sustainability labeling when it becomes available in the marketplace.

**CONTRIBUTIONS**

This dissertation makes several contributions to the sustainability disclosure literature and assimilation-contrast theory. First, I examine how the addition of various sustainability labeling disclosure alternatives on product packaging affects consumers’ attitudes and purchase intentions. Previous findings suggest that consumers want more information, rather than less information on product disclosures (e.g., Andrews, Netemeyer, and Burton 1998; Maronick and Andrews 1999). Providing detailed and comprehensive, yet succinct, information could be an effective way to present sustainability information to consumers. Given that sustainability labeling can educate consumers about the environmental impacts of products throughout their product life cycle, the key to an effective labeling system would be to provide easily accessible and interpretable information. A more transparent approach of presenting sustainability information may be helpful to both consumers and the environment.

Second, this dissertation makes a useful contribution to assimilation-contrast theory (Sherif, Taub, and Hovland 1958). According to the theory, consumers can either assimilate or contrast the information disclosure based on their lay beliefs (Broniarczyk and Alba 1994). The shift in consumers’ internal reference points when evaluating the sustainability level of products provides valuable insights into the underlying mechanism that leads to formulating judgments and decisions. The extent to which consumers shift their reference values depends on how much their reference values differ from the information provided by the sustainability labeling disclosures (i.e., range). The findings will reveal at which sustainability level consumers will accept or reject the information that could have the most practical impacts on purchasing
decisions. For instance, the sustainability level that varies widely is less likely to influence consumers’ purchasing decisions, as these levels are not likely to be assimilated. Consumers are more likely to use the sustainability information if it is within their expected range of sustainability level.

Finally, this dissertation examines the boundary conditions for sustainability utility and accounts for the self-enhancement effect. The moderating roles of latitude of judgment and perceived consumer efficacy provide further understanding of sustainability information processing. By addressing the self-enhancement effect, the findings on the role of sustainability utility and the moderating effect of voluntary sustainability disclosures on consumer product evaluations are deemed more conservative.

**OVERVIEW OF CHAPTERS**

Chapter 2 provides the conceptual framework for this dissertation. I integrate and extend theories related to cognitive reference points, biased assimilation, and self-enhancement to examine the role of sustainability utility and the moderating effect of voluntary sustainability disclosures on consumer product evaluations. Chapter 3 reviews the literature on the general information disclosures, followed by studies on sustainability labeling. Experiment 1 is discussed in Chapter 4, which initially tests the sustainability utility effect in a realistic setting, a retail lab context. Experiment 2 in Chapter 5 examines the role of disclosure formats on product evaluations and the underlying process of sustainability utility. To generalize the findings on the utility derived from consumer cleaning products, experiment 3 in Chapter 6 examines the role of sustainability utility on the evaluations of packaged food products. In the latter studies, from experiment 4 to 6, I address the need to self-enhance that may mitigate sustainability utility effects. The findings from experiment 4 in Chapter 7 suggest that effects of self-enhancement
influence product evaluations if sustainability levels fall outside (vs. within) the latitude of acceptance, suggesting an important boundary condition regarding the influence of sustainability utility. The underlying process of sustainability utility is also examined. As a product usage study, experiment 5 in Chapter 8 takes place in a retail lab setting. Another boundary condition of sustainability utility is examined using consumers’ perceived efficacy and a different form of manipulation for self-enhancement. Experiment 6, which appears in Chapter 9, further extends the utility effect by addressing the self-enhancement effect using packaged food products. Lastly, Chapter 10 discusses the integrated findings from these six experiments, followed by contributions, limitations, and avenues for future research.
CHAPTER 2

Conceptual Framework
CONCEPTUAL FRAMEWORK

The theoretical background builds upon assimilation-contrast theory. In addition, I further our understanding of sustainability labeling processing by integrating and extending the theories related to self-enhancement and perceived consumer efficacy. After being exposed to sustainability labeling information, consumers form evaluations and inferences by assimilating or contrasting the information with their internal reference points and their expectations of perceived sustainability levels. In the next section, a brief overview of the extant literature is provided.

ASSIMILATION-CONTRAST THEORY

Assimilation-contrast theory (Sherif, Taub, and Hovland 1958; Sherif and Hovland 1961) offers insight into the effects of sustainability labeling. Assimilation-contrast theory has been largely adopted in pricing literature to evaluate the psychological perspective of consumers integrating external information into their internal reference points (e.g., Cunha and Shulman 2011; Janiszewski and Lichtenstein 1999; Lichtenstein and Bearden 1989; Lichtenstein, Burton, and Karson 1991). While some researchers suggest that, in general, the likelihood that extrinsic cues will be assimilated into existing knowledge can be estimated (e.g., Richardson, Dick, Jain 1994; Shimp and Bearden 1982), others suggest that the thresholds for assimilating cues are “probabilistic,” which means that it is unlikely that the idiosyncrasies of consumers and the environment can be estimated (Han, Gupta, and Lehmann 2001). In this dissertation, I extend the internal reference point and information processing literature to further our understanding of how consumers process sustainability disclosures.

Consumers have internal reference points for various categories and stimuli that are used to help formulate judgments and decisions (Rosch 1975). According to the assimilation-contrast
perspective, consumers harbor internal reference values, and assimilate or contrast external sustainability disclosure information. The breadth of plausible reference values on a judgment continuum is formulated based on consumers’ past experiences and lay beliefs (i.e., beliefs and intuitions; Broniarczyk and Alba 1994; Sujan and Dekleva 1987), consistent with range theory (Kalyanaram and Little 1997; Volkmann 1951). Based on prior literature, consumers formulate baselines for acceptable price ranges by comparing their internal reference price to a market price (e.g., Janiszewski and Lichtenstein 1999). As such, I expect that consumers will establish upper and lower bounds for plausible sustainability levels to formulate a baseline as well. Therefore, the width of reference range is determined based on consumers’ perceived thresholds along the sustainability level continuum. I examine this continuum for various categories through multiple pilot studies.

Given the dearth of sustainability labeling in the marketplace today, little is known regarding consumers’ initial sustainability expectations and perceptions of sustainability across different product categories. That is, researchers have not empirically pinpointed consumers’ lay beliefs with regards to product sustainability. By providing objective information (i.e., an index score), consumers are expected to formulate their decisions based on not only the explicit information, but also their internal reference points for product categories. This reasoning aligns with the assimilation and contrast literature examining factors such as the extremity of the comparison standards and ambiguity of the target stimuli (Mussweiler 2003).

Based on the assimilation-contrast theory, if the sustainability disclosure is perceived inconsistent with consumers’ reference points, a contrast effect is likely to take place in which the external information is rejected (i.e., latitude of rejection) or discounted (i.e., latitude of noncommitment). This would be the case if consumers may perceive the information provided
on the package to be significantly different from their internal reference points, leading to contrast effects (Mussweiler 2003). In addition, consumers may be skeptical of information provided on the packaging, partly due to greenwashing and prior experiences with unreliable or fictitious claims (e.g., Parguel, Benoît-Moreau, and Larceneux 2011).

**SUSTAINABILITY UTILITY**

According to the assimilation-contrast perspective, if the sustainability disclosure is provided at the point of purchase, consumers will then determine whether it is consistent with their internal reference ranges. As such, assimilation will result when the external sustainability level falls between the consumer’s upper and lower sustainability level thresholds (i.e., latitude of acceptance; brackets 1, 2, and 3 in Figure 1). If there is a marginal difference (overlap) between sustainability expectations for the product category and the information provided, the overall evaluation of the product is not predicted to be significantly affected (bracket 2). An internal reference point that falls in bracket 2 is considered to be the mean sustainability reference point, closely reflecting consumers’ perceived reference point for the product category. Hence, the effect of information disclosure will be marginal.

If there is a greater difference between the internal reference range and the sustainability level information disclosure, consumers are expected to evaluate the product favorably or unfavorably depending on the direction of and the range of expected sustainability level (the shaded areas in Figure 1). For instance, consumers may form negative evaluations if the objectively disclosed level is lower than their mean sustainability reference values. As shown in Figure 1, this area is represented by both bracket 1 and the shaded area to the left of the lower threshold. In contrast, positive evaluations are more likely if the objectively disclosed sustainability level for the product appears more favorable than the mean expected sustainability
reference values. That is, the provision of favorable brand-level sustainability information could create *sustainability utility* for products, influencing consumer evaluations and choices. Akin to Thaler’s (1985) notion of transaction utility, I define sustainability utility as the difference between a specific brand’s level of sustainability and category-level perceptions of sustainability. The sustainability utility effect emerges in bracket 3 and the shaded area to the right of the upper threshold of internal reference values. Overall, I expect the value of sustainability attributes to depend on *where* brand-level sustainability disclosures fall on the latitude of judgment continuum. Figure 1 illustrates the proposed theoretical framework for sustainability labeling, while the conceptual framework for the present research can be found in Figure 2 (cf. Lichtenstein and Bearden 1989).

**SELF-ENHANCEMENT EFFECT**

Prior research indicates that consumer responses related to prosocial and pro-environmental behaviors may be driven by self-enhancement, which I define as the desire to appear socially and environmentally responsible to others. That is, consumers prompted to evaluate products in first person (e.g., “how I feel”) may be more likely to reveal much more (less) favorable evaluations for purportedly sustainable products.

Two methods researchers have applied to more accurately capture unbiased responses to environmentally sensitive questions is to have respondents self-defocus, deploying a “self versus other” and “public versus private” manipulations to address this propensity to self-enhance (cf. Luchs et al. 2010; White and Peloza 2009). That is, consumers primed to consider the evaluations of ‘others’ or ‘private’ should provide unbiased evaluations. Based on previous research, it is plausible that any empirical support for sustainability utility may be inflated (i.e., self-enhancement may be driving the effects). The sustainability utility effect on consequences is
demonstrated while also considering the moderating influence of self-enhancement (experiments 4, 5, and 6).

PERCEIVED EFFICACY

The provision of information may be influenced by consumer characteristics and prior beliefs, revealing the complexity in understanding how consumers process sustainability information (Fischhoff, Brewer, and Downs 2011). To better understand the underlying evaluative process driving sustainability utility, perceived efficacy is examined. In the sustainability information context, perceived efficacy refers to the effectiveness of an individual’s efforts to make a difference in the environment (Chang 2011; Ellen, Wiener, and Cobb-Walgren 1991). Within the stream of pro-environmental research, perceived efficacy has been found to enhance individuals’ propensity to engage in sustainable behaviors and conservation efforts (e.g., Cho et al. 2013; Lee and Holden 1999; Thøgersen 2000; White, MacDonnell, and Dahl 2011). That is, consumers are more likely to behave in a sustainable manner if they perceive that these efforts actually make a positive difference for the environment. Extending these findings, I predict that the provision of sustainability information will interact with consumers’ own perceived efficacy.

Generally, the stream of research on perceived efficacy suggests that highly efficacious consumers behave sustainably because of their own belief and knowledge in addressing environmental issues (Berger and Corbin 1992). Given that human activities cause the degradation of the environment, providing consumers with information about their own impacts via sustainability labeling could affect product evaluations differently across the levels of individuals’ efficacy (experiment 5).
CHAPTER 3

Literature Review
LITERATURE REVIEW

The focus of this dissertation lies on the effects of sustainability disclosure formats on product evaluations and choices. This chapter briefly describes the main foci of the information disclosure literature. Next, I review the literature examining how disclosures and claims on product packaging may influence sustainability information processing.

BACKGROUND ON INFORMATION DISCLOSURES

Motivated by a desire to help consumers make more informed decisions, the area of information disclosure has garnered much attention from behavioral researchers. Broadly speaking, two types of information disclosures are studied: affirmative and voluntary disclosures (Fischhoff, Brewer, and Downs 2011). Affirmative disclosures are mandated (i.e., required in the marketplace by a third party), and include various product warnings (e.g., Surgeon General’s warnings on tobacco and alcohol products) and nutrition labeling. As the name implies, voluntary disclosures are not required, but manufacturers may deploy them to enhance their products and/or other offerings (i.e., they may use voluntary disclosures as a competitive advantage).

The role of information disclosures has focused primarily on consumers’ perceptions and product evaluations. For example, enhancing disclosure salience through the use of varied formats (e.g., symbols, color, font size) has been empirically shown to increase both the attention to and the effectiveness of disclosures (Fischhoff, Brewer, and Downs 2011). Torres, Sierra, and Heiser (2007) found that overtly presented warnings generate a more favorable attitude toward the advertisement and brand, as well as higher purchase intentions. Barlow and Wogalter (1993) found that presenting both print and voice warnings performed better than those exposed to voice-only or no warnings.
Furthermore, both the specificity of information provided has been found to influence disclosure effectiveness. In particular, using specific claims were found to affect consumers more so than the general claims. Maronick and Andrews (1999) found that specific claims on aerosol packages are more effective than general claims in accordance with the spreading activation theory (Collins and Loftus 1975), which suggests that the consumers favor more specific information because it may expand consumers’ cognitive frame of reference. For instance, rather than disclosing “harmful,” “harmful due to CFC” should be more effective. Andrews, Netemeyer, and Burton (1998) also support this notion, finding that “low cholesterol” is a more effective claim than the general claim, “healthy.”

Prior research suggests a potential boundary condition for different formats of label (e.g., Gleim et al. 2013; Viswanathan and Childers 1996). Although the objective format seems to be more effective than the subjective alternative, as the number of informational cues increases, effects of objective information on consumer responses are mitigated. Specifically, when the participants were exposed to a total of 6 informational cues, Gleim et al. (2013) found that participants showed a higher intent to purchase green products when detailed verbal cues, rather than numeric cues were used. In a case where 3 informational cues were provided, there were no significant differences across information formats. These initial findings suggest that as long as consumers are not overexposed to informational cues, the effectiveness of the type of information may be similar.

Based on these studies, it seems that consumers prefer concrete, specific information versus information that may be subject to multiple interpretations. In addition, prior research on the effectiveness of the type of information (subjective vs. objective) has been equivocal and garners further investigation.
SUSTAINABILITY LABELING

Sustainability labeling is defined as a disclosure that communicates information to consumers regarding environmental attributes based on the product life cycle (e.g., manufacturing, transporting, and packaging), which is the main environmental impact assessment tool for retailers, manufacturers, suppliers, and NGOs. Consistent with a standardized sustainability communication tool used in business-to-business (B2B) relationships (i.e., sustainability scorecard), I propose a similar tool for consumers.

Given the relatively nascent stage of sustainability labeling research, the current findings seem to be equivocal. For instance, Teisl, Rubin, and Noblet (2008) created different types of labels (e.g., eco-label, sliding scale) for vehicles and found that the type of environmental information disclosed in the label did not influence the perceived credibility of the labels. On the other hand, Parguel, Benoît-Moreau, and Larceneux (2011) found that sustainability ratings can significantly influence brand evaluations if the sustainability efforts by the company are perceived to be intrinsically motivated. The perception of intrinsic motive refers to inferences consumers make about the environmental consciousness of the company (Parguel, Benoît-Moreau, and Larceneux 2011). That is, the overall evaluation of brands may depend on how consumers assess the firm’s intent on engaging in environmentally responsible practices.

Previous literature that directly addresses sustainability labeling issues seems most relevant for this research (e.g, Engels, Hansmann, and Scholz 2010; Vanclay et al. 2010). For example, Engels, Hansmann, and Scholz (2010) examined sustainability labels for food products that incorporated three distinct values: ecological, economic, and social. The label used in their study was created based on five criteria (e.g., contribution to health, quality and taste, convenience, environmental impact, and contribution to national wealth) and life cycle
These labels all used the same assessment and benchmark scheme, but differed on the amount and type of information provided. A total of three versions were evaluated in the study. The first version of the label revealed the environmental impact of products on the five sustainability criteria. The second version presented the environmental impact based on the product life cycle. The last version was the combination of both sustainability criteria and product life cycle information (i.e., it combined the first and second versions and presented them together). The labels used a set of texts, icons, arrows, numbers, and a traffic light image. The color red represented negative environmental effects, amber indicated moderate effects, and green represented positive effects.

Using samples of consumers and experts from different areas of expertise in leading manufacturers and retailers in Switzerland, Engels and colleagues (2010) demonstrated that consumers did not evaluate the first and second versions differently (i.e., labels using the different sustainability criteria and those showing sustainability through the product life cycle were perceived similarly). While consumers evaluated these first two versions favorably, consumers (vs. experts) evaluated the third version (i.e., the combined format) significantly more favorably. That is, it seems that consumers react more positively to more information in labeling if the information is not considered cluttered.

In summary, the nonsignificant results dealing with the first and second labeling formats suggest two possibilities: 1) relatively equal effectiveness of any type of sustainability label and 2) the impracticality, managerially speaking, of implementing different types of sustainability labels. Specifically, both consumers and experts (3% and 13%, respectively) expressed no preference for either version of the sustainability labels. Additionally, the finding that consumers
preferred full information disclosures (i.e., both pieces of information) to a greater extent than experts may indicate that, contrary to prior findings in the areas of information overload and consumer confusion (e.g., Balasubramanian and Cole 2002), at times, consumers do indeed prefer more specific and detailed information (e.g., Andrews, Netemeyer, and Burton 1998; Maronick and Andrews 1999). The extent of information elaboration across different types of labels, however, is unclear (Nenkov, Inman, and Hulland 2008).

In addition, it seems that sustainability labeling may in turn influence consumption choices and behaviors. For example, Vanclay et al. (2010) examined carbon labeling on food products (e.g., perishable and non-perishable items) over a 3 month period. The researchers used a convenience store setting in Australia to examine product preferences both before and after the implementation of a carbon footprint labeling system that indicated the carbon footprint generated by products. One of their main findings was that consumers switched their product preferences when the lowest priced product generated the least level of carbon footprint. That is, if the price of carbon-labeled products was not the cheapest alternative, there was no significant difference in consumer choices. These findings indicate that both price and carbon footprints are influential factors in pro-environmental purchasing behaviors. Indeed, it seems to suggest that consumer’s willingness to pay a premium price (WPPP) for highly sustainable brands is moderated by the price of the product itself.

To summarize, based on the extant product labeling research, factors such as overall indices and dimensional evaluations comprising disclosure across varying sustainability levels are expected to influence product evaluations. Furthermore, combining both indices and dimensional scores is expected to provide more in-depth information that reinforces and strengthens evaluations; the impact of the combination may be more influential across the different
sustainability levels (low, moderate, high) for brands within a category. Consumers are expected to respond differently to the various formats of a sustainability disclosure following exposure to the disclosure alternatives.

**SUSTAINABILITY ATTRIBUTE TRADE-OFFS**

The current market situation in which consumers are faced with an array of brand options either with or without pro-environmental labels (i.e., USDA organic, certified fair trade) may promote simple heuristic processing involving green product attributes that leads to a limited understanding of current environmental labels. Specifically, I suggest that consumers often categorize green attributes as dichotomous and consider them only at extreme levels (i.e., absent or present), consistent with the basic opposition model (Lakoff 1987). Prior findings appear to support this notion. Based on previous findings on perceived trade-offs between sustainability and functional performance (e.g., Luchs et al. 2010), the dichotomous categorization of green attributes may generate a liability effect for strength related products (i.e., ‘green’ products are lower quality than ‘non-green’).

For consumers in general, sustainability utility (or liability) may be derived from a brand’s specific, quantified sustainability level vis-à-vis a category reference point (cf. Thaler 1985). This dissertation extends prior findings, showing that disclosures with specific dimensions (energy, water, and waste) and overall indices may help consumers assess sustainability utility; in turn, influence consumers’ subsequent brand evaluations, so long as these revealed disclosures are consistent with consumers’ latitudes of acceptance for the relevant product category (e.g., Engels, Hansmann, and Scholz 2010; Vanclay et al. 2010). Further, while the vast majority of studies have operationalized sustainability disclosures as dichotomous (i.e., either present or absent for a single brand), the current research presents communication across
multiple products within a category on a sustainability continuum. In addition, by incorporating the latitude of judgment, the findings demonstrate the positive consequences of disclosing a sustainability attribute with little hindrance to perceived product quality and performance, providing an important boundary condition for the liability effect. In the context of this research, I find that sustainability disclosures may better inform consumers about brand-level sustainability utility, relative to within category competitors, and in turn influence consumer judgment and decision making in the retail environment.
EXPERIMENT 1

The purpose of experiment 1 was to examine the influence of sustainability disclosures and the resulting sustainability utility on consumers’ product evaluations and choices. Notably, this study was conducted in a retail laboratory setting where product options within a category were displayed on retail shelves. The sustainability labels were presented as “shelf talker” signage on the shelving (Appendix C). In “disclosure present” conditions, consumers were exposed to both indices and dimensional scores for all brand options within the category. Dimensional scores were designed to be equivalent to the index (i.e., dimension scores of 2, 3, and 4 resulted in an average index score of 3). To make this study realistic, participants were exposed to actual brands of laundry detergent and dish soap, and the lab environment was designed to be similar to current retail marketplaces. For these product categories, strength-related attributes are considered major determinants of consumers’ choice decisions (Lin and Chang 2012; Luchs et al. 2010).

HYPOTHESES

Drawing from assimilation-contrast theory, sustainability disclosures and their relationship to category-level reference points should potentially influence consumer evaluations of products if external information is assimilated. In these cases, consumer evaluations should increase (decrease) when higher (lower) brand-based sustainability levels (vis-à-vis category reference points) are disclosed, creating utility. In Figure 1, bracket 3 (bracket 1) represents brand-level disclosure information proposed to create sustainability utility. These predictions are consistent with the extant pricing literature, which suggests that evaluations may be affected by externally-provided attribute information within the latitude of acceptance (e.g., Lichtenstein and Bearden 1989). Regarding situations in which marginal differences exist between brand-level
disclosures and category-level reference points (bracket 2), I expect no effect on evaluations. That is, individuals are likely to perceive a moderate level of sustainability invariant from their internal reference points, resulting in little impact on subsequent evaluations.

The basic premise is that each brand in a category has a level of sustainability for which consumers are currently largely unaware. When compared to these conditions in which no brand-level disclosures are provided for the relevant category (i.e., consistent with current retail environments), the provision of sustainability information for all brands within the category may influence product evaluations and purchase intentions. For the moderate sustainability level, individuals are likely to perceive the information as invariant from their internal reference points. Hence, for the products with moderate sustainability scores, there will be little impact on subsequent evaluations. For both low and high sustainability levels, I predict a two-way interaction between the presence (absence) of category-level disclosures and brand-level sustainability ratings on evaluations and choices:

$$H_1:$$ Relative to no disclosures for brands in a category, the addition of sustainability information for the brands affects evaluations. Compared to the category control, the provision of a higher (lower) level of sustainability through a package disclosure will create (un)favorable sustainability utility, increasing (decreasing) (a) willingness to pay a premium price, (b) purchase intentions, and (c) product choice.

**METHODOLOGY**

**Construction of the Sustainability Disclosure and Internal Reference Point**

*Pretests.* To determine which product category to use in the main experiment, a pretest was conducted with 45 undergraduate students. Using a pencil and paper survey, participants rated nine consumer products on their perceived level of environmental impact using a nine-point scale (1 = “not at all harmful”; 9 = “extremely harmful”). The participants were asked to consider the environmental impact of all stages of the product life cycle (e.g., transporting,
processing, packaging, and disposing) for each category. The results showed that laundry detergent was perceived to be the most harmful to the environment (M = 6.07). Given that the three generic dimensions used for most of consumer product categories are energy, water, and waste, these dimensions were selected for sustainability labeling on laundry detergents (The Sustainability Consortium 2013). Additionally, energy, water, and waste also have been considered the most relevant factors for the environmental impact of laundry detergents (The Sustainability Consortium 2013).

In a second pretest consisting of 38 undergraduate students, the internal reference points of the target stimuli of consumer cleaning products were assessed. The procedure was similar as the previous pretest. Participants were instructed that product categories may differ in their overall effect on the environment based on the extent to which the products were substantially processed and required a lot of packaging. The participants assigned an overall sustainability score (in whole numbers only) they would expect to see on detergents and dish soaps. A total of three index scores, the lowest possible performance index, an average possible performance index, and the highest possible performance index were gathered. For laundry detergent, the results showed that the lowest, average, and highest possible performance scores were 2.29, 4.32, and 6.42, respectively. An analysis of the contrasts indicated that laundry detergents with a low sustainability level were significantly different from both moderate (M_{Low} = 2.29 vs. M_{Moderate} = 4.32; F(1, 37) = 297.76, p < .01) and high levels of detergents (M_{Low} = 2.29 vs. M_{High} = 6.42; F(1, 37) = 698.86, p < .01). Additionally, evaluations of the moderately sustainable detergent were significantly different from those for the highly sustainable detergent (M_{Moderate} = 4.32 vs. M_{High} = 6.42; F(1, 37) = 323.87, p < .01).
For dish soap, the results showed that the lowest, average, and highest possible performance scores were 2.55, 4.61, and 6.63, respectively on a 10 point scale. The internal sustainability reference points for dish soaps were similar to those of laundry detergents across three sustainability levels ($M_{\text{Dish Soap}} = 2.55$ vs. $M_{\text{Laundry Detergent}} = 2.29$; $t_{\text{Low}} (1, 37) = -1.15, p > .10$; $M_{\text{Dish Soap}} = 4.61$ vs. $M_{\text{Laundry Detergent}} = 4.34$; $t_{\text{Moderate}} (1, 37) = -1.28, p > .10$; $M_{\text{Dish Soap}} = 6.63$ vs. $M_{\text{Laundry Detergent}} = 6.42$; $t_{\text{High}} (1, 37) = -0.87, p > .10$). Additionally, an analysis of the contrasts indicated that dish soaps with a low sustainability level were significantly different from the moderate ($M_{\text{Low}} = 2.55$ vs. $M_{\text{Moderate}} = 4.61; F(1, 37) = 212.37, p < .01$) and high levels of detergents ($M_{\text{Low}} = 2.55$ vs. $M_{\text{High}} = 6.63; F(1, 37) = 282.65, p < .01$). Also, the moderately sustainable dish soap was significantly different from the highly sustainable dish soap ($M_{\text{Moderate}} = 4.61$ vs. $M_{\text{High}} = 6.63; F(1, 37) = 165.07, p < .01$). Hence, the main study used laundry detergents and dish soaps as target stimuli in an effort to assess generalizability of findings across cleaning products.

*Designing the Disclosure.* The actual sustainability performance index of products may be similar or different from the consumers’ internal reference points. In other words, the sustainability value level that consumers believe is appropriate may vary from the actual level. To determine realistic objective values for the sustainability disclosure, the online source, Good Guide (http://www.goodguide.com), was used as a guideline. The Good Guide website provides information on environmental impacts of consumer products and uses scientific expertise to derive a rating system to evaluate major brands across product categories. The environmental score reported on the website consists of a variety of dimensions (i.e., energy, water, waste, etc.) for products.
To gauge the environmental scores of cleaning products, I reviewed the scores for laundry detergents. Out of 692 laundry detergents listed on Good Guide, there were 661 that reported environmental impact scores. Based on a 1 to 10 scale used in the website, the overall environmental score ranged from 3.8 to 9.3. The overall median score was approximately 6. Individual dimensions were also rated on a scale of 1 to 10. The standard deviation across each dimension of interest (i.e., water, energy, and waste) ranged from 1.06 to 2.48 and was used to calculate minimum and maximum values. Using the values derived from the standard deviation calculation, the overall means of three dimensions were calculated as 3.09, 4.99, and 6.88. Based on these mean levels, three sustainability levels (3, 5, and 7) were determined as appropriate to use as low, moderate, and high environmental impact levels for a scale ranging from 1 (lowest) to 10 (highest). The actual sustainability levels were slightly different from the consumers’ expected levels (i.e., internal reference points) for both low (2.29 vs. 3.09) and high sustainability levels (6.42 vs. 6.88). Given that the difference of expected and the actual values are relatively small, consumers are expected to consider the disclosed levels as believable and assimilate the sustainability labeling information for this category.

**Study Design**

The study was one part of a larger retail shopping trip in which participants were told that retailers may voluntarily introduce “new” labels on product packages and retail shelves for various product categories. These included labeling across a number of different categories, including meat and poultry nutrient labeling, front of package icons, alcoholic beverages, and sustainability. The study was a 3 (brand-level sustainability rating: low vs. moderate vs. high) × 2 (brand-level disclosure: absent (control) vs. present) mixed experimental design. Participants in the disclosure present condition were shown both laundry detergents and dish soaps in a category-based setting.
(i.e., distinct brands grouped by product category) with varied sustainability ratings (low, medium, or high; Appendix C) for different brands. Those in the disclosure absent condition were given no information about the brands’ sustainability levels. Sustainability ratings were a within-subjects factor, while the presence (absence) of disclosures was a between-subjects factor. That is, participants either saw sustainability labels on all products within the category or no sustainability information on all products within the category. That is, in the manipulation condition, participants evaluated a total of 6 brands of laundry detergents and dish soaps that differed sustainability scores. In the category control condition, participants also evaluated 6 brands of products without disclosures, emulating the current retail marketplaces. Both the brands of laundry detergents and dish soaps themselves and sustainability levels assigned to particular brands were rotated and counter-balanced.

**Procedures, Participants, and Measures**

*Procedures and Participants.* A total of 246 undergraduate students participated in the study for course credit (M<sub>age</sub> = 21.6 years; 110 females). Participants in the two-part study were randomly assigned to experimental conditions.

For the first part of the study, participants spent approximately 40 minutes shopping within five product categories in the retail lab (two were the categories of interest for this study), and for the second half, participants spent approximately 20 minutes completing an online survey in a separate computer lab. The participants shopped all categories minimizing potential demand effects. When participants checked in for the study, they were given instructions about the shopping task and a survey to complete during the first (i.e., retail) portion of the study. Further, to explain the absence or presence of labels in the focal study, instructions indicated that retailers may choose whether or not to include particular labeling information on a voluntary basis (e.g., supplemental
nutritional icons, expanded facts panels, alcohol beverage content, sustainability disclosures). That is, when labeling was present, participants were led to believe the retailer had provided enhanced labeling voluntarily. The definition of sustainability and a sustainability performance index (along with other labeling systems) were provided (1 = “worst”; 10 = “best”). Participants were told that the index is an overall score of individual dimensions. Since our focus was on the influence of sustainability information and not price, we provided no specific pricing information to participants, telling them that the prices for these known brands were similar to those encountered at local retailers. After examining the products, participants completed the follow-up computer-based survey and were dismissed.

**Measures.** All of the focal dependent variables were measured in the retail lab where the participants examined the products on the shelf. Participants were first asked which product they would select (“If you were to choose one of the laundry detergents (dishwashing soaps) on the retail shelf, which one would you choose?”). Next, a seven-point Likert scale was used to assess willingness to pay a premium price (1 = “strongly disagree” to 7 = “strongly agree”) (Netemeyer et al. 2004) and a seven-point bipolar scale was used for purchase intentions (1 = “less likely” to 7 = “more likely”) (Kozup, Creyer, and Burton 2003). The final two measures were assessed for all brands. During the second phase, participants completed a web-based survey including demographic questions, manipulation checks, and questions assess possible demand effects.

**RESULTS**

*Manipulation and Demand Effect Checks.* Because disclosures are ineffective if awareness is not high (Andrews 2011), participants were asked “Did you see a sustainability label disclosure on the product?” for both product categories, assessing awareness of the disclosure manipulations (i.e., presence/absence of index). Respondents answered either “yes” or
“no.” When the index disclosure was present for the categories, more than 90% recalled seeing the sustainability scores, and more than 90% of respondents accurately reported *not* seeing the scores in the disclosure absent condition ($\chi^2$’s (df=1) > 150.0, $p < .001$). In addition, participants were asked “Thinking about the packages, was the overall sustainability level indicated by the index score ___?” on a seven-point bipolar scale (1 = “low”; 7 = “high”) for each brand encountered. Significant differences between the high/low/control conditions revealed that the sustainability manipulation worked as intended across product categories (laundry detergent: $M_{\text{Low, Present}} = 3.27$ vs. $M_{\text{Low, Control}} = 4.16$; $M_{\text{High, Present}} = 5.91$ vs. $M_{\text{High, Control}} = 4.00$; dish soap: $M_{\text{Low, Present}} = 2.97$ vs. $M_{\text{Low, Control}} = 3.94$; $M_{\text{High, Present}} = 5.98$ vs. $M_{\text{High, Control}} = 4.23$; $Fs$ ranged from 24.05 to 127.83, all $p$’s < .001). Finally, participants were asked an open-ended question regarding their thoughts about the purpose of the study, eliminating eight participants from subsequent analyses based on their responses. Unless noted, the list of questions used for manipulation and demand checks remained consistent throughout my dissertation.

 tests of hypotheses for product evaluations. A series of mixed ANOVAs were conducted for the dependent variables of interest. For laundry detergents, the main effect of sustainability level was significant on willingness to pay a premium price ($F(1, 236) = 19.45$, $p < .01$) and purchase intentions ($F(1, 234) = 34.98$, $p < .01$). The main effect of category disclosure was nonsignificant across dependent measures (all $p$’s > .50). These main effects were superseded by the predicted two-way interaction of sustainability level and category disclosure on willingness to pay a premium price ($F(1, 236) = 21.99$, $p < .01$) and purchase intentions ($F(1, 234) = 32.82$, $p < .01$).

 As shown in Panel A of Figure 3, planned contrasts for willingness to pay a premium price indicated that for a brand high in sustainability, consumers evaluated a laundry detergent
more favorably when the index score was present than when absent in the control condition 
(M_{High\_Present} = 3.94 vs. M_{Low\_Control} = 3.03; F(1, 236) = 13.86, p < .01). When the sustainability 
level was low, consumers evaluated laundry detergents less favorably when the index score was 
present than when absent (M_{Low\_Present} = 2.57 vs. M_{Low\_Control} = 3.08; F(1, 236) = 4.93, p < .05).
The contrast results support H_{1a}.

Planned contrasts (Panel A of Figure 3) revealed that consumers would be more likely to 
purchase a laundry detergent with a high sustainability level when the disclosure was present 
(M_{High\_Present} = 4.93 vs. M_{High\_Control} = 3.94; F(1, 234) = 15.82, p < .01). Conversely, when product 
sustainability was revealed to be low, purchase intentions were lower in the presence of a 
disclosure (M_{Low\_Present} = 2.81 vs. M_{Low\_Control} = 3.91; F(1, 234) = 19.61, p < .01). These results 
support H_{1b}.

A similar pattern of findings emerged for dish soaps. The main effect of sustainability 
level was significant on willingness to pay a premium price (F(1, 236) = 21.93, p < .01) and 
purchase intentions (F(1, 236) = 25.95, p < .01). The main effect of category disclosure was 
nonsignificant across dependent measures (all p’s > .50). More importantly for the predictions, a 
significant two-way interaction of sustainability level and category disclosure emerged for dish 
soaps on willingness to pay a premium price (F(1, 236) = 13.71, p < .01) and purchase intentions 
(F(1, 236) = 15.82, p < .01).

A similar pattern of findings emerged for dish soaps. As shown in Panel B of Figure 3, 
consumers indicated that they would be more (less) likely to pay a price premium for dish soap 
brands with high (low) sustainability levels when exposed to the disclosure (M_{High\_Present} = 3.78 
vs. M_{High\_Control} = 3.18; F(1, 236) = 7.12, p < .01 and M_{Low\_Present} = 2.48 vs. M_{Low\_Control} = 3.02; 
F(1, 236) = 5.99, p < .05). For the intent to purchase dish soaps (Panel B of Figure 3), planned
contrasts indicated that consumers reported that they would be more (less) likely to purchase dish soap brands with high (low) sustainability levels when exposed to the disclosure ($M_{High\_Present} = 4.80$ vs. $M_{High\_Control} = 4.06$; $F(1, 236) = 9.41, p < .01$ and $M_{Low\_Present} = 3.09$ vs. $M_{Low\_Control} = 3.85$; $F(1, 244) = 9.28, p < .01$).

*Product Choice Analysis.* Prior to analyzing which product participants indicated they would select, the parallel regression assumption was checked ($\chi^2 = .89, p > .60$) and found to be nonsignificant. Ordinal regression results indicated that the presence of the disclosure was a positive and significant predictor of consumers choosing a more sustainable laundry detergent ($\beta = .75$, Wald = 9.32, $p < .01$). That is, in the presence of the disclosure scores, a significantly larger proportion of participants chose the laundry detergent brand revealed to be more sustainable that those who chose the brand when no disclosure was provided (37.9% versus 20.2%; $Z = 2.96, p < .01$, odds ratio = 2.42). When the sustainability level was low, the reduction in choosing the less sustainable detergent approached significance (11.2% versus 20.2%; $Z = 1.86, p = .06$, odds ratio = .50). For dish soaps, the same pattern of results emerged ($\beta = 1.07$, Wald = 18.87, $p < .01$). Combined, these results offer support for H1c.

**DISCUSSION**

Experiment 1, conducted in a retail laboratory environment with actual brands, supported H1, revealing that category-level sustainability disclosures may create sustainability utility, influencing both consumer evaluations and product choice. Relative to the category control condition, which provided no sustainability information for any brands, the disclosure of higher (lower) levels of sustainability across two product categories had positive (negative) effects on sustainability utility, evidenced by both product evaluations and choices made in a retail store environment. Unlike prior studies examining the presence of information disclosures on a single
brand or a product category (e.g., Andrews, Netemeyer, and Burton 1998), the experimental
design of this study was distinctive in that consumers were exposed to a broad range of brands
across different product categories. By using the category control, I was able to compare product
evaluations across each brand that provided sustainability information and that lacked
sustainability information.

While experiment 1 examined the provision of sustainability information on products, I
examine the role of disclosure formats on product evaluations in the next study. Experiment 2
tests whether disclosures including both summary (i.e., index) and dimensional information yield
higher (lower) evaluations for products with better (worse) sustainability performance ratings
compared to a single disclosure formats (i.e., dimensions or index only) and examines consumers’
product evaluations and choice.
CHAPTER 5

Experiment 2
EXPERIMENT 2

HYPOTHESES

Experiment 2 addressed how disclosure format and the amount of information provided in the label interact to influence consumers’ process and use of the information. Disclosures presented on product packaging that include both summary indices and dimensional scores (e.g., energy, disposal, resource conservation) are expected to provide more specific, in-depth information and reinforce evaluations versus when only index or dimensional information is presented. On one hand, specific claims (e.g., dimensional information) are perceived as more credible than general ones that could be open to individual interpretation (Andrews et al. 1998). However, findings also suggest that integrative information (e.g., indices) is more easily interpreted and utilized than dimensional information, due to increased processing fluency (Viswanathan and Hastak 2002). Prior findings suggest that the information needs to be presented in a uniform format (numerical vs. verbal) to reveal any significant differences in product evaluations (e.g., Viswanathan and Childers 1996).

Given that each dimension had an overall sustainability score in sustainability disclosures used in this research, effects of disclosure method (dimensions vs. indices) on product evaluations may be minimal. Hence, while no specific prediction in regard to which disclosure method may be more effective is hypothesized, I expect that levels communicated through both dimensions and indices in concert will strengthen the influence of disclosures (i.e., it moderate the effects predicted in H1). Formally stated, the following three-way interaction is predicted:

\[ H_2: \text{The presentation format for sustainability disclosures moderates the influence of product sustainability level on (a) perceptions of sustainability, (b) willingness to pay a premium price, (c) purchase intentions, and (d) product choice. Relative to no disclosure, disclosures including sustainability ratings for individual dimensions with a summary index result in stronger effects than an index or dimensional ratings presented alone.} \]
Focal dependent measures can be examined further to better understand the underlying mechanism that influences consumer behaviors. For example, the effect of disclosure information on product attitudes is mediated by product-related beliefs (e.g., Ajzen and Fishbein 1980; Burton, Andrews, and Netemeyer 2000; Howlett et al. 2012). For instance, Burton, Andrews, and Netemeyer (2000) found that product health perceptions mediated the effect of the provision of disclosure information on brand evaluations. In addition, Howlett et al. (2012) found that perceived vascular disease risk mediated the effect of sodium knowledge on purchase intentions. Shiv, Carmon, and Ariely (2005) suggest that product-related beliefs influence response expectancies (i.e., internal reference points), leading to effects on product evaluations.

Based on prior literature, the provision of sustainability labeling factors (i.e., a sustainability index value and sustainability dimensions) may be processed via product sustainability evaluations that in turn affect focal dependent variables (i.e., willingness to pay a premium price and purchase intentions). In essence, the moderating effect of sustainability labeling factors on product evaluations is expected to be mediated by perceived product sustainability. Following the rationale for the previous hypotheses, sustainability labeling formats for both low and high levels are expected to show stronger mediating effects through sustainability evaluations. In contrast and consistent with the previous predictions, the moderate sustainability labeling format is not expected to show a significant difference relative to the control condition on the focal dependent variables.

H₃: Perceptions of product sustainability mediate effects of direct and moderating impact of the disclosure on (a) willingness to pay a premium price and (b) purchase intentions.
METHODOLOGY

Study Design

Experiment 2 was a 3 (brand-level sustainability rating: low vs. moderate vs. high) × 2 (dimensions of sustainability: absent (control) vs. present) × 2 (index disclosure: absent (control) vs. present) mixed experimental design. The sustainability dimensions and index manipulations were between-subjects factors, while sustainability level was a within-subjects factor. That is, when present, sustainability levels were rotated amongst the three brands evaluated by consumers. Across the between-subjects conditions, participants either saw no information, just dimensional information, just index information, or both dimensional and index information. For this study, to ensure that the brand names did not affect product perceptions, neutral names were selected from previous research (e.g., Keller 1987). Fictitious brand names, sustainability levels, and shelf position were rotated across the three detergent packages, thus counterbalancing the levels across the brands. Finally, sustainability disclosure scores were presented in one of three ways: an average index representing overall level, scores reflecting levels on three different dimensions, or both (Appendix D). Detergent packages also provided information held constant across brands (e.g., warnings, number of loads).

Procedures, Participants, and Measures

Procedures and Participants. A total of 242 undergraduate students participated for course credit (Mage = 21.4 years; 132 females). Experimental conditions were randomly assigned, and as noted above, the order of stimuli and sustainability levels were counterbalanced. Cell sizes ranged from 59 to 61. Similar to experiment 1, at the beginning of the survey, participants were provided with a definition of sustainability and the meaning of sustainability scores for this product category. To simulate exposure on a retail shelf, all laundry detergent stimuli were
shown simultaneously. Next, participants completed a short survey that contained dependent measures.

Measures. Consistent with experiment 1, the first question asked participants, “If you were to choose one of the laundry detergents on the retail shelf shown above, which one would you choose? In addition, participants were further asked to assess each product on the following dimensions: perception of product sustainability, willingness to pay a premium price, and purchase intentions. The perception of sustainability measure was composed of three seven-point bipolar items. For example, participants responded to the following statement: “Overall, how would you rate the level of sustainability of this product?” on a seven-point scale (1 = “not sustainable at all”; 7 = “very sustainable”) ($\alpha_{low} = .96$, $\alpha_{moderate} = .93$, and $\alpha_{high} = .97$) (cf. Kozup, Creyer, and Burton 2003).

Other dependent measures, willingness to pay a premium price and purchase intentions, were consistent with experiment 1 except that multi-item measures were adopted. Willingness to pay a premium price (WPPP) was assessed with three items (Netemeyer et al. 2004). Participants indicated agreement with two items: “The price of this product would have to go up quite a bit before I would switch to another laundry detergent”; “I am willing to pay a higher price for this product than for other laundry detergents” (1 = “strongly disagree” and 7 = “strongly agree”), and responded to a final 7-point scale item (5 point increments from 0 to 30), “I am willing to pay ___% more for this product over other laundry detergents” ($\alpha_{Low} = .97$, $\alpha_{Moderate} = .83$, and $\alpha_{High} = .84$). Purchase intention was measured using three items: “not likely/very likely,” “less likely/more likely,” and “not probable/very probable.” All three items used seven-point bipolar scales ($\alpha_{Low} = .91$, $\alpha_{Moderate} = .92$, and $\alpha_{High} = .93$) (Kozup, Creyer, and Burton 2003).
RESULTS

Manipulation and Demand Effect Checks. Participants indicated awareness of the sustainability disclosure manipulations (i.e., presence/absence of dimensions and/or index. When the index disclosure was present, 86% recalled seeing it and 89% accurately reported not seeing the sustainability index score in the index disclosure absent conditions ($\chi^2 = 134.08; p < .001$). Similarly, 86% reported seeing dimensional information when present, while 92% said they did not see the information in the dimension absent conditions ($\chi^2 = 143.88, p < .001$). Finally, disclosures affected the perceived sustainability levels associated with the brands. The presence of either an index ($F(1, 189) = 121.67, p < .001$) or dimensions ($F(1, 189) = 118.42, p < .001$) on the package had a significant effect on perceived sustainability levels, relative to the control condition. A hypothesis guessing question was included at the end; the analysis below was conducted with the 191 respondents making no brand-related inferences (i.e., the color of Tide) and having no suspicions of the study’s purpose.5

Tests of Hypotheses for Product Evaluations. Given the mixed experimental design, a series of mixed ANOVAs for each of the dependent variables were conducted, followed by planned contrasts (Table 3). As expected, the main effect of sustainability level across laundry detergents was significant for sustainability perceptions ($F(1, 187) = 174.11, p < .01$), willingness to pay a premium price ($F(1, 187) = 102.09, p < .01$), and purchase intentions ($F(1, 187) = 64.41, p < .01$). While I discuss the interactions below, the pattern of means shown in Table 1 supports H1. In general, relative to the no sustainability information (i.e., control condition), when moderate levels of sustainability are disclosed, there are no differences across the dependent variables. Conversely, low (high) levels of sustainability have unfavorable (favorable) effects across the dependent variables. There was a significant two-way interaction of
sustainability level and dimension on perceptions of sustainability \(F(2, 187) = 20.27, p < .01\), willingness to pay a premium price \(F(2, 187) = 6.10, p < .05\), and purchase intentions \(F(2, 187) = 8.97, p < .01\). Additionally, a significant two-way interaction of sustainability level and index emerged on the perception of sustainability \(F(2, 187) = 33.54, p < .01\), willingness to pay a premium price \(F(2, 187) = 13.07, p < .01\), and purchase intentions \(F(2, 187) = 9.37, p < .01\).

These effects of the level and two-way interactions shown in Table 3 were qualified and not directly interpretable due to significant three-way interactions \(p < .01\) across all dependent measures.

For example, a significant three-way interaction \(F(2, 187) = 15.30, p < .01\) emerged on the perception of sustainability. Consider the pattern of means in Table 4 when the brand has a low level of sustainability. Relative to the package control that does not present either dimensions or an index, contrasts indicate that the product is rated less favorably when dimension information is present than when dimensions are absent \((M_{\text{Dimension_Present}} = 2.90 \text{ vs. } M_{\text{Dimension_Control}} = 4.19; F(1, 187) = 17.29, p < .01\). A similar pattern of results emerged when the index score is disclosed. A low sustainability level is rated less favorably when the index score is present than when the index score is absent \((M_{\text{Index_Present}} = 2.51 \text{ vs. } M_{\text{Index_Control}} = 4.19; F(1, 187) = 29.40, p < .01\). In general, the pattern of means in Table 4 shows that relative to the control in which the level is not indicated by either an index or dimensions, all disclosure formats are similarly effective in reducing perceptions of sustainability when the product level is low. When the level of sustainability disclosed was moderate, the perception of sustainability was more favorable when both dimensions and index were disclosed than when the index (only) was disclosed \((M_{\text{Dimension_Present_Index_Present}} = 4.33 \text{ vs. } M_{\text{Dimension_Absent_Index_Present}} = 3.87; F(1, 187) = 4.28, p < .05\). However, as can be seen by the means in Table 4, the no sustainability
information control is essentially at the scale midpoint (M=4.21), and the means across disclosure format alternatives are relatively similar, ranging from 3.87 to 4.33. Compared to the no information disclosure control, a high sustainability level was rated more favorably when dimensions (MDimension_Control = 4.03 vs. MDimension_Present = 5.38; F(1, 187) = 20.97, p < .01) or index disclosures were present (MIndex_Control = 4.03 vs. MIndex_Present = 5.40; F(1, 187) = 21.78, p < .01). The significant three-way interaction and pattern of means offers substantial support for the H2a prediction for the sustainability perception dependent variable.

The significant three-way interaction (F(2, 187) = 6.29, p < .01) on willingness to pay a premium price revealed a similar series of contrasts. In low sustainability level conditions, participants reported lower willingness to pay a premium price when the index is disclosed (versus absent) (MIndex_Present = 1.86 vs. MIndex_Control = 2.54; F(1, 187) = 6.64, p < .05). A moderate level of sustainability in the various claims does not influence willingness to pay a premium price (M’s range between 2.51 and 2.78 across conditions). For the high sustainability level, the presence of either dimensions (MDimension_Present = 2.46 vs. MDimension_Control = 3.38; F(1, 187) = 8.54, p < .01) or the index score (MIndex_Present = 2.46 vs. MIndex_Control = 3.50; F(1, 187) = 11.07, p < .01) increased willingness to pay a premium price. These three way interactions and pattern of means provide partial support for H2b.

For purchase intentions, a significant three-way interaction (F(2, 187) = 8.82, p < .01) again emerges. Contrasts indicate that consumers seem less likely to purchase a low sustainability level laundry detergent when dimensions (MDimension_Present = 4.04 vs. MDimension_Control = 2.63; F(1, 187) = 16.34, p < .01) or the index score (MIndex_Present = 4.04 vs. MIndex_Control = 2.53; F(1, 187) = 18.77, p < .01) are present versus when no disclosures are present (i.e., the control condition). As predicted, providing information indicating a moderate
level of sustainability does not influence purchase intentions (M’s range between 3.95 and 4.07 across conditions). However, participants report being more likely to purchase laundry detergent with a high sustainability level when dimensions ($M_{\text{Dimension\_Control}} = 4.26$ vs. $M_{\text{Dimension\_Present}} = 5.31$; $F(1, 187) = 8.28, p < .01$) or the index score alone ($M_{\text{Index\_Control}} = 4.26$ vs. $M_{\text{Index\_Present}} = 5.24$; $F(1, 187) = 7.31, p < .01$) are shown (versus no information). However, the mean for dual disclosure (i.e., those including both an index and dimensions) is not significantly greater than when information is provided in only one format ($M = 5.52$). These results provide support for $H_2c$ (see Table 4).

**Product choice.** After checking the parallel regression assumption ($\chi^2 = 1.83, p > .40$), the influence of dimensions and/or index scores on product choice was evaluated using an ordinal regression ($H_{1c}, H_{2d}$). Results indicated that the presence of either dimensional ($\beta = 1.24$, Wald = 16.42, $p < .01$) or index scores ($\beta = 1.01$, Wald = 11.05, $p < .01$) led to selection of a laundry detergent with greater sustainability utility ($\chi^2 = 25.96, p < .01$). Results revealed that 73.0% of participants chose the more sustainable detergent when dimensions were disclosed versus 46.2% when disclosures were absent ($\chi^2 = 14.58, p < .01$). Likewise, 68.3% chose the more sustainable detergent when an index score was present versus 51.1% in the no disclosure condition ($\chi^2 = 11.92, p < .01$). When both the index and dimensions were provided, 75% of participants selected the more sustainable detergent versus 54.7% in the control condition ($\chi^2 = 6.53, p < .05$). These results support $H_{1c}$, but not $H_{2d}$.

**Mediating Role of the Perception of Sustainability**

To test the mediation predicted in $H_3$, I used the Preacher and Hayes’ (2008) bootstrapping method ($n = 5,000$) (cf. Zhao, Lynch, and Chen 2010). The main effects and the interaction terms related to information disclosure were included in the model as key predictors,
perceptions of product sustainability was included as the mediator, while willingness to pay a premium price and purchase intentions were included as dependent variables.

Results indicate that perceived product sustainability mediates the influence of both low and high sustainability levels on the dependent measures. In terms of willingness to pay a premium price, main effects of dimension (indirect effect_{Low} = -.46, SE_{Low} = .15, 95% CI_{Low} = - .78 to -.21) and index disclosures (indirect effect_{Low} = -.60, SE_{Low} = .16, 95% CI_{Low} = -.94 to -.32), and the interaction term between dimension and index disclosures are mediated by perceived sustainability in low sustainability level disclosures (indirect effect_{Low} = .57, SE_{Low} = .19, 95% CI_{Low} = .24 to .96) (see Panel A of Figure 5). Similar findings emerged for willingness to pay a premium price when the sustainability level is high. The main effects of dimension (indirect effect_{High} = .34, SE_{High} = .14, 95% CI_{High} = .08 to .65) and index disclosures (indirect effect_{High} = .34, SE_{High} = .15, 95% CI_{High} = .08 to .64), and the interaction term between dimension and index disclosures are mediated by sustainability perception on willingness to pay a premium price (indirect effect_{High} = -.22, SE_{High} = .14, 95% CI_{High} = -.55 to -.01). The mediated moderation results indicated that perceived product sustainability mediates the effect of sustainability labeling factors on willingness to pay a premium price across low and high sustainability levels.

As shown in Panel B of Figure 5, perceptions of sustainability also mediated the path between the disclosure factors and purchase intentions. The main effects of dimension (indirect effect_{Low} = -.85, SE_{Low} = .23, 95% CI_{Low} = -.1.30 to -.42) and index disclosures (indirect effect_{Low} = -1.11, SE_{Low} = .22, 95% CI_{Low} = -1.54 to -.70), and the interaction term between dimension and index disclosures are mediated by perceived sustainability when the sustainability level is low (indirect effect_{Low} = 1.04, SE_{Low} = .30, 95% CI_{Low} = .49 to 1.63). When the sustainability level is
high, the main effects of dimension (indirect effect_{High} = .74, SE_{High} = .18, 95% CI_{High} = .41 to 1.11) and index disclosures (indirect effect_{High} = .75, SE_{High} = .19, 95% CI_{High} = .41 to 1.14), and the interaction term between dimension and index disclosures mediate the sustainability perception on purchase intentions (indirect effect_{High} = -.49, SE_{High} = .23, 95% CI_{High} = -.96 to -.05). Similar to the willingness to pay a premium price measure, the perception of sustainability mediated the effect of labeling factors on purchase intentions across low and high sustainable products.

The results of mediation analyses support H3 as both low and high levels of sustainability disclosure information was found to be significantly mediated by product sustainability perceptions on willingness to pay a premium price and purchase intentions. The mediating effect of the perception of product sustainability was not present for the moderate sustainability information disclosure condition.

**DISCUSSION**

Experiment 2 again suggests that sustainability utility associated with disclosure information influences consumers’ product evaluations and choice. Additionally, the findings suggest that either index-oriented or dimensional scores may both be effective means of sustainability communication. That is, when compared to a no disclosure control condition (similar to the current marketplace), consumers seemed to incorporate sustainability levels into their decision-making processes when either indices or more detailed dimensional information was disclosed. The provision of *either* index or dimensional information appeared sufficient to influence consumer evaluations (i.e., more complex sustainability information may not be required for accurate consumer evaluations; Balasubramanian and Cole 2002). That is, the amount of information did not moderate the strength of the effects of sustainability information.
Consistent with Viswanathan and Childers (1996), these nonsignificant findings across formats may be due to the integrative layout of disclosures, including both numerical and verbal information. While further research is needed, the results suggest that disclosing dimensional (i.e., more complex) information is not necessary to influence consumer evaluations. Perhaps the provision of information—any information—about sustainability serves as a diagnostic attribute that leads some consumers to more mindful choices. This finding suggests that the presence of even limited information may lead to more sustainable choices and the potential importance of brand-level disclosures (an important consideration for both managers and policy makers).

Furthermore, experiment 2 suggests that perceptions of product sustainability may underlie sustainability utility effects on crucial consumer outcomes. That is, the results suggest that the provision of either dimensions or an index score may influence consumers’ perceptions of sustainability, which in turn influences both willingness to pay a premium price and purchase intentions. The pattern of mediating effects on willingness to pay a premium price and purchase intentions was similar across low and high sustainability levels.

While experiments 1 and 2 established sustainability utility effects for consumer cleaning products, such effects may be attenuated for food product categories given their close association with health related consequences (i.e., nutrition labeling) and taste, potentially with lower salience and less direct concern for environmental issues (e.g., Borin, Cerf, and Krishnan 2011; Grankvist and Biel 2007). In fact, purchases of sustainable food have been driven by consumers’ interest in their health (Sahota et al. 2009). Experiment 3 was designed to generalize the findings to different product categories as well as to examine a potential attenuating utility effect for food products. This is particularly important given that types of environmental impacts
associated with a certain product category may be different, and consumer perceptions of environmental issues may vary among categories.
CHAPTER 6

Experiment 3
EXPERIMENT 3

HYPOTHESES

To extend the findings from experiments 1 and 2, this study utilizes a different product category that may attenuate effects of sustainability utility on consumers’ responses and product evaluations. Specifically, I examine the effects of sustainability disclosures on the evaluation of food products. While previous literature has focused mainly on the effects of sustainability disclosures (i.e., organic claim) on food product evaluations (e.g., Lee et al. 2013; Schuldt and Hannahan 2013), the role of sustainability level disclosures (i.e., an index score) on consumers’ product evaluations has been limited (e.g., Vanclay et al. 2010).

Vanclay et al. (2010) was one of the few studies that used different sustainability levels to examine product evaluations. The authors found that providing low and high levels of carbon footprints on food products in a local convenience store may be an effective intervention tool to increase purchases of sustainable foods. For highly sustainable products, sales increased 4% after providing the green label that indicated a low level of carbon footprints. Conversely, when the black label was used to reveal a high level of carbon footprints, sales decreased 6%. The authors utilized a color-coding scheme (i.e., low level: green, moderate level: amber, and high level: black), rather than objective information to specify the amount of carbon footprints on disclosures. While the changes in the sales volume after implementing the labeling system seem to be small (4% or 6%), findings suggest that the provision of sustainability level disclosures may influence food product evaluations, consistent with previous findings in experiments 1 and 2. Compared to the utility effect associated with cleaning products, I expect such effect to be attenuated for food products given their direct personal health impact (Borin, Cerf, and Krishnan
I further extend prior literature by providing objective values of food products on the front of the package, rather than using the color-coding scheme. Experiment 3 initially begins to address sustainability utility effects, generated by a specific, quantified sustainability level, on packaged food products. In addition, extending findings from experiments 1 and 2 concerning assimilation effects of sustainability disclosure information, this study examines the potential emergence of contrast effects based on internal reference points of frozen packaged foods. Specifically, consumers are expected to contrast or ignore an extremely high index value (i.e., 9 out of 10). Consistent with H1 dealing with (c) willingness to pay a premium price and (d) purchase intentions, I also posit that sustainability utility effects may emerge for (a) perceptions of sustainability and (b) perceived taste.

**METHODOLOGY**

**Construction of the Sustainability Disclosure**

*Pretest.* Given that the type of environmental consequences associated with product categories vary (The Sustainability Consortium 2013), in the pretest used in experiment 1 \( n = 45 \), eight dimensions of sustainability (OPEN IO 2013) were evaluated to gauge the most appropriate dimensions to include in the sustainability disclosure for food products. Participants rated “how important each of the following factors are to you personally in determining sustainability ratings on packaged food products” (1 = “not important at all”; 9 = “very important”). Additionally, to better define the factors that influence the environment, participants were asked to rank order the top five factors that they perceive as having the greatest environmental impact. Based on the results of this study, the sustainability disclosure for food products was created (water, energy, natural resources, material efficiency, and people and community).
For the target stimuli in the main study, frozen packaged food products were selected based on prior literature that suggests a substantially higher use of energy needs for the production of processed products (i.e., frozen and canned products) than unprocessed products (vegetables and fruits) (e.g., Jungbluth, Tietje, and Scholz 2000). Results from the pretest in experiment 1 \((n = 38)\) indicated that internal reference points of frozen packaged foods were 2.76 and 6.47 for low and high, respectively.

**Study Design**

The main experimental study was a 2 (types of frozen packaged food: apple pie vs. garden fresh pizza) \(\times 3\) (brand-level sustainability rating: absent (control) vs. low (3) vs. high (9)) between-subjects experimental design. The sustainability levels were rotated across frozen food products.

Examples of versions of stimuli appear in Appendix E. The sustainability index value of 3 or 9 is provided in the center of the label, indicating either a more favorable or less favorable level of sustainability, respectively. Two variations of frozen foods were used in an effort to examine if the results differed across the two products.

**Procedures, Participants, and Measures**

*Procedures and Participants.* A total of 203 non-student adults from an online panel \((M_{\text{age}} = 34.2\) years; 78 females) were randomly assigned to one of the experimental conditions. Similar to the two previous experiments, participants were given a definition of sustainability and the information regarding sustainability scores. Participants were then exposed to the stimuli, followed by a series of questions.

*Measures.* Perceptions of sustainability \((\alpha = .91)\), willingness to pay a premium price \((\alpha = .80)\), and purchase intentions \((\alpha = .94)\) were based on the same scales used in experiment 2.
(Kozup, Creyer, and Burton 2003; Netemeyer et al. 2004). Perceived taste was a seven-point bipolar scale (1 = “very poor taste” to 7 = “very good taste”).

RESULTS

Manipulation and Demand Effect Checks. Participants indicated awareness of the sustainability disclosure manipulations (i.e., presence/absence of index). When the index disclosure was present, 87% recalled seeing it and 81% accurately reported not seeing the sustainability index score in the index disclosure absent conditions ($\chi^2 = 89.16; p < .001$). In addition, participants were asked whether product packaging revealed high (9) or low (3) overall sustainability levels for each brand encountered. Significant differences between the high and low conditions revealed that the sustainability manipulation worked as intended across product categories (apple pie: $M_{\text{Low}} = 3.21$ vs. $M_{\text{High}} = 6.34$; $F(1, 61) = 180.51, p < .001$; frozen pizza: $M_{\text{Low}} = 3.22$ vs. $M_{\text{High}} = 6.08$; $F(1, 61) = 137.58, p < .001$). Based on the responses on a hypothesis guessing question, ten participants were eliminated from subsequent analyses.

Tests of Hypotheses for Product Evaluations. A series of ANOVAs were conducted, followed by planned contrasts (Table 5). Cell means are shown in Table 6. The main effect of food type was significant for purchase intentions ($F(1, 197) = 7.64, p < .01$). More importantly, consistent with $H_1$, the main effect of sustainability level was significant for sustainability perceptions ($F(1, 197) = 38.80, p < .01$), perceived taste ($F(1, 187) = 4.70, p < .01$), willingness to pay a premium price ($F(1, 187) = 6.17, p < .01$), and purchase intentions ($F(1, 187) = 14.59, p < .01$). The pattern of means indicated that compared to the control condition in which no sustainability information was provided, consumers evaluated frozen packaged foods with high sustainability levels more favorably. Conversely, when low sustainability level disclosures were provided, consumers evaluated the packaged foods either slightly less favorably or similarly to
the control condition. These results suggest that consumers assimilated both low and high sustainability level information.

There was no two-way interaction of food type and sustainability level on all dependent measures, indicating that sustainability disclosures may create sustainability utility for food products (see Table 6). These results suggest the robustness of sustainability disclosure effects for food products and provide support for H1.

**DISCUSSION**

Consistent with previous literature on the effects of sustainability level disclosures (e.g., Vanclay et al. 2010), the results from experiment 3 suggest that providing category-level sustainability disclosures can create sustainability utility for food products, which in turn, can influence product evaluations. Interestingly, consumers assimilated both index scores of 3 and 9 although the reference points of frozen packaged food category ranged from 2.76 to 6.47. Perhaps, the lack of a contrast effect suggests complex trade-offs associated with sustainability attributes and health-related factors. For instance, a very high sustainability level on food products may be deemed extremely healthy, creating assimilation effects. I further examine the role of healthfulness of foods and sustainability level disclosures in the process of impacting sustainability utility (experiment 6).

To extend findings from experiments 1, 2, and 3, experiment 4 considers prior findings regarding self-enhancement motives (Beauregard and Dunning 1998). Self-enhancement, the desire to appear socially and environmentally responsible to others, is expected to yield positively biased responses to environmentally sensitive choices, making it plausible that self-enhancement may be at least partially driving sustainability utility. In addition, by explicitly incorporating the latitude of judgment, an important boundary condition for potential liability
effects may be observed. Thus, the design of experiment 4 addresses the tendency to self-enhance and the boundary conditions for the latitude of judgment.
CHAPTER 7

Experiment 4
EXPERIMENT 4
HYPOTHESES

Prior research indicates that consumer responses related to prosocial and pro-environmental behaviors may be driven by the desire to appear socially and environmentally responsible to others. That is, consumers prompted to evaluate products in first person (e.g., “how I feel”) may be more likely to reveal much more favorable evaluations for purportedly sustainable products. Two methods researchers have applied to more accurately capture unbiased responses to environmentally sensitive questions is to have respondents self-defocus, deploying a “self versus other” and “public versus private” manipulations to control for this propensity to self-enhance (cf. Luchs et al. 2010; White and Peloza 2009). That is, consumers primed to consider the evaluations of ‘others’ or ‘private’ should provide unbiased evaluations. Further, their findings suggest a cautionary conclusion for practitioners; product evaluations may not improve substantially with increased sustainability efforts.

Prior findings may be moderated by where brand-level sustainability disclosures fall on the latitude of judgment continuum. Specifically, respondents considering how “I” evaluate extremely low or high sustainability levels (i.e., at levels outside the latitude of acceptance) may be more likely to assimilate this disclosure information, revealing sustainability utility effects (consistent with H1). That is, the desire to appear prosocial to others may drive the assimilation of disclosure levels when brand-level sustainability ratings reside outside of the category latitude of acceptance. Such assimilation of product alternatives outside category reference point boundaries suggests biased assimilation (Pronin, Gilovich, and Ross 2004). For individuals who want to be perceived as prosocial, extreme sustainability disclosures should lead to more biased effects (Ross, Lepper, and Hubbard 1975).
Further, addressing the propensity to self-enhance should suppress these biased responses. Those primed to consider how others would react to extreme sustainability disclosures should contrast this information in which very high sustainability level decreases perceived quality. Note, this prediction appears consistent with Luchs et al. (2010), who examined disclosures of extreme sustainability information (non-green/green; average rating of 10). Unlike previous studies demonstrating liability of a sustainability attribute, which influences product quality for strength related products, I show that sustainability attribute can serve as utility. Prior research may have examined products sufficiently high in sustainability that liability perceptions are likely, thus diminishing evaluations of product performance. For example, CPG manufacturers of cleaning products acknowledged that extremely environmentally friendly products may tend to be too gentle, thus reducing perceived product performance. Communication strategies in the current marketplace may at times have produced unintended effects on product inferences.

Based on consumers’ intuition regarding product quality of very high sustainable products, experiment 4 addresses when such negative relationships may emerge by incorporating latitude of judgment. Specifically, I predict that when brand sustainability disclosures fall within the category-level latitude of acceptance, consumers will assimilate the external information, and H1 predictions will be supported. In addition, the focus of H3 is a three-way interaction, driven by the general disregard to the latitude of acceptance for consumers motivated to self-enhance (i.e., those in self construal conditions). As a result, this study more thoroughly addresses how (1) the presence of disclosure information, (2) the information’s position vis-à-vis the latitude of acceptance, and (3) tendency to self-enhance interact to influence consumer response to sustainability disclosures. Formally stated, the following three-way interaction is predicted:
H₄: Sustainability disclosure position within or outside the latitude of acceptance, construal level, and the presence of disclosure information for brands in the category interact to increase [decrease] (a) perceived quality, (b) willingness to pay a premium price, and (c) purchase intentions.

(1) For consumers with a self construal, the presence of disclosures that fall above [below] the category-level latitude of acceptance will be assimilated, leading to [un]favorable sustainability utility effects.

(2) For consumers with an other construal, the presence of disclosures that fall above [below] the category-level latitude of acceptance will be contrasted, leading to [un]favorable sustainability utility effects.

Prior findings suggest that consumers often associate highly sustainable products with reduced effectiveness (Lin and Chang 2012) and quality (Luchs et al. 2010). However, these studies have not considered the latitude of judgmental continuum to determine the boundary condition in which sustainability utility emerges. Given that sustainability levels that fall within the category-level latitude of acceptance will be assimilated (H₁), I predict that high (low) brand-level disclosures yield sustainability utility, influencing product quality evaluations leading to purchase intentions. Formally stated:

H₅: Perceptions of product quality/product performance mediate effects of direct and moderating impact of the disclosure on (a) willingness to pay a premium price and (b) purchase intentions.

**METHODOLOGY**

**Study Design**

Experiment 4 was a 3 (latitude of acceptance: within vs. outside vs. control) × 2 (brand-level sustainability rating: low vs. high) × 2 (construal level: self vs. other) mixed experimental design. Latitude of acceptance and construal level were between-subjects factors, while sustainability level was a within-subjects factor. A projective questioning technique was incorporated (Fisher 1993) to address the propensity to self-enhance. Consistent with Luchs et al. (2010), participants were primed with self or other construals. For the other construal conditions,
participants were asked to consider how others (i.e., the “average American consumer”) would respond to the dependent variables, while in the self condition, they answered the questions in first person (similar to experiments 1, 2, and 3). Detergent packages also provided information held constant across brands (e.g., warnings, number of loads). Both the fictitious brand names and sustainability levels were rotated across the detergent packages to control for any possible order or brand name effects (Appendix F).

**Procedures, Participants, and Measures**

*Procedures and Participants.* A total of 200 non-student adults from an online panel (M<sub>age</sub> = 33.9 years; 112 females) were randomly assigned to one of the experimental conditions. The instructions were similar to the previous three experiments. To simulate a retail environment in which consumers view product choices side-by-side on the shelf (similar to experiment 2), participants were presented with images of both detergents for simultaneous examination. After viewing the products, participants completed a series of questions.

*Measures.* Dependent measures of perceived quality (r<sub>low and high</sub> = .88), willingness to pay a premium price (α<sub>low</sub> = .81 and α<sub>high</sub> = .78) and purchase intentions (α<sub>low</sub> = .96 and α<sub>high</sub> = .95) for this study were consistent with previous experiments.

**RESULTS**

*Manipulation and Demand Effect Checks.* In disclosure present conditions, 93% of participants recalled seeing the disclosure, while 86% accurately reported not seeing the disclosure when absent (χ² = 121.99, p < .001). Further, relative to the control condition (i.e., disclosure absent), the disclosure level manipulations worked as intended, influencing perceptions of sustainability (M<sub>Low Within</sub> = 4.58 vs. M<sub>Low Outside</sub> = 2.97 vs. M<sub>Low Control</sub> = 3.91; F(1,
197) = 11.40, \( p < .001 \) and \( M_{\text{High With}} = 4.12 \) vs. \( M_{\text{High Outside}} = 5.15 \) vs. \( M_{\text{High Control}} = 3.86; F(1, 197) = 9.07, p < .001).^{8}

In addition, participants were asked “Were your responses based on what the average American consumer believed or what you believe?” on a seven-point bipolar scale (1 = “what I believed”; 7 = “what the average American believed”), revealing that the construal level manipulation was successful (\( M_{\text{Self}} = 3.10 \) vs. \( M_{\text{Other}} = 4.31; F(1, 198) = 20.29, p < .01 \)). Finally, a question included to assess hypothesis guessing revealed that no participant guessed the purpose of the study.

*Tests of Hypotheses for Product Evaluations.* A series of mixed ANOVAs for the dependent variables were conducted, followed by planned contrasts. There were significant main effects of sustainability level on perceived quality (\( F(1, 194) = 19.39, p < .01 \)), willingness to pay a premium price (\( F(1, 194) = 28.07, p < .01 \)), and purchase intentions (\( F(1, 194) = 26.40, p < .01 \)). Additionally, a significant main effect of construal level emerged on willingness to pay a premium price (\( F(1, 194) = 5.72, p < .05 \)) and purchase intentions (\( F(1, 194) = 8.32, p < .01 \)). These main effects, however, are superseded by higher order of interactions.

For perceptions of quality (H4a), two-way interactions emerged for both sustainability level and construal (\( F(2, 194) = 14.87, p < .01 \)), as well as sustainability level and latitude of acceptance (\( F(2, 194) = 5.64, p < .01 \)). These two-way interactions, however, were qualified by the three-way interaction of sustainability level, construal, and latitude of acceptance (\( F(2, 194) = 4.68, p < .05 \); Figure 3). As predicted, very low (1) [high (9)] sustainability levels outside of the latitude of acceptance (i.e., in the ejection area) led to product evaluations reflecting lower [higher] perceived product quality in the self condition (\( M_{\text{Self Low Outside}} = 3.18 \) vs. \( M_{\text{Other Low Outside}} = 4.11; F(1, 194) = 13.81, p < .01; M_{\text{Self High Outside}} = 5.36 \) vs. \( M_{\text{Other High Outside}} = 4.19; F(1, 194) = 13.10, p < .01 \)).
However, when the tendency to self-enhance was attenuated (i.e., the other condition), perceptions of quality were not influenced by extreme sustainability levels (M’s = 4.11 and 4.19, p > .50; Figure 6), providing support for H4a1 and H4a2.

Notably, when sustainability levels were high (6) or low (4), but within the latitude of acceptance, findings were consistent with those from experiments 1 through 3 in which the sustainability information was assimilated. The influence of disclosures on sustainability utility emerged for product quality regardless of construal manipulation (M_{Self, High, Within} = 5.14 vs. M_{Self, Low, Within} = 3.96, p < .01 and M_{Other, High, Within} = 4.78 vs. M_{Other, Low, Within} = 3.80, p < .05).

With regards to willingness to pay a premium price (H4b), results revealed significant two-way interactions for sustainability level and construal (F(2, 194) = 18.14, p < .01), as well as sustainability level and latitude of acceptance (F(2, 194) = 9.80, p < .01). More importantly, the three-way interaction of sustainability level, construal, and latitude of acceptance (F(2, 194) = 4.24, p < .05; Figure 6) emerged. When sustainability levels were low (4) and very low (1), willingness to pay a premium price was higher for others than the self condition (M_{Self, Low, Within} = 2.26 vs. M_{Other, Low, Within} = 3.05; F(1, 194) = 5.86, p < .05; M_{Self, Low, Outside} = 1.72 vs. M_{Other, Low, Outside} = 3.36; F(1, 194) = 24.74, p < .01). There were no significant contrasts for high sustainability levels (6 and 9). Additionally, addressing the role of enhancement (i.e., the other condition) attenuated consumers’ willingness to pay a premium in extreme sustainability levels (M’s = 3.36 and 3.51, p > .50; Figure 6), providing support for H4b1 and H4b2.

Similar to the results for perceived quality, when sustainability levels were high (6) or low (4), but within the latitude of acceptance, findings were consistent with those from experiments 1 through 3 in which the sustainability information was assimilated. The influence of disclosures on sustainability utility emerged for willingness to pay a premium price for the
self condition and (marginally) for the other (M_{Self-High-Within} = 3.77 vs. M_{Self-Low-Within} = 2.26, p < .01 and M_{Other-High-Within} = 3.61 vs. M_{Other-Low-Within} = 3.05, p = .07).

For intent to purchase laundry detergent (H_{4b}), significant two-way interactions emerged for sustainability level and construal (F(2, 194) = 11.27, p < .01), sustainability level and latitude of acceptance (F(2, 194) = 7.37, p < .01), and construal and latitude of acceptance (F(2, 194) = 8.48, p < .01). Overall, consumers indicated a greater likelihood to purchase highly sustainable detergents when in the self (versus other) conditions (M_{Self-High} = 5.59 vs. M_{Other-High} = 4.54; F(1, 198) = 23.78, p < .01). Of note, this finding held both within and outside of the latitude of acceptance, suggestive of self-enhancement behavior.

Within the latitude of acceptance, compared to the laundry detergent with no disclosure, consumers were less likely to purchase products with a low sustainability level (4) within the latitude of acceptance (M_{Low-Control} = 4.59 vs. M_{Low-Within} = 3.64; F(1, 198) = 4.55, p = .01), regardless of construal. Conversely, compared to the control condition, laundry detergents with high sustainability scores were evaluated more favorably whether they were within (level=6) or outside (level=9) of the latitude of acceptance (M_{High-Control} = 4.48 vs. M_{High-Within} = 5.25 vs. M_{High-Outside} = 5.44; F(1, 198) = 6.68, p < .01). Again, these differences arose regardless of self versus other construal. While the predicted three-way interaction did not emerge, the pattern of these two-way interactions provided partial support for H_{4c1} and H_{4c2}.

To summarize, results suggest that, for perceptions of product quality and willingness to pay a premium price, sustainability levels within the latitude of acceptance were assimilated regardless of self-enhancement. Further, assimilation effects emerged for sustainability levels outside of the latitude of acceptance in the self conditions, revealing an assimilation bias (Pronin et al. 2004). That is, contrary to prior liability literature, I find that, if sustainability disclosures
reveal brand levels within the category-based latitude of acceptance, this information is assimilated regardless of propensity to self-enhance, and sustainability utility results. However, when sustainability disclosure information falls outside of the category-based latitude of acceptance (i.e., extreme ratings), self-enhancement moderates whether information is assimilated or contrasted. Specifically, when the tendency to self-enhance is controlled for, contrast effects arise, and sustainability disclosures have less impact on consumer product evaluations.

*Mediating Role of Perceived Quality.* To test the mediation predicted in H5, Preacher and Hayes’ (2008) bootstrapping technique (*n* = 5,000) was used (cf. Zhao, Lynch, and Chen 2010). As shown in Figure 7, results indicated that perceived quality mediated the influence of both low and high sustainability levels on willingness to pay a premium price and purchase intentions. For willingness to pay a premium price, the main effect of latitude of acceptance was mediated by perceived quality across sustainability levels (indirect effect$_{Low}$ = -.26, SE$_{Low}$ = .09, 95% CI$_{Low}$ = -.46 to -.11; indirect effect$_{High}$ = .15, SE$_{High}$ = .08, 95% CI$_{High}$ = .01 to .31), supportive of H5a. Similarly, for purchase intentions, the main effect of latitude of acceptance was mediated by perceived quality whether sustainability levels were low (indirect effect$_{Low}$ = -.28, SE$_{Low}$ = .10, 95% CI$_{Low}$ = -.49 to -.11) or high (indirect effect$_{High}$ = .20, SE$_{High}$ = .10, 95% CI$_{High}$ = .01 to .41), supportive of H5b. However, for both dependent measures, the mediating role of quality was not significant for the indirect moderating effects (i.e., the interactions between latitude of acceptance, construal, and sustainability level). In sum, these findings suggest that while these interactions influenced both willingness to pay a premium price and purchase intentions, their indirect effects through quality did not (i.e., no mediated moderation).
DISCUSSION

In general, experiment 4 suggests that when participants are directly asked for their own personal evaluations of products, a polarizing effect emerges for extreme disclosure information (i.e., at very high levels, participants indicated they are more positive about the detergents, while, at very low levels, participants indicated more negativity). The findings seem to support the notion that the use of projective techniques may reveal consumers’ more objective preferences, especially when sustainability levels presented are at extremes. Although the influence of disclosing reasonable levels of sustainability (i.e., levels within the latitude of acceptance) was attenuated slightly when the propensity to self-enhance was addressed, the patterns from experiment 4 generally replicated the findings from the previous experiments when sustainability levels were within the latitude of acceptance. Hence, the boundary condition of sustainability utility emerged, in addition to sustainability liability (e.g., Luchs et al. 2010).

Further, results reveal that the influence of self-enhancement is more pronounced in the presence of extreme information, suggesting that assimilation bias (cf. Pronin et al. 2004) occurs for sustainability disclosures. That is, for product evaluations, those in the self conditions assimilated extreme values, creating the utility effect even when disclosure levels were extremely high or low. Biased assimilation did not occur when self-enhancement was addressed via the projective technique. Overall, sustainability liability seems to occur when the sustainability scores fall outside the latitude of acceptance. As long as the levels are within the acceptable range, the liability effect is diminished.

Experiment 5 tests whether the findings from previous studies can be extended further into the product usage domain. Given that product effectiveness is the most important predictor of usage (Folkes, Martin, and Gupta 1993; Zhu, Billeter, and Inman 2012), I extend findings
related to product inferences (i.e., perceived quality) to the actual product usage evaluation. The underlying mechanism driving sustainability utility is examined using consumers’ perceived efficacy.
CHAPTER 8

Experiment 5
EXPERIMENT 5

HYPOTHESES

Based on findings on sustainability liability emerging outside the latitude of acceptance (experiment 4), this study examines how the moderating role of perceived efficacy of consumer sustainability behaviors may help explain the mechanism underlying sustainability liability. Self efficacy refers to the extent to which an individual strongly believes in addressing environmental issues (Wiener 1993). I posit that the provision of sustainability information will interact with consumers’ own perceived efficacy. Specifically, the influence of sustainability information may be more pronounced for consumers low in perceived efficacy based on their ambivalence and susceptibility to external information (Chang 2011). In addition, low efficacious consumers (i.e., those with weaker belief in their efforts to protect the environment) may be more likely to participate in activities to achieve collective goals under the guidance and observation of others’ behaviors (van Lange et al. 1992). This suggests that, compared to highly efficacious consumers who strongly believe in their efforts to protect the environment and are less influenced by others’ sustainable behaviors (Wiener 1993), low efficacious consumers are more likely to be affected by extreme sustainability information in public rather than a private context. That is, rather than committing to sustainable behaviors mainly due to consumers’ own beliefs about their ability to protect the environment for highly efficacious consumers, low efficacious consumers are more likely to be vulnerable to the context in which the pro-environmental behavior takes place.

Specifically, when brand sustainability disclosures fall within the latitude of acceptance, all consumers should assimilate the external information. That is, I do not expect strong differences in product evaluations across consumer efficacy levels. The influence of perceived efficacy is expected to emerge when the brand-level disclosures in a public context fall outside
the category-level latitude of acceptance. Perceived efficacy is expected to interact with the public/private context and the latitude of judgment, resulting in a three-way interaction:

H6: The effects of latitude of judgment and context are moderated by consumers’ perceived efficacy. When disclosed levels are outside the latitude of acceptance, consumers with low perceived efficacy will report higher [lower] (a) product performance, (b) willingness to pay a premium price, and (c) purchase intentions in a public (vs. private) context. The effects of latitude of judgment and context are less pronounced for consumers with high perceived efficacy.

METHODOLOGY

Study Design

Experiment 5 is concerned with product evaluations following the use of sanitizing wipes with different disclosed sustainability levels. Similar to experiment 1, participants were exposed to different labels on product packages across several product categories, including packaged food products and household cleaning products. The neutral brand names were adopted from a previous study (e.g., Lin and Chang 2012). The study was a 2 (latitude of judgment: within vs. outside) × 2 (context: private vs. public) between-subjects experimental design with perceived efficacy as a measured factor. Based on pilot tests, the brand sustainability levels were determined as 6 (within the latitude of judgment) and 9 (outside the latitude of judgment). The sustainability levels were labeled on the lid of the sanitizing wipes. The context manipulation was used to address the role of self-enhancement, similar to the construal level manipulation in experiment 4. In the private context, participants were told that all of their responses would be completely anonymous and confidential. Additionally, participants were told that cameras in the retail lab had stopped working. A two-way mirror in the retail lab was covered with dark fabric that made it invisible to participants. In contrast, in the public context, participants were told that all of their actions and responses would be observed by an experimenter behind the two-way
mirror and would be recorded. Both the brands of sanitizing wipes and sustainability levels assigned to particular brands were rotated and counter-balanced.

**Procedures, Participants, and Measures**

*Procedures and Participants.* A total of 115 undergraduate students participated in the study for course credit ($M_{age} = 21.9$ years; 56 females). Participants in the two-part study were randomly assigned to experimental conditions.

The first part of the study required participants to spend approximately 20 minutes in the retail lab, and for the second half, participants completed an online survey. Participants were given instructions similar to those used in the retail lab study (experiment 1) and a survey to complete during the first portion of the study. The instructions remained the same as in experiment 1, except for the inclusion of following scenario:

> With the recent change in weather, we have begun to see the beginning of the spread of the seasonal flu, H1N1, colds and other diseases. Imagine that as an organizer of an annual special event for the company you work for, part of your responsibility is to make sure that all furniture is sanitized. Your task is to clean the TWO CHAIRS at your table.

Upon the completion of the cleaning task, participants disposed used wipes in the trashcan. Then, participants completed the follow-up computer-based survey and were dismissed.

*Measures.* Dependent variables were measured in the retail lab after participants completed the cleaning task. All of the dependent measures remained the same as in experiment 1, except for product performance (1 = “gets the job done poorly” to 7 = “gets the job done well”). Rather than using perceived quality as in experiment 4, the evaluation of product performance was measured as participants physically used and tested the sanitizing wipes. Consumers’ perceived efficacy was measured with two (reverse-coded) items, seven-point Likert scale (“There is not much that any one individual can do about the environment” and “The conservation efforts of one person are useless as long as other people refuse to conserve”) ($r = .71$)
Ellen et al. 1991). During the second phase, participants completed a web-based survey including demographic questions, manipulation checks, and hypothesis guessing questions.

RESULTS

Manipulation and Demand Effect Checks. The context manipulation check question asked “I knew that someone was watching me when I made judgments about the products” on a seven-point Likert scale (1 = “strongly disagree”; 7 = “strongly agree”). The results revealed that the context manipulation worked as intended (M_{Private} = 3.74 vs. M_{Public} = 6.37; F(1, 110) = 67.10, p < .001). Three participants were eliminated from subsequent analyses based on a hypothesis guessing question; there were no problems with the remaining participants.

Tests of Hypotheses for Product Evaluations. To test whether the efficacy moderated the relationship between context and latitude of judgment, the dependent variables on context, latitude of judgment, and the interactions between the predictors were regressed. All variables were mean centered prior to creating interaction terms (Aiken and West 1991).

As shown in Table 9, for the evaluation of product performance, main effects of context (β = -.31, t = -3.32, p < .01) and efficacy (β = .24, t = 2.42, p < .05), and the context and efficacy interaction (β = .25, t = 2.49, p < .01) were found, but were superseded by the proposed three-way interaction between context, latitude of judgment, and efficacy (β = -.32, t = -3.21, p < .01), providing support for H_{6a}. For willingness to pay a premium price, a three-way interaction between context, latitude of judgment, and efficacy emerged (β = -.21, t = -2.00, p < .05), providing support for H_{6b}. For intent to purchase highly sustainable sanitizing wipes, a three-way interaction between context, latitude of judgment, and efficacy emerged (β = -.26, t = -2.50, p = .01), providing support for H_{6c}. 
These results suggest that the product evaluations induced by consumers’ beliefs on the relationship between the latitude of judgment areas and contexts vary depending on consumers’ perceived efficacy of their pro-environmental behaviors. To further test whether the product evaluations mainly differed across perceptions of efficacy when the higher sustainability scores were within or outside the category-level latitude of acceptance, simple slope analyses were performed at one standard deviation above and below the mean of perceived efficacy (Aiken and West 1991).

The simple slope test results for perceived product performance showed that when the sustainability score was very high (9), low efficacious consumers reported a higher perceived performance in public rather than private settings ($\beta = .60, t = 2.90, p < .01$; Figure 8a), providing support for H6b. Also consistent with our prediction, when the sustainability score was within the latitude of acceptance (6), there were no significant differences across contexts for low efficacious consumers. As shown in Figure 8b, effects of contexts and latitude of judgment were not significant for highly efficacious consumers. Although the simple slope tests were nonsignificant for willingness to pay a premium price and purchase intentions, the pattern of predicted means was similar to that of product performance, providing partial support for H6a.

The results suggest that the liability effect may arise when the sustainability score is extremely high, consistent with my previous findings. Further, perceived efficacy provides a boundary condition for the liability effect in which low efficacious consumers reported a higher product performance in the public rather than private setting. In contrast, highly efficacious consumers were unaffected by contexts, suggesting their strong commitment to preserve the environment. Thus, low efficacious consumers seem to be more susceptible to others’ presence in the context of pro-environmental behaviors, consistent with prior research (e.g., van Lange et al.
1992). The nonsignificant effects of efficacy within the latitude of acceptance imply the robustness of sustainability utility evidenced in experiment 4.

**Mediating Role of Product Performance.** To test the mediation predicted in H5, a bootstrap (n = 5,000) analysis was performed (Preacher and Hayes 2008). The results indicated that product performance mediated the interaction effects on willingness to pay a premium price and purchase intentions (Figure 9). The three-way interaction between sustainability level, context, and efficacy was mediated by product performance on willingness to pay a premium price (indirect effect = -.97, SE = .37, 95% CI = -1.75 to -.31) and purchase intentions (indirect effect = -.97, SE = .36, 95% CI = -1.73 to -.32), supportive of H5a and H5b. Specifically, when the sustainability level was outside the latitude of judgment, for low efficacious consumers, product performance mediated the relationship between context and willingness to pay a premium, and context and purchase intentions. These findings suggest evidence of mediated moderation.

**DISCUSSION**

The results from experiment 5 show that when sustainability disclosure information falls outside the category-based latitude of acceptance, the consumption context (cf. self-enhancement) moderates whether the information is assimilated or contrasted. Experiment 5 findings suggest that a boundary condition of liability may be related to differences in consumers’ efficacy. Compared to highly efficacious consumers, those low in efficacy were more strongly influenced by the consumption context and the presence of a sustainability disclosure outside the latitude of acceptance. Conversely, highly efficacious consumers were less influenced by the context as their views on the environment are more likely to drive behaviors. These consumers are likely to be responsive to higher, plausible sustainability levels, regardless of the context.
In experiment 6, I illustrate sustainability utility on packaged food products, controlling the potential self-enhancement effect (i.e., optimistic bias). While the previous study on packaged food products (experiment 3) examined the utility effect for a frozen product category, the findings may have been, at least in part, influenced by healthfulness of food products (i.e., frozen pie vs. frozen pizza). Hence, in experiment 6, I address the self-enhancement effect and manipulate the level of healthfulness of the same food product (i.e., potato chips).
CHAPTER 9

Experiment 6
EXPERIMENT 6

HYPOTHESES

To extend the sustainability utility findings on food products in experiment 3, this study has two main purposes. First, sustainability utility for food product category is examined using the same food product (i.e., potato chips) to more accurately determine the extent to which healthfulness of foods can interact with sustainability attributes. That is, the healthfulness of food product is manipulated for the single category. To date, to my knowledge, there is no study addressing the effects of sustainability level disclosures on different levels of perceived healthfulness. Based on the findings that the consequences of consuming foods are directly linked to consumers’ health and tastes (e.g., Borin, Cerf, and Krishnan 2011; Grankvist and Biel 2007), as well as driven by consumers’ interest in health (e.g., Sahota et al. 2009), the value of sustainability attributes may be mitigated. That is, healthfulness and taste perceptions, rather than the sustainability level information, may be the primary attributes of food products that guide consumers’ decisions and choices.

Second, the self-enhancement effect, which is termed “optimistic bias” in the food consumption context, is used to address self-focused biased responses. Within the food domain, studies indicate that individuals have the tendency to perceive themselves as more likely than others to experience positive events, referred to as optimistic bias (Miles and Scaife 2003; Weinstein 1989). That is, individuals may be overly optimistic about the consequences of and risks associated with food (i.e., overweight, heart disease, food poisoning, etc.), partially due to their belief that negative events are less likely to occur for themselves than for others.

Based on prior literature on optimistic bias in the food consumption context, individuals in the self construal condition are likely to evaluate foods perceived to be healthy more favorably.
than individuals in the others construal condition. This may be due to consumers’ 1) likelihood of associating themselves with healthier food choices, similar to consumers’ desire to be perceived favorably by others (cf. self-enhancement) and 2) beliefs that they perform risky behaviors less often than others (Weinstein 1984). Hence, given that the food product category is directly associated with consumers’ well-being, I focus on how the effects of healthfulness will interact with the construal level. Specifically, the healthfulness of food products is expected to interact with the self/other construal level, suggesting a two-way interaction:

\[ H_7: \text{The construal level moderates the influence of healthfulness of food on (a) perceived quality, (b) perceived taste, (c) willingness to pay a premium price, and (d) purchase intentions. Specifically, for consumers with a self (vs. other) construal, there is a stronger positive effect of the healthfulness of food.} \]

Consistent with my previous findings concerning the role of self-enhancement on sustainability utility (experiments 4 and 5), I expect the construal level to interact with sustainability level disclosures to influence product evaluations, resulting in a two-way interaction:

\[ H_8: \text{The disclosed sustainability levels and construal level interact to create (un)favorable sustainability utility, increasing [decreasing] (a) perceived quality, (b) perceived taste, (c) willingness to pay a premium price, and (d) purchase intentions. Specifically, for consumers with a self (vs. other) construal, there is a stronger effect of sustainability level.} \]

**METHODOLOGY**

**Construction of the Stimuli and Sustainability Disclosure**

*Pretest.* To create fictitious bags of potato chips, a total of 51 non-student adults evaluated the brand attitude and descriptions of healthy and unhealthy attributes. For brand attitude, participants evaluated a list of 20 brands of potato chips on a seven-point scale (1 = “unfavorable”; 7 = “favorable”). In addition, participants rated 19 descriptions of healthy and unhealthy versions of potato chips on a seven-point scale (1 = “strongly disagree”; 7 = “strongly agree”).
agree”). The results indicated that participants had a moderate brand attitude toward Lance (M = 4.40). Additionally, four attributes (i.e., healthy: natural, baked, lightly salted, no preservatives vs. unhealthy: fat, wavy, salted, and artificial flavoring) were rated most relevant descriptors for healthy and unhealthy versions of potato chips (all $M_{\text{healthy}} > 5.00$ and all $M_{\text{unhealthy}} > 5.39$).

Similar to my other studies, Good Guide (http://goodguide.com) was used to determine realistic objective values for the sustainability disclosure. The highest (7.4) and the lowest (2.8) sustainability scores were used as a basis for disclosure levels in the study.

**Study Design**

The main experiment was a 2 (food healthfulness: unhealthy (“regular”) vs. healthy (“light”)) × 2 (brand-level sustainability rating: low vs. high) × 2 (construal level: self vs. other) between-subjects design. Based on pretest results, four attributes that differed in terms of healthfulness were prominently displayed on the front of the package for each version of potato chips to manipulate the level of healthfulness (see Appendix G). The color scheme and the layout of the packaging remained the same across two versions of potato chips. Consistent with experiment 4, an indirect questioning technique was used to address the role of optimistic bias (cf. Miles and Scaife 2003).

**Procedures, Participants, and Measures**

*Procedures and Participants.* A total of 237 non-student adults from an online panel ($M_{\text{age}} = 32.6$ years; 115 females) were randomly assigned to one of the experimental conditions. The instructions remained the same as in all of the previous studies. After participants were exposed to one of the images of potato chips, they completed a series of questions.
Measures. Dependent measures, perceived quality ($r = .90$), willingness to pay a premium price ($\alpha = .80$), and purchase intentions ($\alpha = .95$) were similar to those used in experiment 4. Perceived taste was similar to the measure used in experiment 3.

RESULTS

Manipulation and Demand Effect Checks. The disclosure level manipulation worked as intended, influencing perceptions of sustainability ($M_{\text{Low}} = 3.19$ vs. $M_{\text{High}} = 5.02$; $F(1, 233) = 112.17, p < .001$). For the perceived healthfulness manipulation, respondents were asked “What is your overall attitude towards this potato chips?” on a seven-point bipolar scale (1 = “unhealthy”; 7 = “healthy”). Consistent with the pretest results, the perceived healthfulness of food products was significantly different ($M_{\text{Unhealthy}} = 2.79$ vs. $M_{\text{Healthy}} = 5.11$; $F(1, 233) = 126.71, p < .01$). In addition, participants were asked “Were your responses based on what the average American shopper believed or what you believe?” on a seven-point bipolar scale (1 = “what I believed”; 7 = “what the average American shopper believed”). The construal level manipulation results also worked as intended ($M_{\text{Self}} = 2.09$ vs. $M_{\text{Other}} = 4.90$; $F(1, 233) = 178.31, p < .001$). Four participants were removed based on the responses from a hypothesis guessing question.

Tests of Hypotheses. A series of ANOVAs for the dependent variables were conducted, followed by planned contrasts (Table 10). There were significant main effects of sustainability level on perceived quality ($F(1, 225) = 9.94, p < .01$), willingness to pay a premium price ($F(1, 225) = 8.70, p < .01$), and purchase intentions ($F(1, 225) = 6.29, p < .01$). Additionally, a significant main effect of food healthfulness emerged on perceived quality ($F(1, 225) = 111.32, p < .01$), perceived taste ($F(1, 225) = 9.64, p < .05$), willingness to pay a premium price ($F(1, 225) = 42.45, p < .01$), and purchase intentions ($F(1, 225) = 55.94, p < .01$). Lastly, the main effect of
construal level was significant on perceived taste ($F(1, 225) = 7.82, p < .01$). These main effects were superseded by two- and three-way interactions.

For perceptions of quality (H7a and H8a), a three-way interaction emerged ($F(1, 225) = 5.45, p < .05$; Figure 10). When optimistic bias was controlled (i.e., use of the other construal), participants evaluated the regular bag of potato chips with a low sustainability level lower in quality than the chips with a high sustainability level ($M_{Unhealthy\_Other\_Low} = 2.81$ vs. $M_{Unhealthy\_Other\_High} = 3.96$; $F(1, 225) = 12.75, p < .01$; Figure 10B). In the self construal condition, participants evaluated the light bag of potato chips with a high sustainability level higher in quality than the chips with a low sustainability level ($M_{Healthy\_Self\_High} = 5.17$ vs. $M_{Healthy\_Self\_Low} = 4.53$; $F(1, 225) = 3.81, p = .05$; Figure 10A). Consistent with the optimistic bias concern, consumers seemed to associate themselves with healthy foods in an effort to self-enhance. In addition, given that the pattern of means for sustainability levels was similar across construal levels, it seems that consumers’ food evaluations were mainly determined by effects of perceived healthfulness. The predicted two-way interaction was superseded by a three-way interaction, providing no support for H7a and H8a.

For perceived taste (H7b and H8b), results indicated a two-way interaction for food healthfulness and construal level ($F(1, 225) = 8.54, p < .01$; Panel A of Figure 11). While the construal level did not affect taste for the healthy product, contrast results indicated that consumers in the self (versus other) evaluated unhealthy food products as less tasty, providing support for H7b ($M_{Self\_Unhealthy} = 3.09$ vs. $M_{Other\_Unhealthy} = 4.19$; $F(1, 229) = 15.52, p < .01$). The predicted two-way interaction of sustainability level and construal level did not emerge, providing no support for H8b.

For willingness to pay a premium price (H7c and H8c), results indicated a two-way interaction for food healthfulness and construal level ($F(1, 225) = 5.09, p < .05$; Panel B of Figure 11). Consistent with H7c, contrast results indicated that consumers in the self (versus other) were less
likely to pay a premium price for unhealthy food products ($M_{Self\_Unhealthy} = 1.72$ vs. $M_{Other\_Unhealthy} = 2.27$; $F(1, 229) = 6.81, p = .01$). The two-way interaction of sustainability level and construal level was not found, providing no support for H$_{8c}$.

The results of purchase intentions (H$_{7d}$ and H$_{8d}$) revealed a two-way interaction for food healthfulness and construal level ($F(1, 225) = 10.03, p < .05$; Panel C of Figure 11). Contrast results indicated that consumers in the self (versus other) were less likely to purchase unhealthy food products, providing support for H$_{7d}$ ($M_{Self\_Unhealthy} = 2.43$ vs. $M_{Other\_Unhealthy} = 3.39$; $F(1, 229) = 11.93, p < .01$). The predicted two-way interaction of sustainability level and construal level was not supported (H$_{8d}$).

Overall, these two-way interaction results (food healthfulness \(\times\) construal level) and the pattern of means across dependent measures suggest that perceived healthfulness of food product may more strongly influence product evaluations than sustainability level disclosures (Tables 10 and 11). Both average mean differences and effect sizes across perceived healthfulness levels ($M$'s range between .61 and 1.72 across conditions; $d$'s range between .04 and .32) and those of sustainability levels ($M$'s range between .36 and .52 across conditions; $d$'s range between .01 to .03) on dependent variables suggest that sustainability attributes of food products may have been less salient, mitigating the effects of sustainability level disclosures. A lack of two-way interactions of sustainability level and construal level on focal dependent measures may be partially due to a strong main effect of healthfulness and the absence of the latitude of judgment consideration.

**DISCUSSION**

Results suggest that the indirect questioning method is effective in addressing optimistic bias in the food consumption context. For perceived quality, when the response bias was suppressed, consumers evaluated unhealthy food products with low sustainability scores less
favorably than those with high sustainability scores and healthy food products with low and high sustainability scores (all \( F \)-values > 9.58, \( p < .01 \)). In addition, for healthy food products, there were no significant differences in perceived quality across sustainability levels. Perhaps, the mere presence (a positive product evaluation that results from exposure alone; Obermiller 1985) of sustainability information on healthy foods was used as an indicator of food quality, similar to the effects of a front-of-package nutrition information on product evaluations (e.g., Mick et al. 2011). When the response bias was not controlled (i.e., self construal condition), consumers evaluated healthy food products with high sustainability scores more favorably than those with low sustainability scores and unhealthy food products with low and high sustainability scores (all \( F \)-values > 3.81, \( p < .05 \)), suggesting that consumers may have been influenced by the optimistic effect. For unhealthy food products, there were no significant differences across sustainability levels for perceived quality.

Extending results from experiment 3, findings from this study, again, suggest complex trade-offs associated with sustainability attributes and healthfulness of food products. For example, as a post-hoc analysis, a series of \( t \)-tests were conducted in which the evaluations for unhealthy foods with either low (\( M = 2.66 \)) or high (\( M = 3.22 \)) sustainability level disclosures were less favorable than healthy foods, regardless of sustainability levels (\( M_{\text{Low}} = 3.96 \) and \( M_{\text{High}} = 4.30 \); all \( t \)-values > 23.38, \( p < .01 \)). These results suggest that consumers, in general, are influenced heavily by inferences of food products (e.g., perceived healthfulness and taste), rather than sustainability level disclosures, partially due to the direct impact associated with consumers’ own health.

This study extends prior literature on consumers’ intuition that healthy food products are less tasty by considering how the optimistic bias can influence product evaluations (e.g.,
Raghunathan, Naylor, and Hoyer 2006). Findings suggest that consumers generally evaluated healthy (vs. unhealthy) foods more favorably across different construal levels. For the healthy food category, the influence of optimistic bias did not have a great impact on consumers. Conversely, for the unhealthy food category, significant differences emerged across construal levels in which consumers in the self (vs. other) condition evaluated unhealthy food items less favorably. These findings suggest that in general, the optimistic bias occurs when consumers are making poor food purchasing decisions (i.e., low in good nutrient content). That is, consumers may distance themselves from unhealthy foods to promote their health and well-being.
CHAPTER 10

Discussion and Conclusions
OVERVIEW OF FINDINGS

The consequences of excessive consumption are becoming increasingly evident, including global challenges related to climate change, greenhouse gas concentrations, water and resource scarcity, environmental degradation, and consumer health (United Nations 2013). Despite such broad concerns, it can be argued that consumers either do not consider the consequences of choice options at the retail point of purchase, and/or they do not have the internal and external information to assist them. The availability of information is likely to change in the future, as retailers and major manufacturers consider alternative communication systems to disclose product sustainability levels to consumers (The Sustainability Consortium 2013). There is an increasing level of need for research on how to communicate sustainability attributes effectively to consumers. Recently, for instance, the Federal Trade Commission (FTC) revised “Green Guides” to prevent misleading environmental claims and the Environmental Protection Agency (EPA) overhauled the gasoline vehicle label to include energy use and environmental impacts. However, consumers remain confused, unable to utilize the information (EPA 2011; Voelcker 2013). As the recently passed legislation in France that requires all products to display objective environmental information shows, understanding the role of “smart” sustainability disclosures is highly relevant in today’s marketing environment (Thaler 2013; Vergez 2012). Thus, the purpose of this dissertation was to assess effects of sustainability communication on product evaluations and choices, considering how increased consumer knowledge of brand levels across different contextual conditions might affect consumer choices.

Across six experiments, I demonstrated that sustainability utility may emerge when the cognitive reference points and the latitude of judgment are considered. That is, consistent with assimilation-contrast theory, if the brand-based sustainability disclosure levels fall within the
latitude of acceptance for the category, consumers seemed to assimilate the information. Conversely, a contrast effect occurs if the sustainability disclosure levels are outside the latitude of acceptance. These findings suggest that as long as the green attribute is not promoted at very extreme levels, the emergence of sustainability utility is likely despite consumers’ intuition that sustainable cleaning products may suggest low quality (i.e., liability). While effects of sustainability utility were mitigated for food items, a positive influence of sustainability information emerged on food evaluations. The role of self-enhancement and optimistic bias incorporated in the latter experiments allowed for more conservative tests of the utility effect.

Overall, findings generally suggest that the voluntary provision of sustainability labeling may effectively communicate sustainability information and affect evaluations, but there are boundary conditions that should be considered. In the context of a retail lab study, experiment 1 initially examined sustainability utility on product evaluations and choices within consumer cleaning products. Findings revealed that presenting brand-level sustainability information may create sustainability utility, impacting willingness to pay a premium price and brand alternative choices at the retail shelf.

Experiment 2 replicated utility effects and tested the influence of format alternatives on product evaluations. Specifically, disclosures including both summary (i.e., index) and dimensional information and a single disclosure formats (i.e., dimensions or index only) were examined. Findings indicated that the provision of index or dimensional information would influence perceptions of sustainability, willingness to pay a premium price, and purchase intentions. Nonsignificant findings across formats may be due to the integrative layout of disclosures, including both numerical and verbal information. In addition, consumers exposed to
a sustainability cue on product packaging were influenced by perceptions of product sustainability.

Experiment 3 then extended the utility effect to food product categories. Findings suggest that the provision of sustainability disclosures influence perceptions of sustainability, perceived taste, willingness to pay a premium price, and purchase intentions. While experiments 1 through 3 demonstrated the evidence of sustainability utility as the information was assimilated, experiments 4 through 6 demonstrated both utility and liability effects, in addition to boundary conditions and underlying process of utility. The value of sustainability attributes was determined based on where brand-level sustainability disclosures fell on the latitude of judgment continuum. Specifically, in experiments 4 through 6, the self-enhancement effect (Beauregard and Dunning 1998) was addressed to examine the utility effect in a more conservative manner. These latter studies generally replicated earlier findings by showing that, even after addressing the influence of self-enhancement, sustainability utility effects emerged.

Experiment 4 initially demonstrated the role of self-enhancement (using a self versus others construal) in conjunction with manipulating whether brand-based sustainability levels fell within or outside of the category-level latitude of acceptance. Consistent with prior literature (e.g., Luchs et al. 2010), construal interacted with the disclosure at extreme levels (i.e., when disclosed brand-level sustainability extended beyond the latitude of acceptance). However, within the latitude of acceptance, assimilation effects remained significant, regardless of self-enhancement. This suggests that if brand-level sustainability disclosures were available in the marketplace, consumers may be more mindful decision makers, so long as disclosures fall within category-level latitudes of acceptance. The latitude of judgment effect was mediated by product
inferences, such as perceived quality on willingness to pay a premium price and purchase intentions.

Experiment 5 extended the prior findings into the product usage domain. Consumers’ perceived efficacy provided an important boundary condition for the utility effect. Specifically, there were no significant differences in perceived efficacy when brand-based sustainability levels fell within the latitude of acceptance. This is the range in which sustainability attribute levels should be assimilated, creating utility. However, when sustainability levels were at extreme levels, low (vs. high) efficacious consumers evaluated products more favorably in a public context, again supporting the role of self-enhancement while utilizing a different form of manipulation. When sustainability levels were at extremes, the effect of liability was diminished in the public rather than private context for low efficacious consumers, suggesting that these consumers may be primarily driven by the need to self-enhance. Conversely, highly efficacious consumers were less likely to be vulnerable to extreme sustainability ratings. In addition, perceived product performance was found to underlie the process of sustainability utility on willingness to pay a premium price and purchase intentions.

Lastly, experiment 6 demonstrated the attenuation of effects of sustainability level disclosures on food products when considering the optimistic bias effect. While sustainability utility emerged for perceived quality, the effects of healthfulness of food products and optimistic bias influenced perceived taste, willingness to pay a premium price, and purchase intentions. The optimistic bias effect strongly influenced consumers’ evaluations of foods perceived unhealthy (vs. healthy).
THEORETICAL CONTRIBUTIONS

Applying the theoretical lens of assimilation bias in conjunction with self-enhancement offers an important extension to prior work. I suggest that the value of sustainability communication is moderated by joint effects of category reference points, assimilation bias, and self-enhancement. Perceptions of efficacy further explain the boundary condition underlying sustainability utility. The utility effect emerged across different product categories.

Specifically, this dissertation attempts to address an important concern drawn from prior findings on sustainability liability. First, I found that priming another construal only attenuates prosocial evaluations and choices when sustainability disclosure information falls outside the category-level latitude of acceptance. That is, compared to the category control condition, more highly sustainable products were viewed more positively by those in the self condition, leading to biased assimilation when levels revealed were outside the bounds of the latitude of acceptance. These differences did not emerge for participants instructed to self-defocus, indicating that the extreme disclosure levels were contrasted. However, for brand-level disclosures that fell within the category-level latitude of acceptance, I found that self (versus other) priming led to only slightly different evaluations of products. Within the latitude of acceptance, even when self-enhancement is attenuated (i.e., in the other condition), positive brand-level disclosure information generated higher evaluations of the product vis-à-vis other offerings in the category. These findings extend prior research regarding sustainability liability by suggesting that self-enhancement is more pronounced at the extremes and will diminish within the latitude of acceptance.

Second, the extent to which self-enhancement influences product evaluations when disclosed levels are outside the category-level latitude of acceptance differed due to perceived
efficacy, suggesting an important boundary condition for the liability effect. Outside the latitude of acceptance, low efficacious consumers were more responsive to the public consumption context and extreme disclosed levels than individuals with high efficacy. Given that others’ behaviors and the scores at the extremes seem to be less influential for highly efficacious consumers, the liability effect is less likely to arise for this group. Additionally, the differences across the efficacy levels did not emerge within the latitude of acceptance, emphasizing the importance of providing sustainability scores within the latitude of acceptance for the disclosure to be effective for both efficacy groups.

Third, prior research suggests that sustainability efforts may lower product quality evaluations, which, in turn, may discourage firm efforts to reduce its carbon footprint. This research extends these findings by showing that as long as the brand-level sustainability information is consistent with category-level latitudes of acceptance, the provision of information across brands within a category encourages favorable consumer evaluations of more sustainable products. That is, when disclosures were presented in a brand/category context, consumers seemed likely to ascribe sustainability utility to the brand, in turn making positive inferences about product quality.

Lastly, the sustainability utility effect on food product categories seems to suggest potential trade-offs between sustainability attributes and health-related factors as consumers did not contrast products with very high sustainability scores. Consumers assimilated both low and very high sustainability scores, perhaps suggesting the importance of optimistic bias consideration. Another potential explanation for the lack of contrast may be the mere presence effect of sustainability information. Similar to the effect of front-of-package nutrition information on product evaluations (e.g., Mick et al. 2011), the mere presence of sustainability
information may have indicated a higher food quality. Findings from food products (experiment 3 and 6) suggest that the provision of sustainability disclosures was assimilated rather than contrasted across product categories (i.e., frozen packaged and regular packaged foods).

**IMPLICATIONS**

The implications of this dissertation are multifaceted. Out of over 400 green eco-labels available today, only three labels were found to be familiar to consumers (Recyclable, Energy Star, and USDA Organic) (BBMG 2009). In other words, it seems that consumers are not effectively utilizing labels and are rather lost in the “label clutter.” Considering the current consumers’ evaluation of labeling, one of the biggest challenges for practitioners, researchers, policy makers, and non-governmental organizations (NGOs) is to create a useful and practical labeling system that not only informs consumers about the specific products on which they are found, but also educates consumers about how products impact the environment.

From policy and research perspectives, this research highlights the potential influence of providing brand-level sustainability disclosures for a category, as well as the context necessary to achieve effects on evaluations. I posit that consumers currently have minimal, credible brand-level data to consider when evaluating products at the shelf, and that the implementation of objective and unbiased quantitative sustainability disclosures may provide consumers with the information they require to behave more sustainably. Findings revealed that providing disclosure information can affect consumer evaluations and choices, which seems consistent with the U.N. objective of having consumers develop the “skills and knowledge to make informed decisions” (2013).

Results from this dissertation also have potential implications for the French Grenelle mandate and the Sustainable Apparel Coalition businesses (e.g., Walmart, Patagonia, Nike) (The
Sustainability Consortium 2013). Similar to other strategic communication decisions, retailers and manufacturers should carefully consider promoting sustainability superiority in a competitive category. However, specific findings from this dissertation suggest that voluntary disclosures might under some conditions be deployed as value-added attributes, particularly in categories with little loyalty and/or minimal differentiation on other attributes. Perhaps more importantly, weaker evaluations resulting from the disclosure of lower sustainability levels suggest that firms not engaging in more sustainable practices may be at a competitive disadvantage. Furthermore, if retailers and companies effectively communicate brand sustainability via disclosures similar to those examined here, consumers will begin to have a better overall understanding of the environmental impact associated with their choices both within and across categories. In addition, effects at the consumer level could encourage companies to improve life cycle and supply chain processes, enhancing sustainability levels they are driven to disclose.

For U.S. and global agencies as well as various NGO’s interested in sustainability issues (e.g., Sustainability Consortium, Grenelle Environnement in France, EPA, U.N. Environment Programme), the pattern of results across six experiments should be of interest. Considering the potential for effects on evaluations and choices extrapolated across the many consumer categories within which consumers routinely make choices, cumulative direct and indirect effects could be substantial.

**LIMITATIONS AND FUTURE RESEARCH**

While this dissertation provides an initial consideration of conditions that may qualify the influence of sustainability utility (e.g., self-enhancement, latitudes of acceptance), the interactions that emerged in experiments suggest that disclosure effects are complex, warranting
future research opportunities. I used a retail lab to examine evaluations and decisions “at the shelf,” and counterbalanced sustainability levels to control for any brand and shelf placement effects. In addition, I replicated sustainability utility findings across different categories, samples, brands (real and fictitious), and contexts. There are, however, various limitations to generalizability. I provided no price, brand or promotional information, all of which likely influence choices made when grocery shopping. In particular, the impact of strong brand equity may attenuate the role of sustainability disclosures on product evaluations (e.g., Larceneux, Benoit-Moreau, and Renaudin 2012). Further, conditions fostered high disclosure awareness (> 90%), a condition likely inconsistent with the retail environment. Further, to generalize the findings, alternative product categories posing more serious threats to the environment could be used (e.g., electronics, products for which disposal is problematic), and studies could be conducted in experimental stores of large retailers.

Additionally, while some prior literature considers multiple product quality dimensions (Garvin 1988), the present research used generalized (e.g., Boulding and Kirmani 1993) versus dimensional (e.g., aspects of performance, aesthetics) measures of product quality. While I measured consumers’ perceptions of product quality prior to use of the product (experiments 4 and 6) and after the use (experiment 5), examining the influence of sustainability disclosures on various quality dimensions could be a promising avenue of future research. Further, given that initial pilot tests showed variance in category reference points, “shaking” confidence (Gao, Wheeler, and Shiv 2009) in these levels may influence both latitude of acceptance and evaluations. In addition, consumers’ perceptions of retail stores (e.g., Walmart, Whole Foods, etc.) may shift their initial reference points, which in turn, may influence product evaluations and choices.
In my dissertation, the mixed experimental designs were composed of sustainability ratings as a within-subjects factor and the presence of disclosures as a between-subjects factor. That is, I considered situations where consumers are provided with an array of products either with or without disclosures. Hence, consumers were unable to compare the brand options that provide sustainability level disclosures to those that do not provide disclosures at the same time. While the implementation of the mixed experimental method aligns with the sustainability initiatives of retailers in that they plan to provide sustainability information across all product categories and brands, consumers may need to evaluate products when a couple of brand options contains sustainability information, rather than the information provided for all of the brand options.

Finally, the sustainability utility and optimistic bias effects that emerge for food product categories (experiments 3 and 6) suggest complex trade-offs between sustainability attributes and health-related factors. Findings suggest that compared to consumer cleaning products (experiments 1, 2, 4, and 5), the role of sustainability disclosures is attenuated for food product categories. Future studies could examine the extent to which the effects of sustainability disclosure may influence product evaluations and consumer choices with the addition of front-of-package nutrition information or sustainability and health claims. As food purchases are directly related to consumers’ health and well-being, providing information related to their health and environmental consequences of making sustainable food choices may further explain trade-offs between sustainability attributes and health-related factors. In addition, the latitude of judgment may be considered in the future studies on packaged food products as a very high sustainability level disclosure was assimilated, rather than contrasted.
The results from experiment 6 suggest that the influence of sustainability level disclosures may be different across perceived healthfulness and construal levels. The strong main effect of healthfulness may have contributed to the lack of higher interactions, such as a two-way interaction of sustainability level and construal level. Given that four different attributes were used on each version of potato chips to manipulate the healthfulness, it is unclear how the combination of cues were utilized to generate sustainability utility, which in turn influenced product inferences. Particularly, given that the pattern of means for perceived taste was similar across the two versions of potato chips, it may be that while the stimuli significantly differed in terms of perceived healthfulness, taste perceptions were not significantly different. Similar to a healthfulness perceptions manipulation used in prior literature (e.g., Raghunathan, Naylor, and Hoyer 2006), the content of saturated and unsaturated fat may be manipulated to more accurately examine the association of perceived healthfulness and taste. These avenues provide further research opportunities for academicians, practitioners, and policy makers.

CONCLUSIONS

In conclusion, despite issues regarding generalizability and a promising future agenda for research, the findings in this dissertation demonstrate that, relative to no disclosure control conditions, the addition of sustainability disclosures can educate consumers about the sustainability of product alternatives, creating perceived utility, and in turn influencing product evaluation and choice. These results should be of interest to diverse constituencies including major retailers, CPG marketers, NGO’s, as well as environmental and consumer welfare advocates. Based on these findings, sustainability communication that discloses specific and easy-to-interpret information about products, when relatively consistent with consumers’ expectations of category-level sustainability performance, may encourage assimilation and
effects on important outcomes. Such disclosures should allow consumers to incorporate sustainability utility into evaluations at the shelf, allowing them to make more mindful consumption decisions.
REFERENCES


APPENDIX A

Tables
# TABLE 1

**EXPERIMENT 1: MIXED ANOVA F-VALUES FOR EFFECTS OF SUSTAINABILITY PACKAGE DISCLOSURES ON DEPENDENT VARIABLES**

## A: Laundry Detergent

<table>
<thead>
<tr>
<th></th>
<th>Willingness to Pay a Premium Price</th>
<th>Purchase Intentions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects:</strong></td>
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<td></td>
</tr>
<tr>
<td>Sustainability Level (SL)</td>
<td>19.45***</td>
<td>34.98***</td>
</tr>
<tr>
<td>Index Disclosure (I)</td>
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<td>0.11</td>
</tr>
<tr>
<td><strong>Interaction Effects:</strong></td>
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<td></td>
</tr>
<tr>
<td>SL × I</td>
<td>21.99***</td>
<td>32.82***</td>
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***p<.01 **p<.05

## B: Dish Soap

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<tr>
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<th>Willingness to Pay a Premium Price</th>
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<td>Index Disclosure (I)</td>
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<td>0.00</td>
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<tr>
<td><strong>Interaction Effects:</strong></td>
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<td></td>
</tr>
<tr>
<td>SL × I</td>
<td>13.71***</td>
<td>15.82***</td>
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</tbody>
</table>

***p<.01 **p<.05
TABLE 2
EXPERIMENT 1: MEANS AND STANDARD DEVIATIONS FOR DEPENDENT VARIABLES

<table>
<thead>
<tr>
<th>Sustainability Level</th>
<th>Provision of Index</th>
<th>Willingness to Pay a Premium Price</th>
<th>Purchase Intentions</th>
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<td>Laundry Detergent</td>
<td>Dish Soap</td>
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<td>Absent</td>
<td>3.08 (1.88)</td>
<td>3.03 (1.77)</td>
</tr>
<tr>
<td></td>
<td>Present</td>
<td>2.57 (1.61)</td>
<td>2.49 (1.61)</td>
</tr>
<tr>
<td>High</td>
<td>Absent</td>
<td>3.03 (1.90)</td>
<td>3.18 (1.63)</td>
</tr>
<tr>
<td></td>
<td>Present</td>
<td>3.94 (1.86)</td>
<td>3.78 (1.86)</td>
</tr>
</tbody>
</table>
### TABLE 3
EXPERIMENT 2: MIXED ANOVA F-VALUES FOR EFFECTS OF SUSTAINABILITY PACKAGE DISCLOSURES ON DEPENDENT VARIABLES

<table>
<thead>
<tr>
<th></th>
<th>Perception of Sustainability</th>
<th>Willingness to Pay a Premium Price</th>
<th>Purchase Intentions</th>
</tr>
</thead>
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<tr>
<td><strong>Main Effects:</strong></td>
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<td></td>
<td></td>
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<td>Sustainability Level (SL)</td>
<td>174.11***</td>
<td>64.41***</td>
<td>102.09***</td>
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<td>Dimension (D)</td>
<td>3.02</td>
<td>2.73</td>
<td>0.06</td>
</tr>
<tr>
<td>Index (I)</td>
<td>0.07</td>
<td>1.30</td>
<td>0.32</td>
</tr>
<tr>
<td><strong>Interaction Effects:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SL × D</td>
<td>20.27***</td>
<td>6.10**</td>
<td>8.97***</td>
</tr>
<tr>
<td>SL × I</td>
<td>33.54***</td>
<td>13.07***</td>
<td>9.37***</td>
</tr>
<tr>
<td>D × I</td>
<td>2.12</td>
<td>0.00</td>
<td>2.33</td>
</tr>
<tr>
<td>SL × D × I</td>
<td>15.30***</td>
<td>6.29***</td>
<td>8.82***</td>
</tr>
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</table>

***p<.01 **p<.05
<table>
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<th>Index Score Disclosure</th>
<th>Perception of Sustainability</th>
<th>Willingness to Pay a Premium Price</th>
<th>Purchase Intentions</th>
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<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Moderate</td>
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<td>Low</td>
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<tr>
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<td>Absent</td>
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<td>4.21</td>
<td>4.03</td>
<td>2.54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.59)</td>
<td>(1.42)</td>
<td>(1.22)</td>
<td>(1.39)</td>
</tr>
<tr>
<td></td>
<td>Present</td>
<td>2.51</td>
<td>3.87</td>
<td>5.40</td>
<td>1.86</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.18)</td>
<td>(1.10)</td>
<td>(1.44)</td>
<td>(1.08)</td>
</tr>
<tr>
<td></td>
<td>Present</td>
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<td>4.26</td>
<td>5.38</td>
<td>2.06</td>
</tr>
<tr>
<td></td>
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<td>(1.06)</td>
<td>(1.56)</td>
<td>(1.20)</td>
</tr>
<tr>
<td></td>
<td>Present</td>
<td>2.79</td>
<td>4.33</td>
<td>5.87</td>
<td>2.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.51)</td>
<td>(0.90)</td>
<td>(1.32)</td>
<td>(1.31)</td>
</tr>
</tbody>
</table>

Note: Standard deviations are in parentheses.
TABLE 5  
EXPERIMENT 3: MIXED ANOVA F-VALUES FOR EFFECTS OF SUSTAINABILITY PACKAGE DISCLOSURES ON DEPENDENT VARIABLES

<table>
<thead>
<tr>
<th>Perceptions of Sustainability</th>
<th>Perceived Taste</th>
<th>Willingness to Pay a Premium Price</th>
<th>Purchase Intentions</th>
</tr>
</thead>
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<td>Main Effects:</td>
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<td></td>
</tr>
<tr>
<td>Food Type (FT)</td>
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<td>0.25</td>
</tr>
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<td>Sustainability Level (SL)</td>
<td>38.80***</td>
<td>4.70**</td>
<td>6.17***</td>
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<td>Interaction Effect:</td>
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<td></td>
</tr>
<tr>
<td>FT × SL</td>
<td>2.23</td>
<td>1.00</td>
<td>2.22</td>
</tr>
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***p<.01 **p<.05
TABLE 6  
EXPERIMENT 3: MEANS AND STANDARD DEVIATIONS FOR DEPENDENT VARIABLES

<table>
<thead>
<tr>
<th>Independent Variables:</th>
<th>Perception of Sustainability</th>
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<th>Willingness to Pay a Premium Price</th>
<th>Purchase Intentions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Apple</td>
<td>Pizza</td>
<td>Apple</td>
<td>Pizza</td>
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<tr>
<td><strong>Sustainability Level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absent</td>
<td>3.29</td>
<td>3.72</td>
<td>4.81</td>
<td>4.14</td>
</tr>
<tr>
<td></td>
<td>(1.44)</td>
<td>(1.46)</td>
<td>(1.47)</td>
<td>(1.92)</td>
</tr>
<tr>
<td>Low</td>
<td>3.76</td>
<td>3.20</td>
<td>4.38</td>
<td>4.47</td>
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<tr>
<td></td>
<td>(1.52)</td>
<td>(1.42)</td>
<td>(1.67)</td>
<td>(1.65)</td>
</tr>
<tr>
<td>High</td>
<td>5.31</td>
<td>4.85</td>
<td>5.38</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>(1.37)</td>
<td>(1.18)</td>
<td>(1.32)</td>
<td>(1.43)</td>
</tr>
</tbody>
</table>

*Note: Standard deviations are in parentheses.*
TABLE 7
EXPERIMENT 4: MIXED ANOVA F-VALUES FOR EFFECTS OF SUSTAINABILITY PACKAGE DISCLOSURES ON DEPENDENT VARIABLES

<table>
<thead>
<tr>
<th></th>
<th>Perceived Quality</th>
<th>Willingness to Pay a Premium Price</th>
<th>Purchase Intentions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects:</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sustainability Level (SL)</td>
<td>19.39***</td>
<td>28.07***</td>
<td>26.40***</td>
</tr>
<tr>
<td>Construal Level (CL)</td>
<td>.78</td>
<td>5.72*</td>
<td>8.32**</td>
</tr>
<tr>
<td>Latitude of Judgment (LJ)</td>
<td>1.48</td>
<td>1.81</td>
<td>1.88</td>
</tr>
<tr>
<td><strong>Interaction Effects:</strong></td>
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<td></td>
</tr>
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<td>SL × CL</td>
<td>14.87***</td>
<td>18.14***</td>
<td>11.27**</td>
</tr>
<tr>
<td>SL × LJ</td>
<td>5.64**</td>
<td>9.80***</td>
<td>7.37**</td>
</tr>
<tr>
<td>CL × LJ</td>
<td>.55</td>
<td>.61</td>
<td>8.48**</td>
</tr>
<tr>
<td>SL × CL × LJ</td>
<td>4.68*</td>
<td>4.24*</td>
<td>.49</td>
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*** p<.001  ** p<.01  * p<.05
### TABLE 8
EXPERIMENT 4: CELL MEANS AND STANDARD DEVIATIONS FOR DEPENDENT VARIABLES

<table>
<thead>
<tr>
<th>Independent Variables:</th>
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<th>Willingness to Pay a Premium Price</th>
<th>Purchase Intentions</th>
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<td><strong>High</strong></td>
</tr>
<tr>
<td>Self</td>
<td>Control</td>
<td>4.37 (1.35)</td>
<td>4.77 (1.18)</td>
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<tr>
<td></td>
<td>Within</td>
<td>3.96 (1.32)</td>
<td>5.13 (1.38)</td>
</tr>
<tr>
<td></td>
<td>Outside</td>
<td>3.18 (1.41)</td>
<td>5.36 (1.23)</td>
</tr>
<tr>
<td>Other</td>
<td>Control</td>
<td>4.75 (1.09)</td>
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<tr>
<td></td>
<td>Within</td>
<td>3.80 (1.20)</td>
<td>4.78 (1.36)</td>
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<tr>
<td></td>
<td>Outside</td>
<td>4.41 (1.68)</td>
<td>4.19 (1.67)</td>
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*Note: Standard deviations are in parentheses.*
### TABLE 9
EXPERIMENT 5: REGRESSION FOR EFFECTS OF SUSTAINABILITY PACKAGE DISCLOSURES ON DEPENDENT VARIABLES

<table>
<thead>
<tr>
<th></th>
<th>Product Performance</th>
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<td>Standardized</td>
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<tr>
<td>Latitude of Judgment (LJ)</td>
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<td>.93</td>
<td>.16</td>
</tr>
<tr>
<td>Perceived Efficacy (PE)</td>
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<td>2.42*</td>
<td>.06</td>
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<tr>
<td><strong>Interaction Effects:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C × LJ</td>
<td>.13</td>
<td>1.44</td>
<td>.04</td>
</tr>
<tr>
<td>C × PE</td>
<td>.25**</td>
<td>2.49**</td>
<td>.06</td>
</tr>
<tr>
<td>LJ × PE</td>
<td>-.11</td>
<td>-1.09</td>
<td>-.14</td>
</tr>
<tr>
<td>C × LJ × PE</td>
<td>-.32**</td>
<td>-3.21**</td>
<td>-.21*</td>
</tr>
</tbody>
</table>

*** p<.001 ** p<.01 * p<.05
TABLE 10
EXPERIMENT 6: ANOVA F-VALUES FOR EFFECTS OF SUSTAINABILITY PACKAGE DISCLOSURES ON DEPENDENT VARIABLES

<table>
<thead>
<tr>
<th></th>
<th>Perceived Quality</th>
<th>Perceived Taste</th>
<th>Willingness to Pay a Premium Price</th>
<th>Purchase Intentions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustainability Level (SL)</td>
<td>9.94***</td>
<td>3.37</td>
<td>8.70**</td>
<td>6.29**</td>
</tr>
<tr>
<td>Food Healthfulness (FH)</td>
<td>111.32***</td>
<td>9.64*</td>
<td>42.45***</td>
<td>55.94***</td>
</tr>
<tr>
<td>Construal Level (CL)</td>
<td>2.46</td>
<td>7.82**</td>
<td>2.71</td>
<td>3.67</td>
</tr>
<tr>
<td><strong>Interaction Effects:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SL × FH</td>
<td>1.58</td>
<td>.01</td>
<td>.45</td>
<td>.44</td>
</tr>
<tr>
<td>SL × CL</td>
<td>.13</td>
<td>2.08</td>
<td>.94</td>
<td>.09</td>
</tr>
<tr>
<td>FH × CL</td>
<td>.65</td>
<td>8.54**</td>
<td>5.09*</td>
<td>10.03*</td>
</tr>
<tr>
<td>SL × FH × CL</td>
<td>5.45*</td>
<td>1.11</td>
<td>.69</td>
<td>2.09</td>
</tr>
</tbody>
</table>

***p<.001 **p<.01 *p<.05
<table>
<thead>
<tr>
<th>Independent Variables:</th>
<th>Perceived Quality</th>
<th>Perceived Taste</th>
<th>Willingness to Pay a Premium Price</th>
<th>Purchase Intentions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food Healthfulness</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unhealthy Low</td>
<td>Self</td>
<td>2.86</td>
<td>3.14</td>
<td>1.58</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.20)</td>
<td>(1.33)</td>
<td>(.81)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>2.81</td>
<td>3.77</td>
<td>1.89</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.09)</td>
<td>(1.50)</td>
<td>(1.08)</td>
</tr>
<tr>
<td>High</td>
<td>Self</td>
<td>3.14</td>
<td>3.03</td>
<td>1.85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.66)</td>
<td>(1.43)</td>
<td>(1.15)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>3.96</td>
<td>4.64</td>
<td>2.69</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.45)</td>
<td>(1.55)</td>
<td>(1.28)</td>
</tr>
<tr>
<td>Healthy Low</td>
<td>Self</td>
<td>4.53</td>
<td>4.14</td>
<td>2.85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.28)</td>
<td>(1.41)</td>
<td>(1.23)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>4.98</td>
<td>4.04</td>
<td>2.74</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.87)</td>
<td>(1.40)</td>
<td>(1.12)</td>
</tr>
<tr>
<td>High</td>
<td>Self</td>
<td>5.17</td>
<td>4.40</td>
<td>3.17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.91)</td>
<td>(1.45)</td>
<td>(1.33)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>4.97</td>
<td>4.45</td>
<td>3.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.11)</td>
<td>(1.80)</td>
<td>(.87)</td>
</tr>
</tbody>
</table>

*Note: Standard deviations are in parentheses.*
### TABLE 12
SUMMARY OF HYPOTHESES

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H1:</strong> Relative to no disclosures for brands in a category, the addition of sustainability information for the brands affects evaluations. Compared to the category control, the provision of a higher (lower) level of sustainability through a package disclosure will create (un)favorable sustainability utility, increasing (decreasing):</td>
<td></td>
</tr>
<tr>
<td>(a) willingness to pay a premium price perception of sustainability</td>
<td>Supported (Experiment 1 &amp; 3)</td>
</tr>
<tr>
<td>(b) purchase intentions perceived taste</td>
<td>Supported (Experiment 3)</td>
</tr>
<tr>
<td>(c) product choice</td>
<td>Supported (Experiment 1 &amp; 3)</td>
</tr>
<tr>
<td></td>
<td>Supported (Experiment 3)</td>
</tr>
<tr>
<td></td>
<td>Partially supported (Experiment 1)</td>
</tr>
<tr>
<td></td>
<td>Supported (Experiment 2)</td>
</tr>
<tr>
<td><strong>H2:</strong> Relative to no disclosure, disclosures including sustainability ratings for individual dimensions with a summary index result in stronger effects than an index or dimensional ratings presented alone. The presentation format for sustainability disclosures moderates the influence of product sustainability level on:</td>
<td></td>
</tr>
<tr>
<td>(a) perceptions of sustainability</td>
<td>Partially supported (Experiment 2)</td>
</tr>
<tr>
<td>(b) willingness to pay a premium price</td>
<td>Supported (Experiment 2)</td>
</tr>
<tr>
<td>(c) purchase intentions</td>
<td>Supported (Experiment 2)</td>
</tr>
<tr>
<td>(d) product choice</td>
<td>Not supported (Experiment 2)</td>
</tr>
<tr>
<td><strong>H3:</strong> Perceptions of product sustainability mediate effects of direct and moderating impact of the disclosure on:</td>
<td></td>
</tr>
<tr>
<td>(a) willingness to pay a premium price</td>
<td>Supported (Experiment 2)</td>
</tr>
<tr>
<td>(b) purchase intentions</td>
<td>Supported (Experiment 2)</td>
</tr>
<tr>
<td><strong>H4</strong>: Sustainability disclosure position within or outside the latitude of acceptance, construal level, and the presence of disclosure information for brands in the category interact to increase (decrease):</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td></td>
</tr>
<tr>
<td>(a) perceived quality</td>
<td>Supported (Experiment 4)</td>
</tr>
<tr>
<td>(b) willingness to pay a premium price</td>
<td>Partially supported (Experiment 4)</td>
</tr>
<tr>
<td>(c) purchase intentions</td>
<td>Not supported (Experiment 4)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>H5</strong>: Perceptions of product quality/product performance mediate effects of direct and moderating impact of the disclosure on:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) willingness to pay a premium price</td>
</tr>
<tr>
<td>(b) purchase intentions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>H6</strong>: The effects of latitude of judgment and context are moderated by consumers’ perceived efficacy. When disclosed levels are outside the latitude of acceptance and the consumption context is public (vs. private), consumers with low perceived efficacy will report higher (lower):</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) product performance</td>
</tr>
<tr>
<td>(b) willingness to pay a premium price</td>
</tr>
<tr>
<td>(c) purchase intentions</td>
</tr>
</tbody>
</table>

The effects of latitude of judgment and context are less pronounced for consumers with high perceived efficacy.
<table>
<thead>
<tr>
<th>H7: The construal level moderates the influence of healthfulness of food on:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) perceived quality                                      Not supported (Experiment 6)</td>
</tr>
<tr>
<td>(b) perceived taste                                        Supported (Experiment 6)</td>
</tr>
<tr>
<td>(c) willingness to pay a premium price                      Supported (Experiment 6)</td>
</tr>
<tr>
<td>(d) purchase intentions                                    Supported (Experiment 6)</td>
</tr>
</tbody>
</table>

Specifically, for consumers with a self (vs. other) construal, there is a stronger positive effect of the healthfulness of food.

<table>
<thead>
<tr>
<th>H8: The disclosed sustainability levels and construal level interact to create (un)favorable sustainability utility, increasing (decreasing):</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) perceived quality                                      Not supported (Experiment 6)</td>
</tr>
<tr>
<td>(b) perceived taste                                        Not supported (Experiment 6)</td>
</tr>
<tr>
<td>(c) willingness to pay a premium price                      Not supported (Experiment 6)</td>
</tr>
<tr>
<td>(d) purchase intentions                                    Not supported (Experiment 6)</td>
</tr>
</tbody>
</table>

Specifically, for consumers with a self (vs. other) construal, there is a stronger effect of sustainability level.
APPENDIX B

Figures
FIGURE 1
CONCEPTUAL FRAMEWORK ASSOCIATED WITH THE CREATION OF SUSTAINABILITY UTILITY

Note: Sustainability utility is defined as the difference between an individual brand’s sustainability level and the sustainability category average. When the brand level exceeds the category norm, positive utility is created; when it is less than the category norm there is negative sustainability utility. The latitude of acceptance is between the lower threshold and the upper threshold. Based on the derivation of sustainability utility we predict that in Bracket 1 there is assimilation and negative effects; in Bracket 2 there is assimilation and the difference between the brand and the category average leads to near zero utility and no effects on evaluations; and in Bracket 3 there is assimilation and a difference between the brand levels and the category reference point that leads positive utility and favorable effects. Disclosed values outside of the latitude of acceptance (shaded areas) are more likely to be discounted.
Experiment 4: Latitude of Judgment and Construal Level
Experiment 5: Latitude of Judgment and Consumption Context
Experiment 6: Healthfulness of Food and Construal Level

Experiments 1 to 3

Product Category Sustainability Manipulation
- Sustainability Level
- Provision of Dimension
- Provision of Index

Product Perceptions/Attitude
Consideration Set/Purchase Intent
Choice/Willingness to Pay a Premium Price
FIGURE 3
EXPERIMENT 1: TWO-WAY INTERACTIONS BETWEEN SUSTAINABILITY LEVEL AND DISCLOSURE

A: Laundry Detergent

Willingness to Pay a Premium Price

<table>
<thead>
<tr>
<th>Low Sustainability Level</th>
<th>High Sustainability Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disclosure Absent</td>
<td>Disclosure Present</td>
</tr>
<tr>
<td>3.09</td>
<td>2.99</td>
</tr>
<tr>
<td>2.52</td>
<td>3.93</td>
</tr>
</tbody>
</table>

Purchase Intentions

<table>
<thead>
<tr>
<th>Low Sustainability Level</th>
<th>High Sustainability Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disclosure Absent</td>
<td>Disclosure Present</td>
</tr>
<tr>
<td>3.94</td>
<td>3.92</td>
</tr>
<tr>
<td>2.76</td>
<td>4.96</td>
</tr>
</tbody>
</table>

B: Dish Soap

Willingness to Pay a Premium Price

<table>
<thead>
<tr>
<th>Low Sustainability Level</th>
<th>High Sustainability Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disclosure Absent</td>
<td>Disclosure Present</td>
</tr>
<tr>
<td>3.02</td>
<td>3.15</td>
</tr>
<tr>
<td>2.48</td>
<td>3.76</td>
</tr>
</tbody>
</table>
Purchase Intentions

Low Sustainability Level
- Disclosure Absent: 3.83
- Disclosure Present: 3.11

High Sustainability Level
- Disclosure Absent: 4.07
- Disclosure Present: 4.81
FIGURE 4
EXPERIMENT 2: THREE-WAY INTERACTIONS BETWEEN SUSTAINABILITY LEVEL, DIMENSION, AND INDEX

A: Perception of Sustainability

B: Willingness to Pay a Premium Price

C: Purchase Intentions
FIGURE 5
EXPERIMENT 2: MEDIATING EFFECT OF PERCEPTION OF SUSTAINABILITY ON MAIN EFFECTS AND TWO-WAY INTERACTION EFFECTS

A: Willingness to Pay a Premium Price – Low Sustainability Level

Main Effect of Dimension:

Main Effect of Index:
Interactive Effect of Dimension and Index:

High Sustainability Level

Main Effect of Dimension:
**Main Effect of Index:**

\[ a = 1.37^{***}, \ SE = .29 \]
\[ b = .25^{**}, \ SE = .08 \]

\[ a = -1.89^{*}, \ SE = .41 \]
\[ b = .25^{**}, \ SE = .08 \]

\[ c = -1.89^{*}, \ SE = .41 \]
\[ c' = -1.47^{*}, \ SE = .42 \]

Sobel test: \( Z = 2.61, p < .01 \)

**Interactive Effect of Dimension and Index:**

\[ a = 1.37^{***}, \ SE = .29 \]
\[ b = .25^{**}, \ SE = .08 \]

\[ c = 1.04^{*}, \ SE = .32 \]
\[ c' = .70^{*}, \ SE = .32 \]

Sobel test: \( Z = -1.78, p = .07 \)

![Diagram of Main Effect and Interactive Effect](image_url)
B: Purchase Intentions - Low Sustainability Level

Main Effect of Dimension:

```
Perception of Sustainability

a = -1.29***, SE = .31
b = .66***, SE = .07

Sustainability Information (Dimension) ➔ Purchase Intentions

c = -1.41***, SE = .35
c’ = -.55, SE = .30

Sobel test: Z = -3.81, p < .01
```

Main Effect of Index:

```
Perception of Sustainability

a = -1.68***, SE = .31
b = .66***, SE = .07

Sustainability Information (Index) ➔ Purchase Intentions

c = -1.51***, SE = .35
c’ = -.39, SE = .30

Sobel test: Z = -4.70, p < .01
```
**Interactive Effect of Dimension and Index:**

![Diagram showing causal relationships between Perception of Sustainability, Sustainability Information (Dimension × Index), and Purchase Intentions.]

- $a = 1.57^{***}$, SE = .43
- $b = .66^{***}$, SE = .07
- Sobel test: $Z = 3.40$, $p < .01$

**High Sustainability Level**

**Main Effect of Dimension:**

![Diagram showing causal relationships between Perception of Sustainability, Sustainability Information (Dimension), and Purchase Intentions.]

- $a = 1.35^{***}$, SE = .29
- $b = .55^{***}$, SE = .08
- Sobel test: $Z = 3.85$, $p < .01$

- $c = 1.35^{***}$, SE = .29
- $c' = .30$, SE = .34
**Main Effect of Index:**

![Diagram showing the main effect of Index]

- \(a = 1.37^{***}, \text{SE} = .29\)
- \(b = .55^{***}, \text{SE} = .08\)
- Sobel test: \(Z = 3.89, p < .01\)
- \(c = 1.37^{***}, \text{SE} = .29\)
- \(c' = .22, \text{SE} = .34\)

**Interactive Effect of Dimension and Index:**

![Diagram showing the interactive effect of Dimension and Index]

- \(a = - .89^{*}, \text{SE} = .41\)
- \(b = .55^{***}, \text{SE} = .08\)
- Sobel test: \(Z = - 2.07, p < .05\)
- \(c = - .89^{*}, \text{SE} = .41\)
- \(c' = -.27, \text{SE} = .45\)

---

**Note:** Bootstrap tests (\(n=5,000\)); both tests show a significant indirect effect with none of the 95% confidence intervals containing a value of ‘0’ (Preacher and Hayes 2008; Zhao et al. 2010).

- \(* * * p < .001\)
- \(* * p < .01\)
- \(* p < .05\)
FIGURE 6
EXPERIMENT 4: THREE-WAY INTERACTIONS BETWEEN SUSTAINABILITY LEVEL, CONSTRUAL LEVEL, AND LATITUDE OF JUDGEMENT

A: Self Construal

**Perceived Quality**

- **Within Latitude of Acceptance**
  - Low Sustainability Level: 3.96
  - High Sustainability Level: 5.14

- **Outside Latitude of Acceptance**
  - Low Sustainability Level: 3.18
  - High Sustainability Level: 5.36

**Willingness to Pay a Premium Price**

- **Within Latitude of Acceptance**
  - Low Sustainability Level: 2.26
  - High Sustainability Level: 4.09

- **Outside Latitude of Acceptance**
  - Low Sustainability Level: 1.72
  - High Sustainability Level: 5.36
Note: The design also included a category control condition, similar to the prior studies. For the self condition, means in the (low) high sustainability level were ($M_{Low} = 4.37$) $M_{High} = 4.77$ and ($M_{Low} = 2.80$) $M_{High} = 2.82$ for perceived quality and willingness to pay a premium price, respectively. For the other condition, means in the (low) high category control were ($M_{Low} = 4.75$) $M_{High} = 4.24$ and ($M_{Low} = 3.11$) $M_{High} = 2.82$ for perceived quality and willingness to pay a premium price, respectively.
FIGURE 7
EXPERIMENT 4: MEDIATING EFFECT OF PERCEIVED QUALITY ON MAIN EFFECTS OF LATITUDE OF JUDGEMENT

A: Willingness to Pay a Premium Price – Low Sustainability Level

Perceived Quality

Sustainability Information (Latitude of Judgment)

Willingness to Pay a Premium Price

a = -.60**, SE = .17
b = .44***, SE = .06

c = -.54**, SE = .17

c’ = .28, SE = .16

High Sustainability Level

Perceived Quality

Sustainability Information (Latitude of Judgment)

Willingness to Pay a Premium Price

a = .30, SE = .17
b = .50***, SE = .07

c = .63***, SE = .18

c’ = .48**, SE = .16

134
**B: Purchase Intentions - Low Sustainability Level**

![Diagram of the model for low sustainability level]

- **Perceived Quality**
  - \( a = -0.60^{**}, SE = 0.17 \)
  - \( b = 0.48^{***}, SE = 0.09 \)
- **Sustainability Information (Latitude of Judgment)**
  - \( c = 0.19, SE = 0.23 \)
  - \( c' = 0.47^{*}, SE = 0.22 \)
- **Purchase Intentions**

**High Sustainability Level**

![Diagram of the model for high sustainability level]

- **Perceived Quality**
  - \( a = 0.30, SE = 0.17 \)
  - \( b = 0.66^{***}, SE = 0.06 \)
- **Sustainability Information (Latitude of Judgment)**
  - \( c = 0.66^{***}, SE = 0.19 \)
  - \( c' = 0.46^{**}, SE = 0.15 \)
- **Purchase Intentions**

*Note: Bootstrap tests \((n=5,000)\); both tests show a significant indirect effect with none of the 95% confidence intervals containing a value of ‘0’ (Preacher and Hayes 2008; Zhao et al. 2010).

*** \( p<.001 \).

** \( p<.01 \).

* \( p<.05 \).*
FIGURE 8
EXPERIMENT 5: THREE-WAY INTERACTIONS BETWEEN SUSTAINABILITY LEVEL, PERCEIVED CONSUMER EFFICACY, AND CONSUMPTION CONTEXT

A: Low Perceived Efficacy of Pro-Environmental Behavior

B: High Perceived Efficacy of Pro-Environmental Behavior
FIGURE 9
EXPERIMENT 5: MEDIATING EFFECT OF PERCEIVED PERFORMANCE ON EFFECTS OF THE THREE-WAY INTERACTION

A: Willingness to Pay a Premium Price

![Diagram A: Willingness to Pay a Premium Price]

B: Purchase Intentions

![Diagram B: Purchase Intentions]

Note: Bootstrap tests \( n=5,000 \)

*** \( p<.001 \).

** \( p<.01 \).

* \( p<.05 \).
FIGURE 10
EXPERIMENT 6: THREE-WAY INTERACTIONS BETWEEN SUSTAINABILITY LEVEL, FOOD HEALTHFULNESS, AND CONSTRUAL LEVEL

A: Self Construal

Perceived Quality

Unhealthy | Healthy
---|---
Low Sustainability Level | 2.86 | 4.53
High Sustainability Level | 3.14 | 5.17

B: Other Construal

Perceived Quality

Unhealthy | Healthy
---|---
Low Sustainability Level | 2.81 | 4.98
High Sustainability Level | 3.96 | 4.97
FIGURE 11
EXPERIMENT 6: TWO-WAY INTERACTIONS BETWEEN FOOD HEALTHFULNESS AND CONSTRUAL LEVEL

A: Perceived Taste

B: Willingness to Pay a Premium Price

C: Purchase Intentions
APPENDIX C

Sustainability Disclosure Manipulations for Experiment 1

All images created by author.
EXAMPLES OF SUSTAINABILITY DISCLOSURES USED AND RETAIL SET UP IN EXPERIMENT 1

Low Sustainability Level:

Moderate Sustainability Level:

High Sustainability Level:
Retail Set Up:

*Note:* There were four brand options for each of the two product categories. To minimize potential anchoring effects, products with moderate sustainability levels were placed as the first and last products placed on the retail shelf. These intermediate levels were used as “fillers” where the sustainability level disclosed would be relatively consistent with reference point expectations for the category. The position on the shelf and the brands for the target lower and higher sustainability levels were counterbalanced, and effects are evaluated relative to values reported in the no disclosure control condition for the same brands and same shelf position.
APPENDIX D

Sustainability Disclosure Manipulations Used for Experiment 2

All images created by author.
EXAMPLES OF SUSTAINABILITY DISCLOSURE CONDITIONS USED IN EXPERIMENT 2

Control Condition:

Partial Information Disclosure (Index Score Condition Only with No Dimension Information):
Partial Information Disclosure (Dimension Information Condition Only with No Index Score):

Full Information Disclosure (Dimensions of Sustainability and Index Score Condition):
APPENDIX E

Sustainability Disclosure Manipulations Used for Experiment 3

All images created by author.
EXAMPLES OF SUSTAINABILITY DISCLOSURE CONDITIONS USED IN EXPERIMENT 3

Control Conditions:
Low Sustainability Level Disclosure Conditions:
High Sustainability Level Disclosure Conditions:

**Sunny’s Frozen Apple Pie**

Microwaveable

**Mr. Eddie's Garden Fresh Pizza**

Microwaveable

APPENDIX F

Sustainability Disclosure Manipulations Used for Experiment 4

All images created by author.
EXAMPLES OF SUSTAINABILITY DISCLOSURE CONDITIONS USED IN EXPERIMENT 4

Within the Latitude of Acceptance:

Outside the Latitude of Acceptance:
APPENDIX G

Sustainability Disclosure Manipulations Used for Experiment 6

All images created by author.
EXAMPLES OF SUSTAINABILITY DISCLOSURE CONDITIONS USED IN EXPERIMENT 6

Low Sustainability Level Conditions:

High Sustainability Level Conditions:
APPENDIX H

Measures Used for Experiment 1
EXPERIMENT 1 MEASURES

Dependent Measures

Willingness to Pay a Premium Price (Netemeyer et al. 2004)

The price of this laundry detergent (dish soap) would have to go up quite a bit before I would switch to another laundry detergent (dish soap). (Endpoints: “Strongly disagree” – “Strongly agree”)

Purchase Intentions (modified from Kozup, Creyer, and Burton 2003)

Assuming you were going to buy a laundry detergent (dish soap), would you be more likely or less likely to purchase this product? (Endpoints: “Less likely” – “More likely”)

Product Choice

If you were to choose one of the laundry detergents (dish soaps) on the retail shelf, which one would you choose? (Laundry detergent brand options: Woolite, Purex, Sun, and All; Dish soap brand options: Palmolive, Ajax, Ivory, and Dawn)
APPENDIX I

Measures Used for Experiment 2
EXPERIMENT 2 MEASURES

Dependent Measures

Perception of Sustainability ($\alpha_{\text{low}} = .96$, $\alpha_{\text{moderate}} = .93$, and $\alpha_{\text{high}} = .97$) (modified from Kozup, Creyer, and Burton 2003)

1. How important would this product be as part of sustainable behavior? (Endpoints: “Not important at all” – “Very important”)
2. Overall, how would you rate the level of sustainability of this product? (Endpoints: “Not sustainable at all” – “Very sustainable”)
3. Is this product bad or good for sustainability? (Endpoints: “Bad” – “Good”)

Willingness to Pay a Premium Price ($\alpha_{\text{low}} = .97$, $\alpha_{\text{moderate}} = .82$, and $\alpha_{\text{high}} = .84$) (Netemeyer et al. 2004)

1. The price of this laundry detergent would have to go up quite a bit before I would switch to another laundry detergent. (Endpoints: “Strongly disagree” – “Strongly agree”)
2. I am willing to pay a higher price for this laundry detergent than for other laundry detergents. (Endpoints: “Strongly disagree” – “Strongly agree”)
3. I am willing to pay _____ % more for this laundry detergent over other laundry detergents. (Endpoints: “0%” – “30%”)

Purchase Intentions ($\alpha_{\text{low}} = .91$, $\alpha_{\text{moderate}} = .92$, and $\alpha_{\text{high}} = .93$) (modified from Kozup, Creyer, and Burton 2003)

1. Assuming you were going to buy a laundry detergent, would you be more likely or less likely to purchase this product? (Endpoints: “Not likely” – “Very likely”)
2. How probable is it that you would consider the purchase of this product, if you were going to buy a laundry detergent? (Endpoints: “Not probable” – “Very probable”)
3. How likely would you be to purchase this laundry detergent, given the information shown on the front of the package? (Endpoints: “Less likely” – “More likely”)

Product Choice

If you were to choose one of the laundry detergents on the retail shelf shown above, which one would you choose? (Brand options: Monarch, Colony, and Baron)
APPENDIX J

Measures Used for Experiment 3
EXPERIMENT 3 MEASURES

Dependent Measures

*Perception of Sustainability* ($\alpha = .91$) (modified from Kozup, Creyer, and Burton 2003)

1. How important would this product be as part of sustainable behavior? (Endpoints: “Not important at all” – “Very important”)

2. Overall, how would you rate the level of sustainability of this product? (Endpoints: “Not sustainable at all” – “Very sustainable”)

3. Is this product bad or good for sustainability? (Endpoints: “Bad” – “Good”)

*Perceived Taste*

What is your overall attitude toward this frozen apple pie/vegetable pizza? (Endpoints: “Very poor taste” – “Very good taste”)

*Willingness to Pay a Premium Price* ($\alpha = .80$) (Netemeyer et al. 2004)

1. The price of this product would have to go up quite a bit before I would switch to another frozen apple pie/vegetable pizza. (Endpoints: “Strongly disagree” – “Strongly agree”)

2. I am willing to pay a higher price for this product than for other frozen apple pie/vegetable pizza. (Endpoints: “Strongly disagree” – “Strongly agree”)

3. I am willing to pay ______ % more for this product over other package of apples/frozen pizza products. (Endpoints: “0%” – “30%”)

*Purchase Intentions* ($\alpha = .94$) (modified from Kozup, Creyer, and Burton 2003)

1. Assuming you were going to buy a frozen apple pie/vegetable pizza, would you be more likely or less likely to purchase this product? (Endpoints: “Not likely” – “Very likely”)

2. How probable is it that you would consider the purchase of this product, if you were going to buy a frozen apple pie/vegetable pizza? (Endpoints: “Not probable” – “Very probable”)

3. How likely would you be to purchase this frozen apple pie/vegetable pizza, given the information shown on the front of the package? (Endpoints: “Less likely” – “More likely”)
APPENDIX K

Measures Used for Experiment 4
EXPERIMENT 4 MEASURES

Dependent Measures

Perceived Quality \( (r_{\text{low and high}} = .88) \) (Boulding and Kirmani 1993)

Compared to other laundry detergents, what is the likely quality of this detergent?
(Endpoints: “Much lower than average quality” – “Much higher than average quality”; “High quality” – “Low quality”)

Willingness to Pay a Premium Price \( (\alpha_{\text{low}} = .81 \text{ and } \alpha_{\text{high}} = .78) \) (Netemeyer et al. 2004)

1. The price of this laundry detergent would have to go up quite a bit before I would switch to another laundry detergent. (Endpoints: “Strongly disagree” – “Strongly agree”)

2. I am willing to pay a higher price for this laundry detergent than for other laundry detergents. (Endpoints: “Strongly disagree” – “Strongly agree”)

3. I am willing to pay _____ % more for this laundry detergent over other laundry detergents. (Endpoints: “0%” – “30%”)

Purchase Intentions \( (\alpha_{\text{low}} = .96 \text{ and } \alpha_{\text{high}} = .95) \) (modified from Kozup, Creyer, and Burton 2003)

1. Assuming you were going to buy a laundry detergent, would you be more likely or less likely to purchase this product? (Endpoints: “Less likely” – “More likely”)

2. How probable is it that you would consider the purchase of this product, if you were going to buy a laundry detergent? (Endpoints: “Not probable” – “Very probable”)

3. How likely would you be to purchase this laundry detergent, given the information shown on the front of the package? (Endpoints: “Not likely” – “Very likely”)
APPENDIX L

Measures Used for Experiment 5
EXPERIMENT 5 MEASURES

Dependent Measures

*Product Performance*

Compared to other cleaning wipes, what is the likely quality of this Livin' Care (NewGen) wipe? (Endpoints: “Poor performance” – “Excellent performance”)

*Willingness to Pay a Premium Price* (Netemeyer et al. 2004)

The price of this cleaning wipe would have to go up quite a bit before I would switch to another cleaning wipe. (Endpoints: “Strongly disagree” – “Strongly agree”)

*Purchase Intentions* (modified from Kozup, Creyer, and Burton 2003)

Assuming you were going to buy a cleaning wipe, would you be more likely or less likely to purchase this product? (Endpoints: “Less likely” – “More likely”)

*Perceived Consumer Efficacy* ($r = .71$) (Ellen et al. 1991).

1. There is not much that any one individual can do about the environment. (Endpoints: “Strongly disagree” – “Strongly agree”)

2. The conservation efforts of one person are useless as long as other people refuse to conserve. (Endpoints: “Strongly disagree” – “Strongly agree”)

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APPENDIX M

Measures Used for Experiment 6
EXPERIMENT 6 MEASURES

Dependent Measures

**Perceived Quality** \((r = .90)\) (Boulding and Kirmani 1993)

Please rate the following statements regarding your (the average American consumer's) perceived quality of this bag of potato chips. (Endpoints: “Much lower than average quality” – “Much higher than average quality”; “High quality” – “Low quality”)

**Perceived Taste**

What is your overall attitude toward this bag of potato chips? (Endpoints: “Very poor taste” – “Very good taste”)

**Willingness to Pay a Premium Price** \((\alpha = .80)\) (Netemeyer et al. 2004)

1. The price of this laundry detergent would have to go up quite a bit before I (the average person) would switch to another bag of potato chips. (Endpoints: “Strongly disagree” – “Strongly agree”)

2. I am (The average person is) willing to pay a higher price for this laundry detergent than for other bags of potato chips. (Endpoints: “Strongly disagree” – “Strongly agree”)

3. I am (The average person is) willing to pay ______ % more for this laundry detergent over other bags of potato chips. (Endpoints: “0%” - “30%”)

**Purchase Intentions** \((\alpha = .95)\) (modified from Kozup, Creyer, and Burton 2003)

Assuming you were going to buy a bag of potato chips, would you be more likely or less likely to purchase this product? (Endpoints: “Less likely” – “More likely”)
MEMORANDUM

TO: Scot Burton
    Yoon-Na Cho

FROM: Ro Windwalker
       IRB Coordinator

RE: PROJECT CONTINUATION

IRB Protocol #: 11-07-033

Protocol Title: Consumer Behavior Research - Mindful Consumption of Sustainable Products

Review Type: ☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB

Previous Approval Period: Start Date: 08/02/2011 Expiration Date: 08/01/2012

New Expiration Date: 08/01/2013

Your request to extend the referenced protocol has been approved by the IRB. If at the end of this period you wish to continue the project, you must submit a request using the form Continuing Review for IRB Approved Projects, prior to the expiration date. Failure to obtain approval for a continuation on or prior to this new expiration date will result in termination of the protocol and you will be required to submit a new protocol to the IRB before continuing the project. Data collected past the protocol expiration date may need to be eliminated from the dataset should you wish to publish. Only data collected under a currently approved protocol can be certified by the IRB for any purpose.

This protocol has been approved for 1,600 total participants. If you wish to make any modifications in the approved protocol, including enrolling more than this number, you must seek approval prior to implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or irb@uark.edu.
MEMORANDUM

TO: Scot Burton
   Yoon-Na Cho

FROM: Ro Windwalker
      IRB Coordinator

RE: PROJECT CONTINUATION

IRB Protocol #: 11-09-130

Protocol Title: Consumer Behavior Research - Consumer Perceptions and Attitudes on Sustainability Labeling

Review Type: ☑ EXEMPT ☐ EXPEDITED ☐ FULL IRB

Previous Approval Period: Start Date: 10/04/2011  Expiration Date: 10/03/2012

New Expiration Date: 10/03/2013

Your request to extend the referenced protocol has been approved by the IRB. If at the end of this period you wish to continue the project, you must submit a request using the form Continuing Review for IRB Approved Projects, prior to the expiration date. Failure to obtain approval for a continuation on or prior to this new expiration date will result in termination of the protocol and you will be required to submit a new protocol to the IRB before continuing the project. Data collected past the protocol expiration date may need to be eliminated from the dataset should you wish to publish. Only data collected under a currently approved protocol can be certified by the IRB for any purpose.

This protocol has been approved for 800 total participants. If you wish to make any modifications in the approved protocol, including enrolling more than this number, you must seek approval prior to implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or irb@uark.edu.
MEMORANDUM

TO: Yoon-Na Cho  
    Robin Soster  
    Katie Kelting  

FROM: Ro Windwalker  
       IRB Coordinator  

RE: New Protocol Approval  

IRB Protocol #: 12-09-098  

Protocol Title: Consumer Shopping September 2012  

Review Type: ☑ EXEMPT ☐ EXPEDITED ☐ FULL IRB  

Approved Project Period: Start Date: 09/20/2012  Expiration Date: 09/19/2013  

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form Continuing Review for IRB Approved Projects, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (http://vpred.uark.edu/210.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 600 participants. If you wish to make any modifications in the approved protocol, including enrolling more than this number, you must seek approval prior to implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or irb@uark.edu.
The conceptual definition of sustainability is “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Economic Development 1987).

“Smart disclosure” refers to complex information and data in standardized formats to enable consumers to make informed decisions (Office of Information and Regulatory Affairs 2011).

The other categories used for evaluation were of interest in other studies, which engendered the feel of a “real” shopping trip while concurrently offering multiple labeling considerations (i.e., not just sustainability), which helped to minimize the potential for demand effects.

Analyses were performed with and without these eight participants who mentioned some role of sustainability labeling on product evaluations or purchasing decisions (i.e., a potential demand effect). All statistical tests remained consistent when including or excluding these participants, but we chose to eliminate these respondents from subsequent analyses.

Twenty-two participants who mentioned the colors of laundry detergent as similar to those of Tide were eliminated from the further analyses to account for a familiarity bias effect. In addition, 29 participants responded that they may have discerned the primary purpose of the study. We conducted the analyses with and without these participants. The results remained consistent for all tests of hypotheses. To be conservative with our statistical tests, we removed the participants for whom there were any concerns, resulting in the analysis of 191 participants’ responses.

In order to rule out potential explanation of sustainability labeling factors driving the mediation effects, the effect sizes are calculated. The effect size for low sustainable product was higher on the perception of sustainability than willingness to pay a premium price and purchase intentions ($d = .15$ vs. $d = .04$ vs. $d = .11$). Similarly, the effect size of high sustainable product indicated that the perception of sustainability had a greater explanatory power than either willingness to pay a premium price or purchase intentions ($d = .19$ vs. $d = .09$ vs. $d = .07$). Based on Cohen’s criteria (1988), the perception of sustainability has a medium sized effect.

Pretests indicated that the sustainability latitude of acceptance (LA) for this category ranged from 3 to 7 (on the nine point scale used). Levels within the LA were set at 4 and 6; levels outside the LA were set at 1 and 9.

Additional analyses were conducted to assess whether participants integrated dimensional sustainability information in the overall product evaluations. The results showed three-way interactions between the sustainability level, construal, and latitude of judgment on the evaluation of water, energy, and energy dimensions ($F$ values ranging from 10.18 to 14.47, $p<.01$), indicating that sustainability attributes indeed influenced the overall product perceptions.

The number of sanitizing wipes used after the participants disposed the wipes was counted. There were no significant differences in the number of wipes used across the level of perceived efficacy or sustainability ratings. I also examined other product attributes to further consider product inferences (i.e., strength, powerfulness, toughness, and sturdiness). All of these attributes did not mediate the effect of disclosure format conditions and suggested little liability effect.