Overcoming the Performance Liability of Environmentally Friendly Products: An Examination of Subtle Signals and Green Attribute Optionality.

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The candidate confirms that the work submitted is his own and that appropriate credit has been given where reference has been to the work of others.

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B.U

Abstract

With the ever-growing threat posed by climate change in the minds of the world's population, consumers are being asked to alter their consumption behavior, in the hope that such a change may help address current and future climate challenges. Thus, conventional wisdom would suggest that firms should develop and promote a product based on its environmental credentials. In doing so, consumers are likely to feel as though they are making a positive impact on the environment. However, despite the importance of environmental consumption, green products are often viewed as orthogonal with product performance. Given the importance placed on a product's performance ability, firms seeking to promote green products may find that their previously assumed asset has become a liability.

In the present thesis, we aim to explore two unique strategies in which a firm can enhance a green product's perceived performance ability. The first is that of green product communication strategy. While firms may desire a communication strategy whereby the product environmental attribute is the focal component, we posit that such an approach maybe have negative consequences. Therefore, we develop and test the concept of green understatement. In this strategy, a firm employs subtle (vs. explicit) environmental attribute signals to communicate a green product's environmental aspect. The results of three experiments show that a green understatement communication strategy leads to higher performance evaluations. Moreover, we introduce several boundary conditions, whereby this effect becomes stronger in situations of higher performance criticality (Experiment 1) and far social distance (Experiment 2) but is mitigated when the environmental attribute becomes optional (Experiment 3). Furthermore, we examine the mediating mechanism of autonomous motivation, whereby a green understatement communication strategy positively impacts on a consumers' sense of autonomy, thus enhancing performance evaluations.

The second strategy that we explore is the role of green attribute optionality, whereby the green attribute becomes optional via two distinct default policies (i.e. opt-in and opt-out). Thus, although the green attribute is present and may enhance the products' environmental characteristics, it is not required for it to function. The findings of three experiments demonstrate that the opt-in green attribute optionality strategy increases performance evaluations compared to the non-optional and opt-out strategies (Experiment 4). Moreover, we find that this effect is negated when an individual possesses an analytical, as compared to a holistic, mindset (Experiment 5). Finally, we show that green product typicality mediates the relationship between green attribute optionality and performance evaluations (Experiment 6). Specifically, when the product is seen as typical to the green product category, performance evaluations erode.

Our findings help advance our theoretical understanding of the role of green product communications and attribute optionality. Moreover, we provide managerial insights into the promotion and the production of green products to alleviate the sustainability liability.

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Preface

In this thesis, there are two main parts. In Part 1, which is contained in Chapter 2-5, we explore the role of green product communication strategy and the mediating role of autonomous motivation. Following the literature review, we present the hypotheses development and the research methodology, followed by the results for Experiment 1, 2, and 3. In Part 2, we examine the role of green attribute optionality, along with the mediating role of green product typicality and the moderating role of cognitive style. The literature review is presented, along with the hypotheses development and results for Experiment 4, 5 and 6. However, despite the differences, each uses an identical research methodology and philosophical underpinning.

List of abbreviations

ANCOVA: Analysis of Covariance

ANOVA: Analysis of Variance

BCCI: Bias-Corrected Confidence Intervals

CI: Confidence interval

df: Degrees of Freedom

DV: Dependent Variable

F: F-test value (ratio of the explained and unexplained variance)

IV: Independent Variable

LLCI: Lower Limit Confidence Interval

M: Mean

MTurk: Amazon Mechanical Turk

N: Number

p: Probability

SD: Standard Deviation

SDT: Self-Determination Theory

SPSS: Statistical Package for Social Science

t: T-Value (hypothesis testing statistic)

ULCI: Upper Limit Confidence Interval

Chapter 1 – Introduction

"If it's fun in any way it's not environmentalism"

(Futurama)

1.1 Green Product Marketing

Increasingly, consumers are demanding new products that feature attributes that are beneficial for the environment. In fact, consumers often state that they are interested in products that emit less pollution, use fewer natural resources and are less harmful to the environment (Luchs, Naylor, Irwin, and Raghunathan, 2010). In 2012, a National Geographic study found that 56% of a surveyed 17,000 people described themselves as green (i.e. avoiding environmentally harmful products, minimizes waste, tries to save energy and chooses the environmentally friendly product as often as possible). Moreover, it was expected that another 30% would be added within five years (National Geographic, 2012). Building on this, a recent study conducted by the Nielsen Global Survey found that 66% of global respondents stated that they were willing to pay more for products and services that were produced by firms who are committed to positive social and environmental concerns (Nielsen, 2015).

To capitalise on this perceived demand, firms have begun to extensively develop products that are environmentally friendly. For instance, the number of products marketed using environmental claims in the United States grew from around 100 in 2004 to more than 1,500 in 2009 (Makhijani, 2013). Moreover, a recent report from the International Council on Clean Transportation found that the amount of hybrid vehicles in the market has dramatically increased from around five models in 2004 to 45 a decade later (German, 2015). Additionally, to align their communication message to perceived consumer interest, firms have employed an explicit communication strategy, whereby the main component of the advertising message is the product's unique selling proposition (i.e. green attributes). For example, Toyota made the

Prius' environmental attributes prominent (i.e., carbon emissions), while using a more forceful tone that asked consumers "*Are you green yet*". This growing trend highlights the notion that firms are eager to distinguish their green products and services from the traditional market segment (Hartmannand and Apaolaza-Ibanez 2009, 2010; Iyer and Banerjee 1993; McEachern and Warnaby 2004).

However, despite their stated willingness to alter their consumption behaviour in favour of green products, many consumers remain hesitant (Peloza, White, and Shang, 2013). Undoubtedly, there may be many factors at play influencing this disconnect between attitudes and behaviours. However, the most cited reason for this disconnect between consumer attitudes and their purchase behaviour is that of product performance concerns. In a recent study from Grail Research, it was found that greenness is not enough to convince consumers to purchase. In fact, it was found while consumers care about environmentalism, green products must offer similar performance to traditional alternatives (Grail Research, 2011). This notion is concerning, as research from ZenithOptimedia found that consumers have strong preconceptions about green products being less effective than their traditional counterparts (Shotton, 2015). This finding is supported by past literature, as scholars have shown that the addition of environmental attributes may in fact have detrimental impacts on a consumers' product performance evaluations (Luchs, et al. 2010; Olson, 2013). For example, Newman, et al. (2014) found that when firms developed a product with environmental attributes, consumers perceived that the firm had devoted resources away from product quality, thus reducing the product's ability to perform as expected. In addition, Luchs, et al. (2010) termed the phrase "*sustainability liability*" to refer to the belief held by consumers that green products do not perform as well as their traditional counterparts. Thus, consumers are often reluctant to make perceived performance sacrifices for environmental gain (Luchs and Kumar, 2015; Olson, 2013; Tesseras, 2015).

Based on this, select firms have begun altering their approach to green product marketing both in terms of product development and marketing communications. For instance, many automakers have begun to development green product attributes that are not central to the product's functioning. While Nissan has approached the green product market with a fully electric vehicle, the Ford Motor Company changed the fabric in its cars seats to include up to 25% recycled material (Ford, 2013). Such an attribute is not a core component, but rather a peripheral attribute, in that its addition does not impact on the core attributes of the product (Gatignon, et al. 2002). In a similar vein, automakers have begun to alter the way in which they promote their green products. Although firms may wish to communicate a product's environmental attributes, doing so may pose a sustainable risk (Tesseras, 2015). Thus, to promote their new electric vehicle, both BMW and Tesla have incorporated subtle green signals, whereby the product's green attributes are downplayed, allowing additional attributes to be prominent in the message. Such a strategy is not localised to automakers. In fact, to acquire new customers, ecological cleaning brand Ecover had to alter its promotion strategy, shifting the focus from sustainability to efficacy (Tesseras, 2015). In the same vein, Method, a company that produces green household cleaning products, promotes the products' design and efficacy in its communication messages, despite its mission statement's strong emphasis on its environmental commitment (Westervelt, 2014).

While both approaches may alleviate the green product performance liability, there has been a dearth of research in these areas. For green product communications, past green marketing literature has often advocated for the use of explicit signals in a green product communication message, whereby the environmental attributes of the product are made prominent (e.g. Gershoff and Frels, 2015; Lin and Chang, 2012; Newman et al., 2014). However, we posit that such an approach may cause a firm's green product to become a liability, as the prominent attribute displayed in the communication message is inflicted with a performance stigma.

Unlike explicit signals, subtle signals have often been overlooked in past research. Subtle signals occur when a firm downplays the product's environmental attributes (Berger and Ward, 2010). As such, the signal is harder to identify for consumers. We refer to this approach as green understatement. Thus, although the product is green, the relevant green information is understated, allowing additional information to be presented. Such information can reassure consumers that the product can perform at a similar level to traditional alternatives.

Additionally, the majority of green marketing research has assumed that green products are homogenous, in that they can either be green or non-green (e.g. Lin and Chang 2012; Luchs and Kumar 2015; Newman et al. 2014; Olson 2013). However, many products feature both environmental and non-environmental product attributes and modes that consumers can select to control how the product will function. Extending this notion, we explore the concept of green attribute optionality, building on past literature on peripheral attributes (Gatignon, et al. 2002) and choice architecture (e.g. Brown and Krishna 2004). Optionality is defined as an attribute that is designed to enhance the benefits provided by the product, but is not required for it to function. Extending this concept, we employ choice architecture to outline two distinct approaches to optionality (e.g. Johnson, et al. 2012). The first, is an opt-in strategy, whereby consumers must state their opinion to receive the given option. The second is that of an opt-out strategy, whereby consumer choice is presumed, and unless stated otherwise, is automatically assigned to the default. Scholars within the domain of choice architecture has often found support for the positive effect of an opt-out strategy, whereby the given attribute or option is the default. Brown and Krishna (2004) define defaults as the alternative a consumer will receive if they do not explicitly select otherwise. While past literature has shown support for the opt-out default policy (e.g. Johnson and Goldstein, 2003; Goswami and Urminsky 2016), defaults have also been shown to act as a carrier of meaning. Thus, when inferring product value, consumers will turn to the default attribute (Brown and Krishna, 2004). Given the negative

performance stigma associated with environmental attributes, a default may lead to a reduction in performance evaluations.

Thus, we aim to examine both green understatement and green attribute optionality and how they can impact on performance evaluations. First, we hypothesize that a green understatement strategy (i.e. subtle green signals), as opposed to an explicit green product communication strategy, will enhance a consumers' perception of green product performance. In doing so, we build upon the perceived performance liability associated with green products, as well as signalling literature, to posit that subtler communication of environmental attributes (i.e. green understatement) will enhance performance evaluations compared to an explicit communication strategy. Secondly, we examine the role of green attribute optionality and hypothesize that green product performance evaluations will be altered based on the selected optionality strategy. It is hypothesized that green product performance evaluations are enhanced when the associated green attribute is not the default option (opt-in), but may be activated if the user desires.

1.2 Gaps in Literature

Based on the relevant literature published in the green marketing domain, we have uncovered a series of gaps that this research aims to address. First, although prior literature has extensively investigated consumer responses to product greenness (e.g. Gershoff and Frels, 2015; Griskevicius, et al. 2010), it does not provide a clear answer on whether and how different green product communication strategies could mitigate the negative correlation between greenness and product performance perceptions. Despite strong consumer interest in green products, research shows that consumers remain hesitant to alter their consumption behavior (Peloza, White, and Shang, 2013), due in part to the perceived disassociation between environmental attributes and product performance. Furthermore, research shows that the inclusion of attributes that are beneficial to the environment may actually damage consumers'

product performance evaluations (Luchs, et al. 2010; Olson, 2013). However, studies have yet to explore how green product communications can overcome this dilemma.

Secondly, the concept of autonomy has largely been overlooked in previous green product marketing and advertising literature. However, a handful of studies have employed the concept of autonomous motivation in the sustainable behaviour context. For instance, Weinstein and Ryan (2010) employed self-determination theory to examine the impact of autonomous and controlled motivation related to helping others on well-being, while also exploring the effects on other outcomes of helping for both helpers and recipients. They find that autonomous motivation in the helper yields greater well-being benefits to both parties than that of controlled motivation. Yet, there exists no research that has explored the concept of autonomous motivation in relation to the evaluation of green products or how consumers evaluate green product messages.

Third, there have been a number of boundary conditions that have been explored in past green marketing literature. For example, Lin and Chang (2014) explored the moderating role of environmental consciousness in the relationship between green products and their perceived effectiveness compared to regular products. Finally, Gershoff and Frels (2014) employed attribute centrality in their examination of green attribute impact on green evaluations. Extending this line of research, we examine whether a product's category and the provided information via the selected green products communication strategy can impact on performance evaluations. Moreover, we explore whether an abstract or concrete mindset, evoked via social distance, can interact with green product communication strategy.

Fourth, an increasing number of firms are offering environmental features that may be activated and deactivated by the consumer. For example, numerous automakers have included a start-stop feature, aimed at reducing fuel consumption and carbon emissions. Moreover, household

appliances, such as washing machines, feature environmental technology that may be deactivated by the user (e.g. Samsung EcoBubble). Given these examples, green product managers can choose whether to build a green attribute into the core product, or offer it as a peripheral option. While extant green marketing literature has focused primarily on core attributes (e.g. Gershoff and Frels, 2014), there exists a dearth of research that explored peripheral optional attributes. Moreover, past literature in choice architecture, or defaults, has stated that optionality can take two forms (e.g. opt-in and opt-out; Johnson and Goldstein, 2002). Defaults are defined as the alternative a consumer will receive if they don't explicitly state otherwise. However, such research has yet to undercover how choice architecture and the role of defaults can impact on product evaluations.

Fifth, scholars have begun to examine the role of cognitive style and how it may impact on brand evaluations (e.g. Melnyk et al. 2012; Monga and John 2007, 2008, 2010). For example, Zhu and Meyers-Levy (2009) found that when a product is placed on a table holistic thinkers were more likely to view it as continuous parts of a larger whole, as compared to analytical thinkers. While this concept has been applied to branding contexts, including brand extensions and brand publicity, it has yet to be examined the green marketing contexts. Specifically, in the context of green attribute optionality. While the potential for default options to alter the evaluations of a product, service or policy is undisputed there has been a dearth of research that has attempted to uncover conditions in which those effects may be altered.

Sixth and finally, categorization and typicality are well studied concepts in the field of marketing. Moreover, typicality has been explored in the green marketing domain. For instance, Gershoff and Frels (2014) found that products with identical environmental benefits will viewed as more or less green based on whether the attribute is central versus peripheral. In doing so, they explored product category typicality. However, what has yet to explored is how choice architecture can impact on perceptions of typicality.

1.3 Contributions of this Thesis

Based on the six gaps in the literature that were identified in the previous section, this research aims to provide important contributions with the aim of addressing those gaps. First, to address the first gap, we will explore the role of green understatement. While the majority of green product communication strategies often advocate the use of explicit signals, such as emphasising green characteristics in communication messages (e.g., Gershoff and Frels, 2015; Lin and Chang, 2012; Newman et al., 2014), the use of subtler signals has often been overlooked. We aim to show that by adopting a green understatement strategy using subtle green signals, firms may be able to reduce the explicitness by which a green attribute is communicated, potentially alleviating the gap between environmental attributes and perceived product performance.

Second, we draw on self-determination theory to examine whether autonomous motivation is the mediating mechanism explaining the relationship between green product advertising and performance evaluations. In doing so, we offer an alternative perspective to that in prior research, which has often advocated the use of controlling appeals in green product communications that advocate behaviour based on external incentives (e.g., Peloza et al., 2013). However, by adopting a green understatement approach, one is performing a given behavior not because of external pressure but based on their internal desires. In this context, without personal identification with the motives for engaging in environmental behaviors, consumers will lack the desire to act. Thus, by exploring the role of autonomous motivation in the context of green product communications, we can develop a richer and more realistic characterization of how consumers may evaluate a given advertisement.

Third, we consider three moderating variables - performance criticality, social distance, and attribute optionality - to understand the conditions under which the impact of green communication strategy on performance evaluations may be altered. Study 1 examines the

moderating role of performance criticality (i.e., the level at which performance is a valued attribute in a given product category), extending prior research on product categorization (e.g., Gershoff and Frels, 2015; LeBoeuf and Simmons, 2010; Meyvis and Janiszewski, 2002) and schema congruity (e.g., Bodur, Gao, and Grohmann, 2014; Chandon, Wansink, and Laurent, 2000). In Study 2, we examine social distance (Trope and Libermann, 2007) and provide fresh insights into research that has demonstrated the role of psychological distance in influencing the effect of product communications on subsequent product-related evaluations (e.g., Hong and Lee, 2010; Yan and Sengupta, 2011). Finally, in Study 3, we extend literature on the innovation locus (Gatignon, et al. 2002) and show that an optional green attribute mitigates the effect of a green product communication strategy on performance evaluations.

Fourth, to extent past work in choice architecture and defaults (e.g. Brown and Krishna 2004; Häubl and Murray 2003; Levav, et al. 2010, Martin and Norton 2009). Scholars demonstrate that when factors in the decision environment influence consumer evaluations, changes in those factors may impact on the way in which an individual evaluation of a specific product. Within choice architecture lies two distinct dimensions of optionality; opt-in and opt-out. The first, is an opt-in strategy, whereby consumers must state their opinion to receive the given option. For example, many banks continue to send paper statements unless the consumer requests green electronic statements (Theotokis and Manganari, 2014). The second is that of an opt-out strategy, consumer choice is presumed, and unless stated otherwise, is automatically assigned to the default. For instance, in the hotel industry, towels are not replaced everyday unless a consumer opts-out of this service by taking the required action (i.e. placing the towels on the floor). Thus, building upon this past literature we examine the role of green attribute default policy and hypothesize that green product performance evaluations will be altered based on green attribute optionality.

Fifth, to understand how a consumers' thinking style could impact on the relationship between green attribute optionality and performance evaluations, we propose that cognitive style (i.e. holistic vs. analytical thinking) will moderate the relationship between the two green attribute optionality conditions (i.e. opt-in and opt-out) and performance evaluations. Thus, we aim to contribute to a better understanding of the effects of choice architecture on consumer attitudes and evaluations. Prior research has found several factors that may alter the impact of choice architecture, including anticipated guilt (Theotokis and Manganari, 2014), consumer expertise (Hildebrand, Haubl and Herrmann, 2014) and option price and product category price and commitment (Park, Jun and Macinnis, 2000). We aim to show that the effect of choice architecture can only be impacted by general processing styles that consumers being to the evaluative situation. Specifically, that when an analytical, rather than a holistic, mindset is activated performance evaluations are maintained, regardless of the selected green attribute optionality strategy.

Sixth and finally, to address the concept of typicality, we examine the concept as a mediating variable between green attribute optionality and performance evaluations. Contributing to past literature on product categorization, we posit that a default green attribute will lead to the associated products viewed seen as typical to other green products, thus aiding in categorization. However, this can result in prior knowledge beings transferred to the target product, reducing performance evaluations.

1.4 Objectives of this Research

Building on the research gaps presented and the contributions of this research, we formulate specific research objectives. The first three objects are based on the first section of this research, namely, the examination of green product communication strategy. First, we aim to examine the role of green product communication strategy on consumer performance evaluations in different product domains. Moreover, we aim to explore different communication strategies,

including attribute prominence and language assertiveness. Second, we aim to explore the theoretical concept of autonomous motivation as a mediating mechanism in order to understand how consumer autonomy is impacted by product communications and how that influences one's level of performance evaluations. Third, we aim to test whether the effect of green product communication strategies on performance evaluations can be moderated by performance criticality, social distance and attribute optionality. Therefore, the three objectives of the green product communication strategy part of this research are:

1) To gain an understanding on the relationship between green product communication strategy on performance evaluations.

2) To explore the role of autonomous motivation as a mediating mechanism that can be impacted by green product communications and alter performance evaluations.

3) To examine factors influencing this relationship, including performance criticality, social distance and attribute optionality.

Next, we present the objectives for the second part of this thesis. First, we aim to extend past literature on both innovation locus and choice architecture to explore the role of green attribute optionality on performance evaluations. Second, this research explores the role cognitive style to uncover how consumer performance evaluations derived from green attribute optionality can be impacted by one's thinking style. Third, we aim to explore the mediating mechanism of green product typicality to demonstrate that typicality can be harmful in a green product context. Thus, the three objectives for the green attribute optionality section of this research are as follows:

1) To explore the role of green attribute optionality on performance evaluations.

2) To examine the role of cognitive style and how it can alter one's performance evaluations derived from the different green attribute optionality strategies.

3) The test the mediating role of green product typicality on the relationship between green attribute optionality and performance evaluations.

The order to achieve these objectives, we will integrate different theoretical frameworks, specifically related to signalling, autonomous motivation, schema-congruity, social distance, innovation locus and choice architecture, cognitive style and product typicality. This combination of perspectives will provide a novel perspective in the examination of green product performance evaluations.

1.5 Thesis Outline

This thesis is formed by nine chapters with two separate parts (Table 1). The first chapter presents the introduction to this research, presenting the gaps in the literature and the contributions and objectives of this study.

Following this, the first part of this thesis is presented. In Chapter 2, we present the relevant literature on green product marketing and communications, self-determination theory, categorization, construal level theory and green attribute optionality. In examining each of these concepts, we provide a detailed account for their development and multi-disciplinary usage.

Chapter Three represents the hypotheses for the first half of this research. Specifically, the hypotheses aimed at examining green product communication strategy. Each hypothesis is generated to address the gaps that were identified in the literature in the introductory chapter. The hypotheses are formulated in order to connect the relevant theoretical frameworks presented in Chapter Two to allow for empirical investigation.

In Chapter Four we illustrate the methods that are used to conduct the empirical investigation of the formulated hypotheses that will be tested for both the green product communication strategy and green attribute optionality sections. Thus, the information presented is applicable

to both sections. In this chapter, we present the rationale behind our selection of an experimental methodology, along with the relevant data analysis techniques. This section represents the methodology for both Part 1 and Part 2 of this thesis.

In Chapters Five, we present and discuss the empirical results for the green product communication strategy section of this thesis. Three experiments are designed to test the hypotheses presented in Chapter Three. First, we examine the role of green product communication strategy and performance criticality on performance evaluations, mediated by autonomous motivation. Second, we test green product communication strategy and social instance on performance evaluations, mediated by autonomous motivation. Finally, we examine green product communication strategy and attribute optionality on performance evaluations.

Part Two begins in Chapter Six, whereby we present the literature on choice architecture, cognitive style and green product typicality. As in Chapter 2, we provide a detailed account for the development of each concept and its use across disciplines.

In Chapter Seven the hypotheses for the second half of this research. Specifically, the hypotheses aimed at examining green attribute optionality. The hypotheses are constructed based on past literature that was presented in Chapter Six.

In Chapter Eight, we present and discuss the empirical results related to green attribute optionality. First, we examine the direct relationship between green attribute optionality and performance evaluations. Second, we present the moderating variable of cognitive style. Third, we explore the mediating variable of green product typicality.

Chapter Nine provides an overall discussion of both research streams (i.e. green product communication strategy and green attribute optionality). In addition, we acknowledge the potential limitations of this research and present suggestions for future research.

Table 1 The Thesis Outline

Part	Chapter Number	Content
	1	Introduction
Part 1	2	Literature Review for Green Product Communication Strategy
	3	Hypotheses Development for Green Product Communication Strategy
	4	Research Methodology
	5	Results for Experiment 1, 2, and 3
Part 2	6	Literature Review for Green Attribute Optionality
	7	Hypotheses Development for Green Attribute Optionality
	8	Results for Experiment 4, 5, and 6
	9	General Discussion and Concluding Remarks

Chapter 2: The Literature Review for Green Product Communication Strategy

"We could have saved the Earth but we were too damned cheap."

(Kurt Vonnegut)

2.1 Chapter Overview

In this chapter, we present a review of different streams of literature that make up the theoretical framework of the first part of this thesis. The first section examines green product marketing and signalling theory. The second section outlines self-determination theory, including its development, meaning and usage. The third section presents past literature on the moderating variables of performance criticality, while the fourth examines social distance. Fifth, we explore past work in attribute optionality.

2.2 Environmental Marketing

The increasing development of green products has led to a plethora of research in the domain of marketing and consumer behaviour. In this section, we will examine the literature stream related to green product marketing. Specifically, how consumers evaluate green products. We will then explore the tenants of signalling theory and how it be utilised to understand how green product advertising can overcome the performance liability.

2.3 Green Product Marketing and Perceptions

In the development of new products, firms are increasing adding new environmental attributes. Such attributes may reflect moral principles (Ehrich and Irwin 2005; Irwin and Baron 2001; Irwin and Naylor 2009), such as fair labour practices or human treatment of animals, or they may relate to environmental issues. Such issues could include recycled components, nontoxic ingredients and reduced pollution. Traditionally, past literature has often referred to these attributes as environmentally friendly (e.g. Newman, et al. 2014). As

we review a wide range of past literature in the field of green marketing, we use the term "environmental" and "green" alternatively.

Previous research in the domain of environmentally friendly consumption behaviour has often found that consumers have a positive attitude towards recycling, the supporting of companies that donate to environmental groups, energy conservation and the consideration of green products when making a purchase decision (e.g. Allen, 1982; Laroche, Bergeron and Barbaro-Forleo, 2001; Luchs, et al., 2010). However, despite these claims, consumers remain reluctant to purchase green products. In fact, only a select number of consumers follow through by also performing environmental behaviours (Connolly and Prothero 2003; Ginsberg and Bloom 2004; Peattie and Peattie 2009). Thus, one of the primary aims of green product literature in the field of marketing has been to reduce this gap between consumer attitudes and their behaviour. Specifically, how can firms increase a consumers' willingness to consider the purchase of green products? One stream of literature has suggested that environmental attributes should be more visible and made important to consumers using marketing programmes that highlight their environmental benefits (Kilbourne and Carlson 2008; Sheth et al. 2011). However, such an programme may not take into consideration consumers perceptions regarding environmental attributes. Moreover, although consumers may value environmentalism or ethicality, it does not necessarily mean that they will also prefer green products (Luchs, et al. 2010). In the domain of corporate social responsibility (CSR), past research has found mixed results, with some indicating that it does not always lead to benefits for the firm (Luo and Bhattacharya 2006; Sen and Bhattacharya 2001). For instance, when a product is perceived to be high in quality, a positive CSR record can decrease purchase intent (Sen and Bhattacharya 2001). Furthermore, firms that are perceived to be less innovative can see a decrease in consumer satisfaction and financial results when engaging in CSR (Luo and Bhattacharya 2006).

Additionally, another stream of literature has explored how environmental attributes may impact on a consumers' evaluation of a green product. Specifically, the belief that, in addition to being perceived as environmentally friendly, the addition of an environmental attribute can alter a consumers' evaluation of that product by altering their perception of other valued attributes. Past research into halo effects (e.g., Nisbett and Wilson 1977) and schema-consistent judgments (e.g., Fiske and Pavelchak 1986) would suggest that a product that is perceived as superior in one dimension (e.g. environmentalism) it will be evaluated positively on other attribute dimensions. In other words, if consumers value the environmental attribute, the other attributes of the green product will be perceived more positively as well.

However, scholars have also suggested that the presence of a desirable attribute can have a negative impact on one's perception of other product attributes (Newman, et al. 2014). Consumers are often aware that firms have a finite number of resources to devote to product development. Based on the behavioural implications of efficient markets (Chernev and Carpenter, 2001), consumers may perceive that when a product is superior on one attribute, it will be inferior on other product attributes. In other words, if a product is developed with a superior green attribute, the other products attributes, such as performance, may suffer. In fact, Newman, et al. (2014) found that this was particularly the case when firms intentionally developed new environmental attributes. Research in the domain of intentionality suggests that there is a correlation between intentions and perceived effort (Heider, 1958). In relation to consumer behaviour, it is suggested that consumers may associate perceived effort with the motivations of the company (Morales, 2005). Based on this line of reasoning, Newman, et al. (2014) suggests that when a company intentionally develops a new environmental attribute, consumers will infer that additional resources were devoted to its development, taking resources away from other product attributes. Their argument is based on the zero-sum heuristic (Chernev, 2007; Chernev and Carpenter, 2001), which states that consumers

perceive firm resources as zero-sum. In other words, if a firm devotes resources to the development of a new environmental attributes, resources will have to be taken from other product attributes. For instance, Chernev (2007) found that when a toothpaste was perceived to be superior in its ability to fight cavities, it was perceived as inferior on tartar control. Thus, the authors posit and find that consumers infer that devoting additional resources to the development of environmental attributes implies that the firm invested fewer resources into product quality.

This finding is again confirmed by Lin and Chang (2011), who find that consumers often rely on lay theories when forming their product evaluations about missing or unavailable information (Broniarczyk and Alba 1994). Such a notion is supported in other literature, most notably in the food marketing context. Specifically, Raghunathan, Naylor and Hoyer (2006) found that consumers rely on their impressions of food healthiness to infer its tastiness. Moreover, Chandon and Wansink (2007) suggests that consumers use health claims to infer the calorie content of fast food. Furthermore, Chernev and Gal (2010) state that consumers perceive healthier meals to have less calories that unhealthy meals. In the context of green marketing, Lin and Chang (2011) found that when a product was perceived to be green, consumers used more of it in order to compensate for its perceived reduction in performance ability. This over usage negates the positive environmental benefits of the product.

Each of these examples highlight the strategy of compensatory inferences (Chernev and Carpenter, 2001). This refers to the notion that consumers observe and expect that product alternatives within a given category offer similar levels of benefits. Thus, when consumers employ compensatory inferences, they often reason that the dominate option negatively impacts on unobservable attributes. In the food context, such inferences explain why there exists a negative correlation between tastiness and healthiness (Chandon and Wansink 2007; Raghunathan, Naylor, and Hoyer 2006). For green product evaluations, this suggests that

consumers will use their lay inferences to determine that if a product is superior in greenness, it will be less effective in other areas.

However, prior literature has suggested that by providing information about missing values, a consumers tendency to rely on lay theories reduces (Raghunathan, Naylor, and Hoyer 2006). For instance, Luchs et al. (2010) found that providing product strength related information negated the negative effect of ethicality on a consumers' product preference. Therefore, we posit that a shift in communication strategy may alleviate the green product performance risk. In other words, by eliminating information asymmetry in relation to product performance, a firm may overcome the perceived green product performance liability. To explore this, we examine the role of signalling and product advertising.

2.4 Signalling Theory

Consumers are often confronted with a wide array of green and traditional products. However, they often lack the necessary information to make an informed judgement. This is known as information asymmetry. As explained by Stiglitz (2002), information asymmetry occurs when different parties have differing access to information. This information asymmetry arises between parties that have access to information and those that are unable to use it to make more informed choices. Stiglitz (2000) argues that there are two broad types of information asymmetry that are particularly important. The first is that of information regarding quality. In this instance, information asymmetry is crucial when one party is not fully aware of the characteristics of another party. The second relates to information of intent, whereby one party is concerned about another's behavioural intent (Elitzur and Gavious, 2003). The majority of research in this domain has focused upon the use of incentives as mechanisms to reduce moral hazards that may stem from an individual's behaviour (Jensen and Meckling, 1976). In contrast to this research, signalling theory has also been employed to examine how both parties (i.e. the firm and the consumer) can eliminate information asymmetry.

The origin of signalling theory can be traced back to the work of Spence (1973). In his seminal paper, Spence (1973) proposed signalling as a tool for creating optimized solutions for both the sender and the receiver. To explain the role of signals, he examines the labour market in which an employer lacks information regarding the quality potential employees. The firm would naturally seek a high-quality candidate, but they are unable to separate the high quality candidates from the low quality candidates until after they are hired. Thus, in order to signal quality, job candidate can obtain certification to reduce information asymmetry. However, as both employees differ in their level of pre-existing quality, the cost of certification acquisition is lower for the high-quality candidate and higher for the low-quality candidate. Therefore, certification is only economically viable for the high-quality candidate. Based on this, Spence (1973) argues that the signal is reliable, as the low-quality candidate will not be able to afford the cost of certification. Moreover, Spence (1973) argues that, unlike human capital theory, the education signal is used to transmit unobservable information rather than as a means to increase worker productivity (Weiss, 1995).

Expanding upon this work, Kirmani and Rao (2000) offer an additional illustration of the signalling theory model. They present two firms, one high quality and one that is low quality. While each firm is aware of their own quality, such information is not available to consumers. Thus, information asymmetry is present, presenting firms with an opportunity to signal its quality to outsiders. When the high-quality firm signals, they receive Payoff A. In contrast, if they choose to not signal, they receive Payoff B. For the low-quality firm, Payoff C is acquired when they choose to signal, while Payoff D is obtained when they abstain. Thus, signalling becomes a viable strategy when A is greater than B and when D is greater than C. In other words, it is more viable to not signal for the low-quality firm, whereas for the high-quality firm, signalling is the ideal strategy.

Before proceeding, we should note that in this research, quality refers to as the underlying, unobservable ability of the signaller to fulfil the needs and the demands of the receiver (Connelly, et al., 2011). In other words, quality represents the ability of a firm to provide relevant information to consumers. In the context of this research, quality may refer to the firms' ability to signal performance information to consumers. This differs from that of Spence (1973), who stated that quality relates education. If firms and consumers are rational, signalling theory examines conditions in which information asymmetry may be resolved. In these scenarios, the firm possess information about the quality of their goods or services. Consumers, in the evaluative context, lack the capacity to access this information and thus are unable to distinguish between high and low-quality goods and services. Thus, signalling theory has been applied to this domain to examine the role of firm developed signals that are sent to consumers. For instance, scholars have used signalling theory to explore the role of advertising (Ippolito and Roberts, 1986; Kirmani, 1990; Milgrom and Roberts, 1986; Nelson, 1974), price (Milgrom and Roberts, 1986), brand names (Erdem and Swait, 1998) and warranties (Grossman, 1981; Lutz, 1989; Spence, 1977).

In the context of this research, we explore the prominence of a given signal in a communication message and the ability of this information to aid in the generation consumer evaluations. Firms often employ explicit green product communications that aim to make clear the green products' unique attribute (i.e. environmentalism). While this may reduce uncertainty regarding this target attribute, information asymmetry remains, as consumers remain in doubt over the product's performance ability. In this instance, consumers will revert to their lay theories regarding resource allocation and green product performance. However, in contrast to this approach, research in the domain of conspicuous consumption has explored the role of subtle signals. Conspicuous consumption refers to an attempt by an individual to signal wealth and power through conspicuous consumption via the purchase of publicity visible goods and

services that in some instances, may cost more than their functional counterparts (Bagwell and Bernheim, 1996). To signal status, uniqueness or conformity, products must meet select criteria. The first is that of social visibility, in that to display wealth, it must be observed by others (Veblen, 1899). The second is that products have some symbolic meaning that can be interpreted by others in the intended way (Bagwell and Bernheim, 1996). Finally, the product needs to be scarce (O'Cass and Frost, 2002).

Firms can aid in this process through the development of visible logos or patterns. For example, the swoosh logo from Nike. Moreover, a product may belong to a specific product category. The most notable in this century have been products featuring environmental characteristics. Griskevicius, et al. (2010) argued that consumers purchase green products in order to signal to others that they are willing and able to incur the cost of owning and using a green product. This cost may take the form of price, or the inference that green products are able to help the environment, but perform poorly compared to traditional alternatives. For example, the Toyota Prius allows an individual to signal to others that they are pro-social and that, instead of buying a car that may be more luxurious, they have chosen to sacrifice in the name of the environment. In fact, such a statement is often made by wealthy individuals, in that the Toyota Prius was the preferred vehicle choice in the United States' ten wealthiest postal codes (Breyer, 2012). It is argued that this notion can be explained by costly signalling (Grafen, 1990; Zahavi, 1975), in that a pro-social purchase signals to others not only one's level of altruism, but also their ability to incur costs (Bird and Smith, 2005).

In contrast to these explicit signals, subtle signals aim to reduce the prominence of a given product feature, making it harder to recognize (Berger and Ward, 2010). For example, in relation to consumption behaviour, explicit signals are more visible to the general population, making it easier to identify someone, as well as make it easier for others to determine which brand is the aspiration groups' symbol and adopt it for themselves. In this instance, subtle

signals may be preferred among groups who aim to distinguish themselves from mainstream consumers, as the signal can only be observed by those in the in-group (Berger and Ward, 2010). For green product advertising, subtle green signals may be the ideal approach, as this reduction in explicitness related to the environmental attribute will allow other product attributes to be observed by the consumer. This increased level of information may alleviate performance-related information asymmetry, as the firm has provided a sufficient level of information regarding the product's ability to perform. In line with past research, such information can help alleviate the performance liability (e.g. Luchs, et al. 2010).

Table 2 Key Literature for Green Product Marketing

Author(s) and Year	Title and Journal	Methodology	Main Variables	Research Summary
Spence (1973)	Job Marketing Signaling. The quarterly journal of economic	Equation Modelling	Signaling, equilibrium, information asymmetry	The author focuses upon the job market and the uncertainty that exists about potential candidates due to information asymmetry. Furthermore, they argue and show the implications of signalling and the equilibrium.
Kirmani and Rao (2000)	No pain, No Gain: A Critical Review of the Literature on Signalling Unobservable Product Quality. Journal of Marketing	Review	Signalling, product quality	The authors develop a typology for signalling theory and discuss the empirical evidence that exists in the signalling theory domain.
Chernev and Carpenter (2001)	The Role of Market Efficiency Intuitions in Consumer Choice: A Case of Compensatory Inferences. Journal of Marketing Research	Experimental Design	Consumer compensatory inferences, market efficiency beliefs, availability of other bases of inference	The authors find that consumers draw inferences when the market is perceived to be efficient, when there is discrepancy between what is observed and what is implied by market efficiency and other bases for inferences regarding unobserved product attributes.
Berger and Ward (2010)	Subtle Signals of Inconspicuous Consumption	Experimental Design	Signalling, preference, cultural capital, public vs. private	The researchers found that subtle signals impacted on consumer preferences and inference making. Subtle signals are more

	Journal of Consumer Research		consumption settings	likely to be misperceived, which may be preferred by insiders.
Luchs, et al. (2010)	The Sustainability Liability: Potential Negative Effects of Ethicality on Product Preference. Journal of Marketing	Experimental Design	Sustainability, ethical products, green marketing, implicit associations, corporate social responsibility	The extent to which sustainability impacts on consumer preference is dependent on the benefit that consumers desire from a given product category.
Newman, et al. (2014)	When Going Green Backfires: How Firm Intentions Shape the Evaluation of Socially Beneficial Product Enhancements Journal of Consumer Research	Experimental Design	Green products, intentionality, product evaluations	This research demonstrates that a firms' intentionality in relation to green product development can impact on performance perceptions.

2.3 Self Determination Theory

"Autonomy was shopped to us. We looked at the price and thought it was absurdly high."

(Larry Ellison)

2.3.1 Introduction

Research in the domain of social psychology has often favoured theories that posit that one's social environment can impact on an individuals' ability to learn (i.e. attitudes, values, motivations and behaviours). The social environment helps teach individuals what to value, think, need and do. Such a viewpoint has been labelled the "standard social science model" (Cosmides and Tooby, 1992). In the area of developmental psychology literature, this model is often aligned with the social learning theory, which states that one learns via a process that takes place in the social context through reinforcement and observational learning. It is through these processes that one can learn and grow (Ryan and Deci, 2000).

Differing to that of social learning theory, the theory of self-determination (SDT) has also focused upon the impact of social environments on an individuals' attitudes, values, motivations and behaviours. It assumes that individuals have evolved to be inherently active, intrinsically motived and are oriented toward developing naturally via an integrative process (Deci and Ryan, 2011). Such qualities continue to develop over time, impact on one's ability to learn and are altered by an individual's social environment (Deci and Ryan 2011).

The first natural process that needs to occur to foster both psychological and behavioural well-being is the notion of intrinsic motivation. Intrinsic motivation relates to motives that are not due to psychological drivers or their derivatives for which the reward is the main catalyst of the action. In other words, the process of being intrinsically motivated represents actions that are taken based on their inherent interest, value and enjoyment. The second natural process is that of integration, whereby motivations become a part of the self (Ryan and Deci, 2000). For

these active processes to operate normally resulting in psychological well-being, individuals require maintenance in form of biological and psychological nutriments (Ryan, 1995). If these nutriments are missing, they may hinder these natural processes, resulting in experiences, development and behaviours that are less than optimal. The majority of literature in SDT has primarily focused on these psychological nutriments within the context of one's social environmental via biological supports. Moreover, inherent individual differences are also examined and found to play an important role.

Per past literature within the domain of SDT, scholars have proposed that there are three main psychological needs (Ryan and Deci, 2000). Specifically, that of relatedness, competence and importantly for this research, autonomy. Relatedness is one's need to belong and feel connected to others. For example, a student who feels as though they are supported and cared for by their teachers and parents. Competence is a need that relates to one's sense of efficacy with respect to a target activity (Ryan and Deci, 2000). By using a similar example to that of relatedness, a student may feel competence when they receive unexpected positive feedback. Finally, the notion of autonomy is a central tenant for integration to occur. An individual may feel as though their actions are derived from external incentives, rewards, threats or punishments. In this instance, autonomy may be hampered. Thus, autonomy is when one feels a sense of volition and choice, where actions are performed based on their inherent enjoyment or interest. Each of these aspects are essential for optimal development and functioning. Differing from that of the evolutionary perspective, scholars within the domain of SDT view each of these needs as underlying the adaptive organization of behaviour, being supported by many individual adaptions. (Ryan and Deci, 2000).

2.3.2 The growth of SDT

The emergence of SDT in social psychology literature has revolved around an examination of extrinsic rewards on intrinsic motivation. Deci (1971) was one of the first published articles in

which extrinsic rewards (i.e. monetary rewards) were shown to undermine an individuals' intrinsic motivation to perform a given activity. Following this seminal study, more than 100 similar studies have been conducted (Deci, Koestner and Ryan, 1999), supporting the belief that extrinsic rewards are negatively correlated with intrinsic motivation, and that such an approach is not ideal when attempting to motive individuals. However, not all scholars have been convinced by SDT research. Past work has taken issue with the notion that tangible rewards undermine intrinsic motivation and have even argued that there are confounds in the methodology (e.g. Calder and Staw, 1975). In addition, Eisenberger and Cameron (1996) stated that the findings presented in SDT research provide no clear reason to refrain from the use of rewards as a motivation tool. However, Deci, et al. (1999) refute these claims, stating that tangible rewards, as well as task-contingent and performance-contingent rewards, do in fact reduce one's sense of intrinsic motivation.

In examining alternations to intrinsic motivation based on extrinsic rewards, SDT scholars have employed the attributional concept of perceived locus of causality (deCharms, 1958). Simply put, the perceived locus of causality explores reasons for one's actions. Specifically, whether an individual has conducted an action is based on internal or external motivations (Ryan and Connell, 1989). In addition, intrinsic motivation has also been linked to the basic human need for competence and autonomy (i.e. self-determination). Intrinsic motivation was considered by scholars to be the fundamental inherent human characteristic of self-determination (Ryan and Deci, 2000). An individuals' level of intrinsic motivation could therefore be enhanced or reduced based on their social environmental and whether it supported or thwarted the need for competence and autonomy. For example, extrinsic rewards may leave individuals feeling like they are pawns to the reward (de Charms, 1968) and thus, autonomy may be hampered (Deci, et al., 1999). In addition, scholars have also shown that external factors such as deadlines (Amabile, DeJong and Lepper, 1999), controlling language (Vansteenkiste, et al., 2004), threat

of punishment (Deci, 1971) and competition (Deci, et al., 1981) damage the basic needs for competence and autonomy, resulting in an external locus of causality, reducing intrinsic motivation. Alternatively, choice and positive feedback were shown to enhance intrinsic motivation via increasing one's experience of competence and autonomy (Deci, et al., 1999).

Based on the above, the tenets put forward by SDT may be viewed in contrast to other psychological theories that have been used to explore intrinsic motivation. The notion that environmental factors and fundamental human needs are linked and can be used to explain the effect of one's social environmental on their level of intrinsic motivation.

2.3.3 The development of cognitive evaluation theory

The theory of cognitive evaluation was presented by Deci and Ryan (1985) as a sub-theory of SDT that had the aim of exploring factors that could explain the variability within intrinsic motivation. Cognitive evaluation theory encompasses both social and environmental factors that may enhance intrinsic motivation. It was developed based on the notion that intrinsic motivation is inherent and will be generated when an individual is in a situation that that allows it to flourish (Ryan and Deci, 2000). Put in another way, intrinsic motivation will be present if the conditions permit.

This sub-theory specifies two processes by which an individual's intrinsic motivation can be altered. The first, is that of social-contextual events, such as feedback, communications and rewards. These events may either enhance autonomy, resulting in an internal perceived locus of causality, or harm autonomy, leading to an external perceived locus of causality. Thus, events such as choice that lead to an internal perceived locus of causality and support the need for autonomy enhance intrinsic motivation. Moreover, scholars have shown that by providing optimal challenges and freedom from demeaning evaluations allows intrinsic motivation to enhance (Deci, 1975; Vallerand and Reid, 1984).

The second is that of competence need, whereby events such as positive feedback will enhance intrinsic motivation. Alternatively, negative feedback will result in a reduction in perceived competence, thwarting intrinsic motivation (Ryan and Deci, 2000). However, competence will not lead to an increase in intrinsic motivation if the action is not accompanied by a sense of autonomy (Ryan, 1982). In other words, there is no link between competence and intrinsic motivation growth in that an individual does not have an internal perceived locus of causality (de Charms, 1968). Thus, individuals need not only experience a sense of competence, but also feel as though their behaviour is self-determined. If both conditions are satisfied, intrinsic motivation will flourish. For example, positive feedback may enhance competence, but will only effect intrinsic motivation if it relates to an activity that is autonomously motivated (Pritchard, et al., 1977) or within an autonomy-supportive context (Ryan, 1982).

Furthermore, cognitive evaluation theory states that social environmental events, such as rewards or feedback, contain within them two aspects that are related to the concept of intrinsic motivation. The first aspect is related to control, which pressures the way in which people think, feel or behave. In this instance, motivation is controlled, resulting in an external locus of causality, reduced autonomy and thwarted intrinsic motivation (Ryan and Deci, 2000). The second is that of the informational aspect, which may convey both competence or incompetence information to individuals. The former, when conducted in an autonomy supportive context, enhances competence, autonomy and thus, intrinsic motivation. The latter aims to harm the need for competence, reducing intrinsic motivation (Ryan and Deci, 2000). In some instances, the information provided may result in an individual feeling as though they are incompetent and unable to obtain a desired outcome. In this case, it is supported that the individual will experience neither intrinsic nor extrinsic motivation, but rather a general lack of motivation towards the specific activity (i.e. amotivation) (Deci and Ryan, 2011). The

salience of these two aspects is fundamental to the fostering, or dampening of intrinsic motivation.

In summary, the cognitive evaluation theory framework suggests that social environments can either enhance or degrade intrinsic motivation by either helping or hindering an individual's inherent psychological needs. While both competence and autonomy have been linked with intrinsic motivation, it should be noted that individuals will only experience a sense of intrinsic motivation when an activity holds intrinsic interest or value.

2.3.4 The Nature of Autonomous and Controlled Motivation

Thus far, we have operated under the assumption that intrinsic motivation is the only type of self-determined motivation. However, most actions undertaken by individuals do not stem from intrinsic motivation. For example, in their examination of childhood activities, Ryan and LaGuardia (2000) state that early childhood behaviour is rarely intrinsic, and is often due to social pressure to perform activities that are not of interest. Based on this reasoning, it is important to understand how an individual acquires the motivation to perform an activity that is not intrinsically motived. Per SDT, an individuals' motivation may range from amotivation, or a complete unwillingness to comply, to passive compliance and active personal commitment, even when the motivating factor is external to the individual (Ryan and Deci, 2000). These differing levels of motivation reflect the varying degrees to which the value and regulation of a requested behaviour have been internalized and integrated. The concept of internalization refers to an individual accepting a value or regulation, while integration relates to a regulation that has been accepted as a part of the self. Thus, the processes of internalization, as well as integration, represent a central component for the regulation of behaviour in an individuals' life. This is due to the notion that individuals are often in situations in which behaviours and values are prescribed. However, often, these behaviours and values, which are not inherently interesting, are adopted by the individual. Thus, scholars within the SDT domain

have attempted to understand the processes by which a non-intrinsically motivated behaviour can become self-determined, as well as the way in which one's social environment influences those processes (Ryan and Deci, 2000).

Extrinsic motivation, in contrast to that of intrinsic motivation, refers to an action that is taken to obtain some separable outcome. While past research has often conceptualized intrinsic and extrinsic motivation as opposites (deCharms, 1968), SDT states that extrinsic motivation may vary in its relative autonomy (Ryan and Connell, 1989). This viewpoint demonstrates that extrinsic motivation may contain within it differing levels of autonomy. For example, if a person exercises throughout the week because they grasp its importance in relation to their health, that person is extrinsically motived. Similarity, an individual who conducts work due to threats of punishment is also said to be extrinsically motived. In both instances, the individual is conducting an action based on separate outcome. However, the former case of extrinsic motivation represents personal endorsement and a feeling of choice. In contrast, the latter relates to one's compliance with a personal threat. Thus, it is argued that each of these activities relates to a different level of relative autonomy.

To understand the differing forms of extrinsic motivation and the contextual factors that may either promote or inhibit internalization and integration of regulations, Deci and Ryan (1985) introduced the sub-theory entitled, organismic integration theory. The organismic integration theory taxonomy of motivational types is shown in Figure 1. The motivations are arranged left to right in terms of the extent to which the motivation is self-determined.

Figure 1 The SDT continuum (Ryan and Deci, 2000)
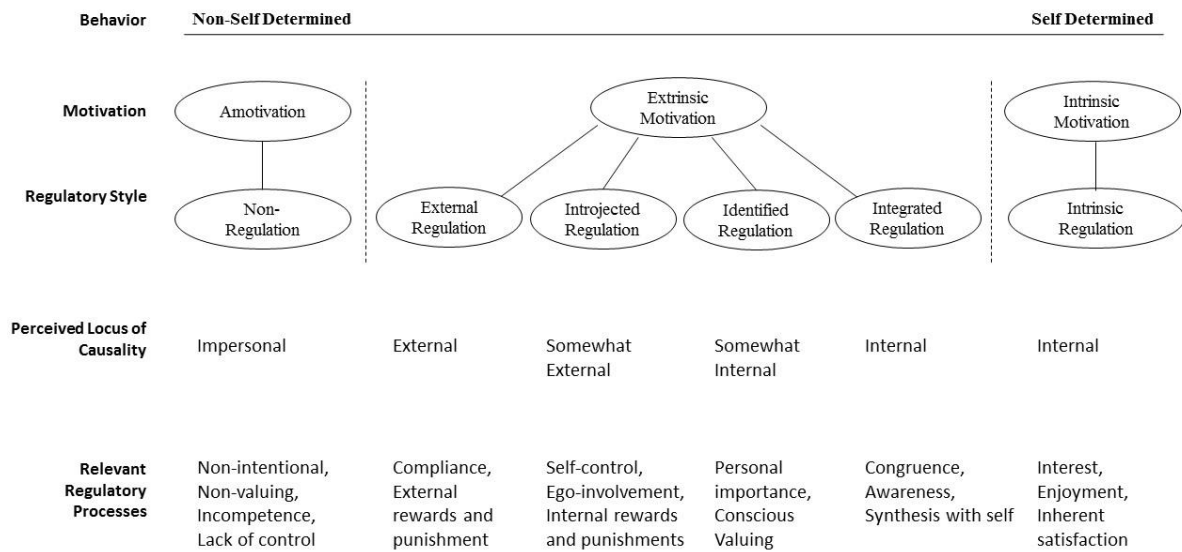
On the far left of the SDT continuum is amotivation. This relates to a state in which an individual lacks the intention to act. Put in another way, in this state, a person either does not act at all, or acts without intent (Ryan and Deci, 2000). Amotivation often develops when an individual does not value an activity (Ryan, 1995), feels a sense of incompetence (Bandura, 1986) or feels as though the action will not deliver a desired outcome (Seligman, 1975). To the far right is intrinsic motivation. In this state, the individual is acting based on inherent satisfaction. This is the most autonomous of the five motivation states and is the prototypical outline for self-determination (Ryan and Deci, 2000). To the right of amotivation are five motivational states that have been outlined by the organismic integration theory. In between these two motivational states exist four extrinsic motivations that vary in the extent to which their regulation is autonomous. Although past work has often viewed motivation as a unitary concept, scholars have argued that each motivational state is theoretically, experientially and functionally unique (Deci and Ryan, 1985).

1. **External regulation:** extrinsically motivated behaviours that lack autonomy are referred to as externally regulated. Individuals may perform these behaviours to satisfy an external demand or reward contingency. These behaviours are often experienced as controlled, resulting in an external locus of causality (deCharms, 1968). For example, a student may do their homework due to fear of punishment, or expectation of an external reward. This type of motivation has often been contrasted with intrinsic motivation in past SDT literature (e.g. Vansteenkiste, Lens and Deci, 2006, Weinstein and Ryan, 2010).

2. **Introjected motivation:** represents the second form of extrinsic motivation. In this case, an individual may take in a regulation, but has not yet fully accepted it as their own (Ryan and Deci, 2000). Similar to external regulation, this form of motivation is relatively controlled, in which behaviours are conducted in order to avoid guilt or anxiety. Unlike external regulation, introjected regulation relates to self-esteem, rather than external pressure (Deci and Ryan, 1995). Thus, the regulation does not originate from the individuals' sense of self and is experienced as pressure or control. For example, a student may feel guilty if they don't study before seeing friends. Thus, this motivation also takes the form of an external locus of causality (deCharms, 1968) and in many experiments, is combined with external regulation to form a controlled motivation composite score.

3. **Identification:** is the next form of motivation and refers to the process of identifying with the value of a behaviour and thus, it is accepted as a regulation (Ryan and Deci, 2000). For example, if a student studies or does their homework because they value its potential to allow them to access a good university. Thus, the individual is able to foresee the benefit provided by a given activity. While the person is engaging in the behaviour for an external outcome, they are doing so by

their own volition. Identification represents a fuller form of internalization and is often characterized by an internal locus of causality (deCharms, 1968).

4. **Integrated regulation:** the most autonomous form of extrinsic motivation is that of integrated regulation. Integration takes place when identified regulations become a part of the self. In this instance, they have evaluated and accepted the regulation, as it is congruent with one's other values and needs. In many ways, behaviours that represent integration are similar to that of intrinsic motivation, although they remain extrinsic as they are done to obtain a separable outcome that is not related to inherent enjoyment. In many cases, both identified, integrated and intrinsic motivation are combined to form an overall autonomous motivation composite.

The process of internalization and assimilation of regulations results in an increased level of autonomy in an individual's actions. While this process may occur in stages, SDT scholars have suggested that this does not indicate that individuals must process through each stage of internalization (Ryan and Deci, 2000). Ryan (1995) stated that an individual may internalize a behaviour along any point in the continuum and its motivational state is dependent on both prior experiences and current situational factors. Moreover, Loevinger and Blasi (1991) stated that the range of behaviours that may be assimilated into the self can increase over time as cognitive and ego development enhance.

Within this conceptualization derived from organismic integration theory is the important distinction made between autonomous and controlled motivation, rather than intrinsic or extrinsic. Autonomous motivation contains within it intrinsic motivation, as well as identified and integrated extrinsic motivation. In a similar vein, controlled motivation is comprised of both external and introjected regulation. By accepting this conceptualization, autonomy is considered relative, in that most individuals perform actions for a variety of reasons as outlined by these five categories.

To examine the newly developed SDT continuum, Ryan and Connell (1989) examined achievement behaviours among school children. They found external, introjected, identified and intrinsic regulatory styles were intercorrelated (Ryan and Deci 2000). Thus, this provided initial support for the underlying continuum. Importantly, they also uncovered that experience differences existed based on the type of extrinsic motivation. For example, identified regulation resulted in more interest and enjoyment, leading to increased effort, while introjected regulation had similar effects, while also enhancing notions of anxiety Further research into education has supported these conclusions, in that autonomous motivation is positively associated with engagement (Connell and Wellborn, 1991; Vansteenkiste, et al., 2006), performance (Miserandino, 1996) and high quality learning (Grolnick and Ryan, 1987). Moreover, similar results have been uncovered for healthcare (e.g. Williams, et al., 1996; Williams, et al., 1998), physical exercise (Chatzisarantis, Biddle, and Meek, 1997), political activity (Koestner, et al., 1996), environmental activism (Green-Demers, Pelletier and Menard, 1997), as well as relationship marketing (Dholakia, 2006). Thus, the wide range of support suggests that internalization of behaviours appears to be an important component to motivation.

2.3.6 Applications of SDT in Research

The tenets outlined by SDT have been explored in a variety of settings. One of which is the examination of personal relationships. Unlike previous perspectives, SDT states along with relatedness, autonomy within the relationship is an essential component. This was argued by La Guardia, et al. (2000) who stated that one's sense of security and attachment to another individual was dependent on the extent to which their basic psychological needs, including autonomy, were satisfied. This notion was supported by Lynch, et al. (2009) who found that relationship satisfaction was higher in relationships that demonstrated autonomy support.

In addition, SDT has often been applied to examine social psychology. Through both longitudinal and cross-sectional research, SDT, as well cognitive evaluation theory, have

determined that events such as rewards, punishments, threats and even deadlines can undermine intrinsic motivation and lead individuals to take the shortest path to achieve an outcome. In some instances, the shortest path may be unethical (Ryan and Brown, 2005). Moreover, the events may trigger poor heuristic performance and psychological well-being (Deci and Ryan, 2011). In contrast, events such as positive feedback, choice, autonomy-supportive language and even acknowledging feelings can lead to an enhancement in intrinsic motivation, internalization of regulations and well-being (Moller, et al. 2006).

Furthermore, SDT has been applied to areas of behavioural choice, including healthy living and exercise. For example, scholars have shown that autonomy support can aid in the promotion of physical activities, education and overall health (Hagger and Chatzisarantis, 2007). Moreover, behaviour choices, such as quitting smoking (Williams, et al., 2002), weight loss (Williams, et al. 1996), glucose management (Williams, et al. 2004) and medication adherence (Williams, et al. 1998) have been explored. Overall, the findings demonstrate that autonomy support for nurses and doctors may enhance an individual's level of autonomous motivation, as well as perceived competence.

Finally, SDT research has been employed in areas such as sustainable behaviour (Pelletier and Sharp, 2008), religion (Ryan, et al., 1993), videogame play (Ryan, et al., 2006), as well as job satisfactions (Baard, et al. 2004).

2.3.7 The Role of Self-Determination Theory in Marketing

The use of SDT in the marketing domain is tended to focus on select segments. The first of which is service marketing. For example, McGinnis, Gentry and Gao (2008) hypothesize that individual level variables have more of an impact on enduring involvement than social variables in a service encounter due to the level of volitional control. Based on their findings, the authors state that a transcendental experience (flow) is more important than social order

(communitas) in establishing enduring involvement, as the self-regulating nature of flow is viewed as more autonomous. Furthermore, SDT was employed by Lin, Tsai and Chiu (2009) to examine an integrative model of consumer loyalty through the use of both expectation-conformation theory and SDT. In line with the past literature, the authors find that intrinsic and identified regulation enhanced service loyalty, while introjected and external regulation hindered loyalty. Moreover, Schepers, et al. (2012) applied the tenets of SDT in their examination of frontline employee behaviour. By examining autonomy, competence and relatedness, they find that autonomy aids in encouraging employees to share responsibility for their actions towards customers, that relatedness enhances trust which in turn, increases accountability, and that competence promotes a lack of self-interest among employees. In a similar vein, Cadwallader, et al. (2010) find that an increase in autonomous motivation enhances service employees' openness to innovation and change.

 The second domain in which SDT has often been applied in that of consumer behaviour. For example, Sun, Tai and Tsai (2010) examined the motivational factors that underlie perceived ease of use in e-commerce. They argue that need for arousal is positively related with a consumer's level of self-determination, in that arousal promotes consumers to seek autonomous consumption settings, which in turn, enhanced perceived ease of use. In addition, Oh, Jeong and Baloglu (2011) examine the role of SDT in influencing the adoption of self-service technologies. Their findings indicate that autonomy enhances the selection of self-service technologies. However, their argument is based on a past conceptualization of autonomy, in which it is correlated with independence. In fact, they argue that an individuals' desire for autonomy leads reduces one's want for social interaction. In fact, this is direct opposition to past SDT work that has shown that there is a positive, rather than a negative, link between relatedness and autonomy (Ryan and Lynch, 1989). In addition, in his examination of SDT on relationship marketing, Dholakia (2006) argued that consumers who perceive their

involvement with a firm's relationship marketing program as self-determined would engage in more relational behaviours than those who perceived their joining as firm-determined. The results of this work confirmed these assumptions, in that consumer self-determination plays a vital role in relational behaviours towards the firm and the overall effectiveness of the relationship marketing program. Furthermore, Botti and McGill (2011) examine the role of choice and find that respondent satisfaction with a choice that was autonomously selected was greater than those who were assigned to the same outcome. Moreover, the authors find when choice is terminal (intrinsic) as compared to instrumental (extrinsic), the exercise of choice leads to a greater sense of causality, while a lack of choice relates to a reduction in self-determination. Finally, in the domain of consumer behaviour, SDT has been applied to examine the role of consumer choice. Markus and Schwartz (2010) argue that choice is not universally beneficial to psychological well-being. Specifically, the authors state that in Western cultures, too much choice can produce a paralyzing uncertainty, depression and even selfishness, and that choice in non-Western cultures may not possess the same aspirational meaning. Thus, the meaning of choice may be culturally constructed.

Third, SDT has been sparsely applied to the domain of marketing communications and public policy. For example, Moller, Deci and Ryan (2006) argue that public policy communications should be developed to motivate behaviour change and that it should consider the numerous benefits associated with fostering a sense of autonomy among individuals. In doing so, they state that autonomy-supportive, as opposed to coercive and controlling tactics, such as meaningful rational, should be employed.

Finally, SDT has been applied to the context of luxury goods, whereby it was found that intrinsic aspirations decreased preference for luxury goods (Truong, McColl and Kitchen, 2010). In the attachment domain, it was found that consumer feel an enhanced attachment to brands when their basic psychological needs were satisfied (Thompson, 2006). In addition,

Martin and Hill (2012) employ SDT to examine the impact consumer poverty. The findings of this research indicate the individuals in nations that can provide both relatedness and autonomy have higher levels of life satisfaction. However, those that are living in extreme poverty are less likely to experience the effects related to psychological need fulfilment. Furthermore, SDT has been employed to examine concepts in the domain of strategic marketing. For example, Robson (2012) argued that the motives outlined by SDT can be applied to international alliances that may face mixed motives and attachment anxieties. Lastly, in an environmental policy context, research has shown that incentives for recycling behaviour tend to lose their appeal over time, even when the contingencies are in effect (DeYoung, 1993).

Despite the plethora of research that has employed SDT in the marketing domain, there have been very few studies that has tested its tenants empirically. In some cases, scholars have presented and tested flawed operationalisations and have offered a misguided understanding of SDT. Moreover, there has been limited research that has attempted to understand how marketing and specifically, marketing communications, may impact on an individual's sense of autonomous motivation. Thus, we aim to understand how marketing techniques may increase the ability of consumer to act in a self-determined manner, whereby the consumer feels as though their evaluations are driven by their own intrinsic motives.

Table 3 Key Literature for SDT

Author(s) and Year	Title and Journal	Methodology	Main Variables	Research Summary
de Charms (1968)	Personal Causation	Conceptual (Book)	Locus of causality	The author examines the role of personal causation. Specifically, he explores the notion of an internal and external locus of causality.
Deci and Ryan (1985)	The General Causality Orientations Scale: Self-Determination in Personality. Journal of Research in Personality	Scale Development	General causality, self-determination, autonomy, control, impersonal	The aim of this research was to develop the causality orientations scale. The scale was shown to be internally consistent and temporally stable. The scale measures one aspect of the organismic integration theory derived from SDT.
Ryan and Connell (1989)	Perceived Locus of Causality and Internalization: Examining Reasons for Acting in Two Domains. Journal of Personality and Social Psychology	Experimental Design	External, Introjected, Identified and Intrinsic Motivation, autonomy, relatedness, competence	The authors explore the perceived locus of causality derived from children's self-reported reasons for acting, thus showing initial support for the SDT continuum. Moreover, they test this continuum in the domain of prosocial behaviour.
Ryan and Deci (2000)	The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behaviour	Conceptual	Autonomy, relatedness and competence	The authors discuss SDT and the role cognitive evaluation theory and organismic integration theory. The authors then explain the role of the

				basic psychological needs.
	Psychological Inquiry			
Vansteenkiste, et al., (2004)	Motivating Learning, Performance, and Persistence: The Synergistic Effects of Intrinsic Goal Contents and Autonomy-Supportive Contexts. Personality Processes and Individual Differences	Field Experimentation	Intrinsic vs. extrinsic motivation, autonomy, control, performance	The authors conducted three field experiments to test the role of SDT. They found that autonomy-supportive, as compared to controlling, learning environments enhanced a student's learning, performance and persistence.
Dholakia, (2006)	How Customer Self Determination Influences Relational Marketing Outcomes: Evidence from Longitudinal Field Studies. Journal of Marketing Research	Longitudinal surveys.	Self-determination, relationship marketing, profit, intentions, behavioural control, reminders	The findings show that consumer self-determination plays an important role in the context of relationship marketing. Consumers who felt self-determined had higher levels of purchase intent, perceived behavioural control and a positive attitude towards the firm.
Hagger, Chatzisarantis and Harris (2006)	From Psychological Need Satisfaction to Intentional Behavior: Testing a Motivational	Survey	Global psychological need satisfaction, relative autonomy, subjective norm,	The authors develop and test a sequence, whereby global level psychological needs impact the contextual level, which in turn, influences the situational level in the contexts of exercise

	Sequence in Two Behavioral Contexts		intention, behavior	and dieting. Moreover, it was shown that autonomous motivation impacts intentions.
	Personality and Social Psychology Bulletin			
Moller, et al. (2006)	Choice and Ego-Depletion: The Moderating Role of Autonomy	Experimental Design	Self-determination, autonomy, control, ego-depletion, choice	The authors explore the role of autonomous and controlled regulation, as well as autonomous and controlled choice. They find that controlled choice leads to ego-depletion.
	Journal of Personality and Social Psychology			

2.4 Performance Criticality

"Give them quality. That's the best kind of advertising."

(Milton Hersey)

2.4.1 Categorization

To understand the role of performance criticality in the marketing domain, it is necessary to explore categorization. This concept, from a consumer perspective, entails a consumers' knowledge about a product or a brand that may form a partial entity in the mind, generated based on functional, rather than structural representations (Cohen and Basu, 1987). Within these categories may exist a group of objects that are perceived to be similar to one another, as well as both object-based and category-based knowledge. In other words, categorization may occur when an individual perceives objects to similar based on important aspects and thus, groups them together in a category. In doing so, information processing efficiency and cognitive stability is enhanced (Lingle, Altom and Medin, 1984). Moreover, categorization aids in identification and allows individuals to make meaning out of new objects or events based on the associated category, rather than their uniqueness (Cohen and Basu, 1987). Furthermore, it enables one to draw inferences regarding interaction outcomes, or to make casual or evaluation judgements. Thus, the perspective of categorization has been a vital tool in aiding our understanding of how consumers can categorize all forms of stimulus situations (Mervis and Rosch, 1981).

The concept of categorization was developed in cognitive literature where it was employed to examine perception and identification of objects or concepts. One of the earliest examinations of categorization came from Cantor and Mischel (1979), who applied the concept to the domain of social information processing. They found that categorization gave credence to one's stored knowledge regarding others, allowing one to feel as though they know somebody they have

barely met. This work was followed by Srull and Wyer (1980) who posited that by categorizing social experiences and related expectations, individuals will gain access to information, can interpret and infer meaning, solve problems, set goals and engage in behaviours.

Within the realm of categorization literature, there are three main models that aim to provide a different outlook on a few fundamental information processing issues. Notably, the nature of category knowledge that forms the basis for comparison, the nature of the comparison itself and finally, the degree to which the process is automatic (Cohen and Basu, 1987). Moreover, each model offers a unique perspective on the issue of categorization representation (i.e. analytical vs. non-analytical). An analytical representation refers to a focus on individual features, while the latter employs a more holistic viewpoint. Moreover, representation may differ on its automaticity. In other words, how deliberate the categorization mechanism may be. Each of the categorization representation approaches results in the formation of knowledge structure in memory, whereby it acts as an input in problem solving contexts to determine one's behaviour (Cohen and Basu, 1987). The three most common models, each of which will be examined in-depth, is the "classical", "prototype" and the "exemplar" models of the categorization process (Smith and Medin, 1981).

The first model is that of the classical view. It was developed based on the idea that individuals adopt a concept identification strategy to maximize the information gains from each stimulus presentation. Thus, an individual ensures that the object will be categorized with certainty with reduce error and cognitive strain (Dominowski 1974). When one faces a categorization situation, one may either categorize it into a level category based on similar critical attributes, or if does not possess even one similar attribute, it is not viewed as a category member. However, while the classical view has its benefits in relation to easily definable and unambiguous concepts, it does not provide an accurate overview of the categorization process in a consumer setting (Cohen and Basu, 1987).

The second model is called the prototype, or the probabilistic viewpoint. A prototype is defined as a set of features that are commonly associated with members of a category. Each feature is assigned a weight based on its level of association with the category (Rosch and Mervis, 1975). In contrast to the classical viewpoint, the prototype approach emphasizes fit between an object and the implied meaning of a given category. This is termed prototypicality (Cohen and Basu, 1987). Like the classical approach, the prototype strategy is not without its issues, as scholars are torn as to the meaning and the implications of the prototype concept (Cohen and Basu, 1987) with some arguing that it refers a category defining rule (e.g. Posner and Keele, 1968), while others state that it is a mere representation of a hypothetical category member (e.g. Cantor, 1982; Reed, 1972).

The final categorization strategy is that of the exemplar viewpoint. This approach states that categorization occurs by cuing the retrieval of specific category exemplars. If an object or event shares similar exemplars with pre-existing category exemplars, it is likely to be placed within that category (Cohen and Baus, 1987). Such exemplars need to be assessable during the categorization process. Following this, an individual may employ two distinct comparative processes. The first is referred to as the aspect-by-aspect matching process (Cohen and Basu, 1987). In the exemplar approach, the target object is matched against examples that are good indicators of a specific category. The second exemplar comparison process employs a non-analytical approach. This approach is based on the psychological meaning that exists at entity level, regardless of one's stored feature information. Within this process, feature information is transformed into a more integral representation. Thus, this suggests that category level representation access is quicker than access to feature level information (Smith and Kemler, 1984).

These three models present an interesting exploration into categorization literature, but given their diversity, it may be challenging to understand which should be employed in consumer

behaviour research. Cohen and Basu (1987) have stated that, while each model beings with it some importance, the level of automaticity is probably less relevant in the consumer behaviour domain. In contrast, alternative representations of product-defined categories and comparison processes may be directly related to consumer behaviour research. While all three models offer a diverse view of the categorization process, it may be productive to assume an extremely flexible information processing system to explore the role of categorization.

Consumer interaction with products typically occurs at the evaluative level. Thus, it may be argued that categorization and evaluation are linked from the initial formation of the category (Cohen and Basu, 1987). Based on this, an individuals' evaluative judgements may serve the same function as descriptive attributes. Therefore, when encountering a product, one's reaction may be derived on their identification of it as a member of a specific category (Cohen, 1982; Alba and Hutchinson, 1987; Sujan 1985). Moreover, category development may be based on examples of the category, alongside, or instead of, feature based rules. Overall, there exists a diverse range of possible outcomes in relation to consumer judgement.

2.4.2 The development and role of schema congruity

Within the domain of consumer behaviour, the use of categorization has been fruitful. The key premise that underlies the notion of categorization is that they are functional and may be shaped by an individuals' goals, values or the need to respond in a specific manner (Sujan and Dekleva, 1987). Moreover, categorization may take place at varying levels of specificity. According to Rosch (1978), objects are categorized in a hierarchical fashion. Superordinate categories, or categories that represent a superior order, vary in a few core attributes, but they share little features. The next level down is that of the basic level, whereby one seeks out a greater level of shared attributes as compared to contrasting attributes. Lingle, Altom, and Medin (1984) state that this level is known as basic because their attributes are thought to provide the greatest discrimination between categories. Moreover, they are often used by individuals when

categorizing natural or social objects. The next level down may relate to product classes, types and brands that require a single or small number of attributes to distinguish objects that may share a large number of features (Sujan and Dekleva, 1987). In the context of consumer electronics, products may be grouped into superordinate, or product level, categories, such as computers, or into specific brand level categories, such as Dell XPS computers. Furthermore, these categories may differ on their level of richness and distinctiveness. The former refers to the number of attributes that may describe a category, while the latter refers to how differentiated the category is from other categories existing at the same level (Sharma, Levy and Kumar, 2000). For example, the richer a description, the more easily it can be categorized (Murphy and Wright, 1984).

The most common level of categorization is likely to occur at the product level (Sujan and Dekleva, 1987). For example, sports cars and family cars are likely to viewed as unique subcategories under the main category of cars, while the brands of each car may be viewed as having few distinct attributes. Moreover, categorization research suggests that more inferences may be generated when objects are categorized at the product class level. Categorization at this level allows consumers to generate more inferences that are likely to be evaluative in character. For example, a sports car may be described as having good handling or a powerful engine. Furthermore, the inferences that are created about contrasting product types are likely to be distinct (i.e. the attributes that are ascribed to a sports car are likely to be different from those that are developed for family cars; Sujan and Dekleva, 1987). However, what happens when attributes of a given product are seen as incongruent with the product category? Or even when a message emphasized product characteristics that do not match previously held product type category notions?

In order to examine this question, researchers have developed a concept known as schema congruity. A schema may be described as "a conception of what is common to all members of

a class" (Oxford Dictionary). In other words, a schema is a mental representation of preconceived ideas that form a framework that may represent some aspect of the world. Research in schema congruity has demonstrated that it is a useful concept in providing insights into how congruity between products and their associated product category may alter processing and evaluative judgements (Cohen and Basu 1987; Fiske 1982; Fiske and Pavelchak 1986; Srull 1981; Sujan 1985).

Mandler (1982) stated in his seminar work on schema congruity that the process of responding to different levels of schema congruity may influence an individuals' affective response. For example, he reasons that when incongruity is present between a category and an object, an individual's evaluation may be more extreme due to heightened levels of arousal and cognitive effort. Congruity relates to the extent to which a configuration of attributes that are associated with a given product is viewed as related to the configuration specified by the schema. Moreover, Fiske (1982) states that congruity is represented between the schema and the relevant attributes of the product. In contrast, incongruity takes place when there is a mismatch. Whether or not the evaluation is positive or negative depends on the extent to which the individual can process and resolve the incongruity.

It is argued that congruity, rather than incongruity, leads to a more favourable response among individuals (Mandler, 1982). This is due to the underlying notion that people like objects to conform to their previously held expectations. In other words, consumers prefer predictability compared to dissimilarity. In fact, extreme incongruity can result in negative judgements. Extreme incongruity refers to a situation whereby the incongruity that is present cannot be resolved, or may be resolved via dramatic shifts in one's existing cognitive structure.

Meyers-Levy and Tybout (1989) tested the assumptions developed by Mandler (1982) by postulating that a beverage category hierarchy. For example, based on the work of Rosch (1978), the product type (i.e. beverage) was at the superordinate level, while soft-drink was at the basic level. Further down was the subordinate level (i.e. all-natural soft drink). The authors operationalized extreme incongruity by selecting attributes for the superordinate level concept from a subordinate level product. In contrast, moderate incongruity was operationalized by selecting attributes that are typical of a neighbouring hierarchical level. The authors operationalized congruity via the use of a feature-product combination consistent with the respective category schema. The results confirmed the assumptions of Mandler (1982), whereby moderate incongruity generated the most positive evaluations. Interestingly, they found no significant difference between the extreme incongruity and the congruent conditions. Additionally, in the context of advertising, there have been numerous studies in this domain, with a focus on advertisement music–advertised product congruity (Hung 2000; Kellaris, Cox, and Cox 1993), advertisement picture– advertisement text congruity (Areni and Cox 1994; Houston, Childers, and Heckler 1987), congruity between involvement types of advertisement and television program (Sharma 2000), spokesperson–advertised product congruity (Kamins and Gupta 1994; Lynch and Schuler 1994; Solomon, Ashmore, and Longo 1992), program context– advertised product congruity (Bello, Pitts, and Etzel 1983; De Pelsmacker, Geuens, and Anckaert 2002; Furnham, Gunter, and Richardson 2002; Furnham, Gunter, and Walsh 1998; Horn and McEwen 1977) and an individual's mood–advertisement content congruency (Howard and Barry 1994; Kamins, Marks, and Skinner 1991; Lord, Burnkrant, and Unnava 2001).

However, the majority of research has been conducted under the assumption that consumers have access to sufficient and congruent information when evaluating products in a category. In this research, we are interested in how novel information can impact on a new product designed

to fit within an existing schema (e.g. environmental information regarding a new sports car). To understand how this may affect one's evaluation, there is a stream of literature on unique, novel and irrelevant product attributes. Products launched designed to fit in a schema can contain new attributes that are irrelevant to the category, whereby all products share similar attributes (Carpenter, Glazer and Nakamoto, 1994). There are numerous attributes that could be considered irrelevant. Carpenter, Glazer and Nakamoto (1994) stated that an irrelevant attribute is one that implies greater benefit, but does not provide the implied benefit. The benefit can be viewed by the consumer who lacks any supporting information. In other words, the consumer views the differentiating attribute, but does not possess any information as to its value. In this instance, the consumer is unable to determine the value of the irrelevant attribute and thus, it cannot be evaluated and should be ignored.

However, in the green product context, the new differentiating attribute (i.e. environmental attribute), may in fact be beneficial to the product and may be used by consumers when forming inferences. Even in the absence of experience or information, the consumer may perceive that the attribute holds value because of the information that it conveys. This is because the purpose of communication, according to the informativeness principle of communication theory, is to inform and to communicate something that the consumer does not currently know (Xu and Wyer, 2010). In fact, it is stated that communication has a semantic component, which refers to the message's literal meaning, and a pragmatic component that refers to the reason for the message (Harris and Monaco, 1978). Consumers, in the absence of the semantic component, can sometimes rely on the pragmatic.

In this instance, the uniqueness of the attribute can lead to differentiation within the schema. An examination of casual inferences indicated that causality is often attributed to a greater degree to attributes that are deemed distinctive (Einhorn and Hogarth, 1986; McGill and Anand, 1989). Thus, one could make the case that the performance liability associated with an

environmental attribute may have a significantly more damaging impact if the attribute is deemed unique compared to similar products in an existing schema. This is because the attribute is likely to be salient compared to other products, particularly when an explicit green product communication strategy is employed. For instance, in a product category valued for high performance, an environmental attribute may stand out as being unique, particularly if the advertising appeal makes such information prominent. Moreover, Aaker (1991) stated that if consumers lack the ability to evaluate a given product, they may rely on the observable. In this instance, the observable green attribute that is distinctive among similar products will be the primary driver of consumer judgement.

Building on this, there has been a plethora of research in the field of advertising that has explored the role of attitudes towards incomplete stimuli (e.g. Peracchio and Meyers-Levy 1994; Sawyer and Howard 1991; Stayman and Kardes 1992), which has uncovered that consumer attitudes may improve via one's ability to self-generate arguments. However, in relation to product evaluation, there exists a negative effect is relation to missing information, as this enhances uncertainty (Meyer, 1982). For instance, Simmons and Lynch (1991) found that missing information can lower product evaluations. Interestingly, it was also found that subjects inferred quality information from other salient cues. Thus, if performance information is limited in relation to a green product advertisement, one may infer an increased sense of risk in that the product may not be effective due to inferences being generated based on the explicitly communicated environmental information. Extending this line of work, Johnson and Levin (1985) found that when missing information was positively related to the available information, a consumer may assume that the missing information builds upon what is available. However, in the case of green products, this may not hold. This is due to the negative correlation between the available environmental attribute information and product performance perceptions. In other words, the consumer may view the available information and infer

negatively on the missing information. Additionally, performance related information is of vital importance to consumers and subtly communicating it may be viewed with suspicion. Thus, it is posited that both schema congruity and missing information inferences in relation to performance criticality will impact on the relationship between green product communication strategy and performance evaluations.

Table 4 Key Literature for Performance Criticality

Author(s) and Year	Title and Journal	Methodology	Main Variables	Research Summary
Rosch (1978)	Principles of Categorization in Cognition and Categorization.	Conceptual	Categorization	The author argues for the two general and basic principles of categorization, followed by an examination of the vertical and horizontal dimension of categories.
Cantor and Mischel (1979)	Prototypicality and Personality: Effects on Free Recall and Personality Impressions Journal of Research in Personality	Experimental Design	Categorization, character prototypicality	The findings of this research supported a developed model, whereby incoming information about personality is coded, structured, elaborated and remembered according to the degree in which there is congruity in relation to preexisting beliefs about personality types.
Mervis and Rosch (1981)	Categorization of Natural Objects Annual review of psychology	Conceptual	Categorization, category membership, abstraction, attributes	The authors examine past categorization research and challenge the existing definitions of categories.
Mandler (1982)	Structure of Value: Accounting for Taste Center for Human Information Processing Report	Conceptual	Categorization, congruity, schema	The author proposes the role of congruity and the notions of extreme and moderate incongruity. Moreover, he argued that moderate incongruity may be ideal compared to both extreme incongruity and congruity.

Alba and Hutchinson (1987)	Dimensions of Consumer Expertise Journal of Consumer Research	Review	Categorization, consumer expertise, product related knowledge	The authors review empirical research from psychological literature to establish a foundation for consumer knowledge. Moreover, they argue that consumer knowledge is distinct from product-related experience and that it is composed of five dimensions.
Cohen and Basu (1987)	Alternative Models of Categorization: Toward a Contingent Processing Framework Journal of Consumer Research	Conceptual	Categorization	The authors attempt to bring together the different accounts of how people categorize new instances. Furthermore, in doing so, they emphasize the flexibility of the information processing system in response to contextual factors.
Sujan and Dekleva (1987)	Product Categorization and Inference Making: Some Implications for Comparative Advertising Journal of Consumer Research	Survey	Consumer inferences, attributes, ad perceptions, brand perceptions	The authors employ a categorization approach to explore consumer inference making. They tested comparative advertising and found that it led to different responses for experts relative to either product class or product type as compared to non-comparative advertising.
Meyers-Levy and Tybout (1989)	Schema Congruity as a Basis for Product Evaluation	Experimental Design	Categorization, congruity, schema	The author's support the notions of Mandler (1982), in that moderate incongruity led to more favorable outcomes to that of extreme

	Journal of Consumer Research			incongruity and congruity.

2.5 Social Distance

"Social distance makes it all the easier to focus on small differences between groups and to put a negative spin on the ways of others and a positive spin on our own"

(Daniel Goleman)

2.5.1 The Development of Construal Level Theory

The development of construal level theory was based on the desire to understand the way in which an individual evaluates objects or events. It is argued that evaluations are not only driven by a product's quality or its performance ability, but also on a variety of other less central factors. Construal level theory posits that psychological distance is one among many important determinants influencing evaluations. Specifically, it relates to whether an individual employs primary, essential characteristics or secondary, peripheral characteristics in their evaluation (Trope and Liberman, 2010).

The basic premise of construal level theory, according to Trope and Liberman (2010) is that individuals when confronted with an event or an object in the near employ concrete, low level construals. In contrast, an abstract high level construal is used for distant events or objects. Low level concrete construals may be described as unstructured and contextualized representations that include subordinate and incidental features. Alternatively, an abstract high level construal schematic, decontextualized representations that aim to understand the underlying aspect of the available information. In this construal there exists few subordinate core features of events or objects. Thus, whereas the concrete low level construal may lead towards more rich details, a distant event or object is met with abstraction, whereby secondary and incidental features are omitted (Trope and Liberman, 2010). A movement towards abstraction leads to an omission of features that are not deemed important to the abstract construct, while simultaneously linking the activity with a more generalized set of events. In

doing so, new meanings and definitions are generated that were not present in the low-level representation. Furthermore, construal level theory states that as one moves towards a higher level of abstraction they simultaneously move up the hierarchy, whereby specific product attributes or traits become less specific.

Construal level theory posits that this move towards abstraction is related to psychological distance. Specifically, as an event becomes more distant, the more it will be viewed with greater levels of abstraction. Distance describes an event or an object that is not part of one's direct experience. The process by which this may occur is multifaceted (Trope and Liberman, 2010). For example, an event that is more psychological distant is one that takes place further in the future, or even at a distant location. Moreover, the event may be less likely to occur, or take place with individuals that one may not be familiar. Therefore, psychological distance is comprised of four main components: temporal, spatial, hypothetical, or social. The more distant an event on one or more of these dimensions, the greater the extent of abstract representation (Liberman, Trope and Stephan, 2007).

This supposed relationship between psychological distance and abstraction relates to the notion of direct experience and event information. In particular, when an individual experiences an event in the present, they are likely to have a great deal of information about it and thus, perceive it at a concrete low level construal making use of the available rich and contextualized information on hand. In contrast, when an event is further removed from one's direct experience, access to reliable information is reduced and thus, one develops a more abstract representation (Dhar and Kim, 2007). Furthermore, construal level theory posits that this association between psychological distance and abstraction is over generalized and thus, will occur even when the amount and reliability of information is held constant (Trope and Liberman, 2010). Next, we will present three of the psychological distance tenants.

- **Temporal Distance**: Temporal distance relates to the time dimension of construal level theory, in that an event can take place in the now or in the distant future. There has been a plethora of studies that have employed the temporal distance dimension of construal level theory, each of which has examined the assumption that distant future events are represented by more abstraction that those of near, close events. For example, Liberman, Sagristano, and Trope (2002) examined temporal distance via the use of structure measures and categorization breadth. Their results showed that when respondents were asked to think about an event occurring in the distant future, their thoughts were based on superordinate and abstract notions. These findings were supported by Wakslak, Nussbaum, Liberman, and Trope (2006), who also employed structural measures to explore the role of temporal distance. The authors focused upon temporal shifts in the structure of self-representation. It was found that distant future self-representations were more abstract and more integrated than near future self-representations. Moreover, additional research has measured construal level by examining shifts in identification. For instance, Liberman and Trope (1998) explored measures of action identification. They distinguished between a high-level identification, whereby an activity is linked to its superordinate purpose, while a low-level identification is liked to subordinate means. In other words, the former relates to the "why" of an activity, while the latter refers to the "how". Their results demonstrated that activities that take place in the future were more likely to be identified in high-level terms. In contrast, activities in the near were identified via low-level terms.

- **Spatial Distance**: Spatial distance relates to the distance between objects or events. For example, a party that takes place down the street will be viewed as having low spatial distance, while a party in another county will be seen as having high spatial

distance. There have been a number of studies that have explored the relationship between spatial distance and mental construal. For example, Fujita, et al., (2006) examined students at the New York University Washington Square campus. Students were shown a video of two students who were interacting with each other. In the spatially near condition, participants were told that the students in the video were attending New York University, taking classes at the same campus. In the spatially distant condition, participants were told that the students were studying abroad in Florence, Italy. Using the Linguistic Categorization Model (Semin and Fiedler, 1988), it was shown that spatially distant events are associated with abstract high-level construals, while spatially near events were related to concrete low-level construals. Henderson, et al., (2006) also explored the role of spatial distance at the same location. They found that when behaviours were spatially distant, rather than near, participants structured those behaviours into broader units and attributed them globally rather than situationally.

- **Social Distance**: Social distance relates to the distance between two or more social groups or individuals. The actor-observer effect has been widely tested and has shown support for the notion of the self-other construal (Jones and Nisbett, 1972). This past research demonstrates that a person's view of their behaviour emphasizes the role of concrete situational factors that are present in the moment in which the action takes place. In contrast, one's view of another individual's actions may place emphasis on the casual role of stable and general dispositional properties. These differences between the self and the other may be explained by differences in knowledge, whereby people know more about themselves and the variability of their behaviour over situations than about others. In addition, it may also relate to differences in the salience of behaviours versus situations. Research that has

explored the abstractness of memories to the perspective in which they are recalled has attempted to explore whether differences in construal emerge when knowledge is identical for near and fear social targets. For example, it has been found that personal memories of behaviours recalled from the perspective of another individual was more dispositional. In contrast, when recalling personal memories from the perspective of the self, more situational terms were utilized (Frank and Gilovich, 1989; Nigro and Neisser, 1983). Libby and Eibach (2002) found that when an activity was imagined from a third-person perspective, reports of the activity were less vivid compared to an activity imagined from the first person perspective. Thus, based on the tenants of construal level theory, the research in the area of social distance has shown that the third person perspective induces a high level construal than that of the first person perspective. This is supported by Pronin and Ross (2006), who found that a third-person perspective, compared to the first person perspective, resulted in attributions of one's behaviour to be connected to personality traits rather than to specific situational factors.

When altering construal level, there are a number of various factors that may be impacted. For example, Wakslak, Trope, Liberman, and Alony (2006) found, independent of its temporal, spatial or social distance, an event is considered to be removed from one's direct experience when it could have happened, but did not, or when it is possible but not certain. Thus, an event that is deemed improbable would be seen as more distant than a probable event.. Furthermore, one's construal level may impact on their judgements. Liberman, et al. (2007) found that the relationship between distance and construal was bi-directional. This is due to the notion that thinking about the why of an activity represents a high-level construal, whereas thinking about the how is part of a low level construal, participants that answer why questions should indicate more distant enactment times than those in the how question condition.

One of the most prominent applications of construal level theory has been in the area of evaluations (Trope, Liberman and Wakslak, 2007). Similar to predictions, an individual's evaluation about distant events should be based on a high level construal compared to events in the near future. Due to its popularity, this research has been broken down into a number of subsections: primary, goal-related vs. secondary, goal irrelevant sources of value; feasibility vs. desirability; arguments in favor vs. arguments against an action; idealistic values vs. pragmatic concerns; and use of nonalignable as opposed to alienable attributes.

Trope and Liberman (2000) explored the extent to which primary and secondary features are evaluated differently based on psychological distance. They explored object and event evaluations that contained both primary and secondary features. In several studies, they presented respondents with a radio. In one study, they were asked to imagine buying the radio either tomorrow, or in a year. Furthermore, in one condition, respondents were told that the sound quality of the radio was good, but that the clock was relatively useless. In the other condition the clock was good but the radio was poor. The results indicated that in the distant condition, respondents were more satisfied when the central attribute (i.e. radio) was good and the peripheral attribute was poor (i.e. the clock), compared to when the clock was good and the radio was poor. However, in near future condition, there was no difference between both conditions.

In addition, construal level theory has also been used to explore desirability and feasibility. When an individual considers an action, an individual may focus on the why or the how aspects of the activity. The former is the desirability dimension that emphasises the end state of the action. The latter relates to feasibility concerns, in that one focuses upon the means to reach an end state (Trope and Liberman, 2010). Thus, when a high level construal is activated, the emphasis should be placed upon desirability concerns. Alternatively, a low level construal should enact a focus on feasibility. In other words, when psychological distance is high, one

should place more weight onto desirability over feasibility. This notion was examined by Liberman and Trope (1998) within the temporal distance domain. In one study, for example, participants had to make a decision about three decision situations that were to take place within the near or distant future. In each situation, the desirability and the feasibility of each decision was varied among participants. Consistent with construal level theory it was shown that one's desire for desirability increased over time, whereas feasibility decreased. Moreover, Tsai and McGill (2011) argued that feelings of difficulty at a high level construal will engender a sense confidence and thus, desirability, as effort is required for a positive outcome. In contrast, a lower level construal results in subjective feelings of difficulty. In this instance, one interprets this as an indicator of decreased feasibility and thus, lower choice confidence. Furthermore, Yan and Sengupta (2011) state that price is a more abstract notion in that it acts to signal a set of desirable attributes. The authors suppose that consumers rely on price, as opposed to product attributes, for making quality inferences when the judgement is psychologically distant.

In their examination of construal level theory, Williams, Stein and Galguera (2014) find that, in relation to desirability and feasibility, psychological distance and construal level can impact on evaluations beyond merely primary or secondary decision inputs. The authors find that abstractness reduces the intensity of both the pleasure associated with positive experiences and displeasure associated with negative experiences. However, it is shown that an abstract versus a concrete construal enhances evaluations when both positive and negative experiences are present. Moreover, Thomas and Tsai (2012) find that when psychological distance increases, ones' sense of difficulty that is activated by complex tasks is negated. However, when viewed a near psychological distance, the mind perceives the task to be more challenging. Moreover, they show that this occurs even for elemental tasks that do not involve deliberative thinking trade-offs between desirability and feasibility.

Table 5 Key Literature for Construal Level Theory

Author(s) and Year	Title and Journal	Methodology	Main Variables	Research Summary
Liberman and Trope (1998)	The Role of Feasibility and Desirability Considerations in Near and Distant Future Decisions: A Test of Temporal Construal Theory. Journal of Personality and Social Psychology	Experimental Design	Temporal distance, feasibility, desirability	The authors explore the role of temporal distance and found that future activities were constructed more abstractly and were more influenced by desirability than feasibility, compared to the near future condition.
Trope and Liberman (2000)	Temporal Construal and Time-Dependent Changes in Preference Journal of Personality and Social Psychology	Experimental Design	Temporal distance, valence, outcomes, activities, products	In five experimental studies, the authors show that a high level construal, compared to a low level construal, was more active in distant future than in near future decisions.
Fujita, Henderson, Eng and Trope (2006)	Spatial Distance and Mental Construal of Social Events Psychological Science	Experimental Design	Spatial distance, events, behavior	In two experiments, the authors find that spatial distance enhanced the activation of a high-level construal (i.e. desirability preference and abstract language).
Dhar and Kim (2007)	Seeing the Forest or the Trees: Implications of Construal Level Theory for Consumer Choice	Review	Construal level theory, consumer choice	The authors explore past empirical research in construal level theory. Moreover, they offer additional extensions along the consumer decision making process (i.e. goal pursuit,

	Journal of Consumer Psychology			consideration-set generation, receptivity, choice and post-choice).
Trope, Liberman and Wakslak (2007)	Construal Levels and Psychological Distance: Effects on Representation, Prediction, Evaluation, and Behavior Journal of Consumer Psychology	Review	Construal level, prediction, evaluation, behavior	The authors explore the use of construal level theory in consumer behavior. The literature in which they review highlights the notion that psychological distance impacts on one's mental construal, which in turn affects prediction, evaluation and behavior.
Trope and Liberman (2010)	Construal Level Theory of Psychological Distance. Psychological Review	Conceptual	Psychological distance, concrete, abstract	The authors explore the role of construal level theory based on past research in psychology. They state that there is commonality in the way people respond to different distance dimensions (i.e. temporal, spatial, social and hypothetical).
Yan and Sengupta (2011)	Effects of Construal Level on the Price-Quality Relationship Journal of Consumer Research	Experimental Design	Construal level, social distance, product attributes, quality inferences	The authors hypothesize and find that consumer reliance on particular aspects when generating inferences about product quality can be altered by their compatibility with a consumer's construal level. For instance, high level construal enhances focus on abstract cues, while a low level construal

				increases reliance on concrete cues.

2.6 The Role of Optionality

"*The ability to have a choice in what you do is a privilege*"

(Anton Yechin)

2.6.1 Innovation Locus

The concept of innovation is one that is at the core of dynamic organizational capabilities (Teece and Pisano, 1994), however the literature presents a fragmented view as to different innovation approaches and their impact on organizational outcomes. For instance, in the watch and tire industries, innovation leading towards the development of the quartz movement and radial tire dramatically transformed each industry (Sull, 1999; Glassmeier, 1991). However, other innovations, such as the automatic movement as a source of energy for watches, had little impact on the Swiss watch industry (Landes, 1983). Furthermore, Tripsas (1997) found that some innovations led to failure among firms in the typesetting industry, while other innovations did not. Thus, there appears to be great variation in the impact of innovation.

To potentially address these differences, scholars have proposed a number of concepts in order to assess innovation and technical change, including radical vs. incremental (Dewar and Dutton 1986, Ettlie et al. 1984, Damanpour 1996), competence-enhancing vs. competence-destroying (Tushman and Anderson 1986, Anderson and Tushman 1990), disruptive (Christensen and Rosenbloom 1995), architectural and generational (Henderson and Clark 1990), core/peripheral (Clark 1985, Tushman and Murmann 1998), and modular (Schilling 2000). In their seminal work in the domain of innovation locus, Gatignon, et al. (2002) proposed a structural approach in evaluating innovation, as products are composed of hierarchically ordered subsystems and linkage mechanism (e.g. Sanchez and Mahoney, 1996). They characterize innovation based on its locus (core vs. peripheral), its type (architectural vs. generational) and its characteristics (competence-enhancing vs. competence-destroying and

incremental vs. radical). These dimensions may not only impact upon consumers, but also upon innovation and organizational outcomes. For example, architecture (Henderson and Clark, 1990) and disruptive innovation (Christensen, et al. 1999) have been associated with delayed or incompetent innovation. Furthermore, Clark (1985) and Tushman and Murmann (1998) have argued that, as products are made up of hierarchical ordered subsystems, technological change will impact on innovation outcomes differently based on whether the innovation takes place on the core or the peripheral subsystem of the product.

One of the most adopted aspects of this structural approach has been that of the innovation locus. For example, Abernathy and Clark (1985) applied the concept to their description of automobiles. They stated that core subsystems, such as the engine, enhance the development of more peripheral subsystems. Moreover, certainly innovations, such as movements in watches (Landes, 1983), drive innovation in other peripheral components. While select publications have been quiet on subsystem hierarchy (e.g. Anderson and Tushman, 1990; Christensen, et al. 1999), the majority of research has supported the notion that core subsystems drive system-level innovation. For example, research that has focused upon mainframe computers (Iansiti and Khanna, 1995), portable stereos (Sanderson and Uzumeri, 1995) and stereo systems (Langlois and Robertson, 1992) have all demonstrated the importance of specifying innovation at the subsystem level of analysis and untangling core from peripheral subsystems.

As products are compared to hierarchical subsystems and linking mechanisms, some of those subsystems will be more core to the product, while others will remain peripheral (Tushman and Murmann, 1998). A core subsystem is more tightly connected or interdependent with other subsystems (Gatignon, et al. 2002). In contrast, a peripheral subsystem is weakly coupled or less interdependent with other subsystems. Furthermore, they are not associated with strategy performance parameters. When making alterations to a product, changes to core subsystems

will have more impact throughout the product, compared to peripheral subsystem changes that will have minimal effect. For example, innovations in the core subsystems for bicycles drove innovation in other subsystems (Pinch and Bijker, 1987).

Innovations may also be violations, in that they challenge one's preconceived notions of a given product category. Scholars have shown that when this occurs, consumer process it differently based on the extent to which the violation challenges their product category beliefs (e.g. Bagga, Noseworthy and Dawar, 2016). For example, when a core violation takes place, it impacts on the prototypical view of the product category. In contrast, peripheral violations only impact on attributes that are not sufficient for category membership, such as components that effect core functionality, a novel accessory or changes to packaging (Bagga, et al., 2016). For instance, a firm alteration to a peripheral component may indeed disconfirm expectations, but is unlikely to alter a consumers' beliefs about that product category. However, a change to a core component, such as the case of a smartphone or the engine of automobile may force consumers to change their previously held beliefs regarding that product category.

These reassessments derived from firm alterations tend to lead consumers to revaluate the functionality of the product. For example, consumers may wonder if the products can perform as well given this category differentiating aspect. This is due to the very notion of core alternations, which are tightly coupled with other subsystems as compared to weakly coupled peripheral alterations (Gatignon, et al. 2002). This is supported by the notion that consumers evaluate functionality via a more deliberative and rule-based process (Hoegg, Alba and Dahl, 2010; Page and Herr, 2002) and that functionality is often inferred based on the product's form (Veryzer, 1995). Alternatively, peripheral violations generate more automatic and perceptual processing (Ashby and Alfonso-Reese, 1998; Noseworthy and Goode, 2011). In one of the few marketing examples, Noseworthy and Goode (2011) found that deliberative processing of core product violations could negate one's implicit processing derived from peripheral inputs.

Extending this work, Ma, et al. (2015) defined peripheral components that those that are optional and detachable. In other words, they are components that offer additional utility but can physically detached from the base product. The authors define optionality as a peripheral component that enhances the benefits of the product but are not required for the functioning of the base product. Alternatively, detachability implies that the innovation can be physically detached from the base product. Thus, they argue that components that are built into the base product do not count as peripherals, regardless of the benefits offered. They found that radically new peripheral components fare better than core adjustments because the peripheral component does not force one to reassess the base product category. However, the detachability concept as presented by Ma, et al. (2015) is not a central tenant of the peripheral component conceptualization as outlined by Gatignon, et al. (2002). For instance, Bagga, Noseworthy and Dawar (2016) gave the example of a new security feature offered with one automaker. While this system enhances the perceived utility of the core product, it is not required for it to function. Thus, we adapt the optionality dimension of peripheral components in this research.

Table 6 Key Literature for Optionality

Author(s) and Year	Title and Journal	Methodology	Main Variables	Research Summary
Tushman and Murmann (1998)	Dominant Designs, Technology Cycles, and Organization Outcomes. Research in Organizational Behavior	Conceptual	Core, peripheral, subsystems	In one of the earliest examinations of core and peripheral product components, the authors review the history of technology, economics and technology management to explore design and technological cycles. Moreover, their focus on subsystems allows for the identification of core and peripheral product subsystems.
Gatignon, et al. (2002)	A Structural Approach to Assessing Innovation: Construct Development of Innovation Locus, Type, and Characteristics. Management Science	Survey	Innovation, locus, competence, core components, peripheral components	This study extends past literature in innovation via scale generation. Moreover, it provides insights into innovation locus, type and characteristics. This was a seminal paper in the exploration of the innovation locus.
Noseworthy and Goode (2011)	Contrasting Rule-Based and Similarity-Based Category Learning: The Effects of Mood and Prior Knowledge on Ambiguous Categorization.	Experimental Design	Categorization, product ambiguity	The authors explore the role of category learning and verbal rules. They find that when a verbal rule is present, the rule system overrode the similarity based system in categorization. It is also suggested that dominant attributes can bias categorization if they are not present.

	Journal of Consumer Psychology			
Ma, et al. (2015)	Core versus Peripheral Innovations: The Effect of Innovation Locus on Consumer Adoption of New Products. Journal of Marketing Research	Experimental Design	Peripheral innovation locus, detachability, optionality	The authors present an initial examination into the impact of peripheral components and the concept of optionality. They show that offering a really new innovation as a peripheral component led to higher levels of adoption intent than if the component were core.
Bagga, Noseworthy and Dawar (2016)	Asymmetric Consequences of Radical Innovations on Category Representations of Competing Brands. Journal of Consumer Psychology	Experimental Design	Innovation, categorization, dominant brands	The authors examine the role of radical innovations and category representation. They show that radical innovations only affect competing brands when they are introduced by a dominant brand and when they have the ability to alter the core category attribute, rather than a peripheral attribute.

2.7 Chapter Summary

In this chapter, we discussed the conceptual background for each of the constructs to be

examined under the umbrella of green product communication strategy. Each literature

stream has been taken from differing theoretical perspectives in the field of marketing,

including signalling, self-determination, product categorization and schema congruity,

construal level theory and finally, attribute optionality derived from innovation research.

However, each aspect in this research is unified by self-determination and the notion that

one's attitude and behaviour can be influenced by their level of autonomous or controlled motivation.

In the first section of the literature review, we explore past green marketing literature in relation to product perceptions and advertising. Additionally, we examine signalling theory and the concept of explicit and subtle signals. Explicit signals aim to make clear the product's unique selling point, which in this instance, would be an environmental attribute. While this approach has been advocated by select scholars (Kilbourne and Carlson 2008; Sheth et al. 2011), it has also been found that explicit communications can negatively impact one's sense of autonomy (Edwards, et al. 2002; O'Keefe, 1997). Such a reaction may occur in the case of explicit green product communications, as consumers feel as though their free will is being threatened (Kim, et al. forthcoming) and, due to negative performance inferences, feel as though they are being asked to make an unwanted sacrifice (Olson, 2013). Moreover, many believe that firms do not have the right to tell them to be green (Zollo, et al. forthcoming). In contrast, a subtle signals approach reduces the prominence placed on the product's environmental attribute, thus allowing additional product information to be observed. Such information that is of value and may be deemed useful to consumers, enhancing their sense of autonomy (Hagger, et al. 2006).

In addition to green product communication strategy, we propose several moderators, including performance criticality, social distance and optionality. Like the above, we unite each concept under the umbrella of self-determination. Performance criticality refers to the category based inferences in relation to product performance. In other words, the extent to which performance is a valued benefit in a product category. Alignment between the message and the product category can not only enhance evaluations, but also one's sense of autonomy. For instance, Kivetz (2005) found that consumers can maintain their sense of autonomy by selecting an item that is congruent with a given consumption effort, as the behavior is viewed

as intrinsically motivated. Additionally, Kronrod, et al. (2012) found that congruency between an explicit message and product category can increase the effectiveness of the advertisement. In relation to the product advertisement, the provision of information that is of value to the consumer has also been shown to enhance autonomy (Hagger, et al. 2006).

Social distance, based on construal level theory, offers us insight into how the buying situation can impact on the relationship between green product communication strategy and performance evaluations. Purchasing for another individual can enhance one's sense of internal pressure, as one seeks to purchase a product that will meet the users' expectations (e.g. Sherry, et al. 1993). This expectation can be magnified when purchasing a green product, as a consumer may wish to signal virtuosity, while simultaneously having counter thoughts due to the product's perceived performance liability (Green, et al. 2014). Subtle signals aim to reduce this sense of pressure by providing additional product information to allow the buyer to make an informed choice.

Finally, we examine attribute optionality. We posit that optionality can affect a consumers' evaluation of a green product. The concept of optionality builds upon the concept of peripheral innovations (e.g. Gatignon, et al. 2002). Thus, when the environmental attribute is optional, it negates the incongruity between the core product and the attribute, as well as reduces performance risk, as peripheral components are not integrated into the core product. This reduce risk and enhanced understanding leads to a increase in consumer autonomy perceptions.

Building on past literature that has been shown in this chapter, we aim to develop a series of hypotheses to test the relationships among the variables that have not yet been covered in academic literature. These hypotheses will be tested in Chapter 5 and will constitute the empirical part of this thesis.

Chapter 3 – Hypotheses Development for Green Product Communication Strategy

"When Henry Ford made cheap, reliable cars people said, 'Nah, what's wrong with a horse?' That was a huge bet he made, and it worked."

(Elon Musk)

3.1 Chapter Overview

In this chapter, we aim to combine together the different theoretical frameworks that have been outlined in the literature review presented in Chapter 2 in relation to the objectives of the first part of this thesis document. Specifically, we focus on the role of green product communication strategy and its impact on performance evaluations. We then explore the mediating role of autonomous motivation. Furthermore, we propose a series of boundary conditions, including performance criticality, social distance and green attribute optionality. Thus, in this chapter, we develop a series of hypotheses that will aim to address the entity and direction of the relationships among the constructs in order to test our predictions in a set of empirical studies.

3.2 The Role of the Green Understatement Communication Strategy

In the marketplace, there exists a wide range of products on offer. Those firms seeking to promote green products may do so via the signalling of relevant product attribute information. In the development of a communication strategy aimed at transmitting such information, firms may alter how explicitly they are branded or how prominent they make certain attributes (Newman, et al. 2014). One such strategy to distinguish their green product from traditional alternatives via the use of salient environmental attribute information. We refer to this communication strategy as explicit, in that the signaller (firm) transmits environmental attribute informational signal to the receiver (consumer). For example, an automotive firm may emphasize carbon emissions or a recently developed hybrid power system when signalling information to consumers. Moreover, household electronic companies may play prominence

upon electricity consumption or recyclable materials. Past literature has shown that this approach is effective, as it allows the environmental attribute is stand out and be observed by consumers (Berger and Ward, 2010; van der Wal, van Horen and Grinstein, 2016).

In contrast, a firm may utilize a subtle signal approach, in which brand or product information is transmitted discreetly. In doing so, the firm is attempting to downplay certain brand or product elements. While the former approach (explicit signals) may increase the likelihood that consumers will make the desired product inferences, such an approach may be detrimental. As stated by Kirmani and Rao (2000), there often exists a state whereby consumers lack pre-purchase information. In other words, consumers are unable to assess the quality of a product before usage. As there exists information asymmetry, consumers may rely on inferences, derived from category knowledge. If this occurs, it is likely that the consumer will infer a negative performance connotation associated with the target green product. Newman, et al. (2014) argues that this negative correlation between green products and performance may be due to resource allocation perceptions. In particular, consumers believe that when a firm devotes an increased level of resources to the development of an environmental attribute, these resources were transferred from other product attributes, such as performance. In other words, in order to increase the level of one attribute, another had to be reduced. Furthermore, Aaker, Vohs and Mogilner (2010) found that consumers often hold stereotypical views of green and non-green products. For example, the authors found that when green attributes were presented to respondents, they often inferred signals of generosity, trustworthiness and sincerity, rather than competency, efficiency and effectiveness. This finding was supported by Lin and Chang (2012), who found that consumers often use more a green product in order to make up for its perceived performance deficiency, while Doorn and Verhoef (2011) found that consumers' held negative quality perceptions regarding organic food. Moreover, Young, Hwang,

McDonald and Oates (2010) found that consumers inferred a reduction in performance for green products, even when they claim to be environmentally consciousness.

Thus, it may be fruitful for firms to seek and alternative green product communication strategy. In this instance, we propose the concept of green understatement, in which a firm employs the concept of subtle signals to communicate a green product's environmental aspect (Berger and Ward, 2010). When a green understatement is employed, firms subtly, rather than explicitly, communicate a green product's environmental attributes, allowing consumers to observe non-environmental attributes. Subtle signals are often less effective at promoting a given aspect (Berger and Ward, 2010). In other words, a subtle signal is under the radar and though it is present in the advertisement, is not the focal theme (Berger and Ward, 2010). In employing this approach, other product attributes become visible to consumers. We propose that there are two underlying reasons why such an approach could be beneficial. The first is rooted in signalling theory. The green understatement strategy represents both the default contingent approach and the separating equilibrium. For instance, there is no upfront cost to the firm when employing this green product communication strategy. However, a focus on performance will enhance a consumers' expectation that the product will perform as expected. Thus, only firms that are able to match these consumer expectations are likely to be able to follow this communication strategy, as failure to meet consumer expectations may result in negative downstream consequences. The second is based on consumer inferences. The notion that green products are unable to match the performance ability of their traditional counterparts is likely rooted in lay inferences. In fact, Newman, et al. (2014) states that firms may be able to devote resources to environmental attributes without sacrificing quality. Moreover, there are a number of products on the market, including automobiles that are able to match and in some cases, surpass, the performance ability of traditional goods. For instance, Luchs, et al. (2010) found

that when performance information was given in relation to a green product, consumers performance concerns were alleviated.

Based on this, we propose that green understatement communication strategy, whereby the environmental attribute is communicated subtly, rather than explicitly, will alleviate performance risk. Thus:

H1: Subtle (explicit) green product signals lead to higher (lower) performance evaluations of green products.

3.3 The Mediating Variable of Autonomous Motivation

To understand the relationship between green product communication strategy on performance evaluations, we employ SDT, which outlines two types of instrumentalities to which a consumer may prescribe their actions (e.g. DeCharms, 1968, Mele, 1997). When being asked to perform an action, such as a product evaluation, a consumer may feel as though their beliefs stem from either autonomous or controlled motivations. Autonomous motivation may occur when an individual feel as though their behaviour is derived from their own internal interests and values. Moreover, for autonomy to occur, one needs to feel as they are acting based on their own volition. As discussed in the literature review (Chapter 2), the benefits of autonomous motivation have been shown in the contexts of relationship marketing (Dholakia, 2006), employee motivation (Vansteenkiste, et al. 2004), environmental conservation (Pelletier, et al. 1998) and the adoption of healthier eating habits (Williams and Deci, 1996).

In contrast, controlled motivation occurs when an individual feels as though either an external or internal agent is guiding their behaviour. Such behaviour can stem from external incentives, rewards or punishments, as well as internal pressure, guilt or shame (Ryan and Deci, 2000). Furthermore, controlled motivation arises when one fees as though they must obey demands,

maintain their self-esteem, avoid guilt, or when they feel as though they must live up to their own internal self-standards (Ryan and Connell, 1989).

It should be noted that amotivation has yet to be discussed. In the conceptualization and operationalization of controlled motivation, we have excluded amotivation as it represents a lack of motivation, whereby one refuses to act, or simply does so without intent (Ryan and Deci, 2000). Thus, controlled motivation represents external and interjected regulation. In contrast, autonomous motivation reflects identified and integrated motivations. It should also be noted that intrinsic motivation, the most self-determined motivation state, is also left out. This is due to the notion that in this instance, the product is being sold by a firm through the advertising medium. Thus, we are acting as an external agent via the promotion of a green product to a consumer base in the hopes of generating a positive evaluation.

The majority of literature employing SDT has examined the downstream impact of autonomous motivation. For example, Hagger, et al. (2006) found that heightened autonomy positively impacted upon an individual's attitudes, which in turn influenced their behavioural intentions. Moreover, Dholakia (2006) showed that consumers who perceive their joining a relationship marketing program as self-determined were more likely to engage with the brand and have ongoing purchase and consumption intentions. In the context of communications, Ryan and Deci (2000) state that information related to consumer interests, communicated from the perspective of the consumer, can enhance autonomous motivation. In taking this approach, the communicator is attempting to demonstrate the value of a given activity through non-assertive communication. Thus, autonomy may be dependent on the provision of information that a consumer deems valuable (Hagger, et al. 2006).

When evaluating a green product shown in an advertisement some consumers may feel a sense of pressure to comply with message, or that they are being asked to make a sacrifice to achieve

a specific outcome. This feeling may especially be prominent if an explicit communication strategy is employed. Prior work by Luchs et al. (2012) has shown that consumers who favor a product alternative that offers greater sustainability but inferior functional performance can experience feelings of distress because their functional performance needs are being compromised. This distress may cause a negative reaction and thus, autonomy may be reduced, as consumers feel as though they are being asked to make a sacrifice. This reduction ultimately leads to a decrease in performance evaluations.

Against this backdrop, we posit that a green understatement strategy will aid in enhancing autonomous motivation. Deci and Ryan (2000) argue that information related to consumer interests, communicated from the perspective of the consumer, can heighten autonomous motivation. Kultgen (1995) argues that autonomy begins to occur when individuals' possible actions are shaped by their beliefs and goals. Thus, autonomy is dependent on the provision of information that a consumer deems of value (Hagger et al., 2006). Thus, by employing a green understatement strategy firms are attempting to downplay the product's environmental attributes by highlighting alternative product attributes that may be of interest to consumers. Such interest has been shown to be of vital importance when explaining environmental behaviour (Kalinowski, Lynne & Johnson, 2006). In the same direction, Corbett (2005) maintains that personal interests as well as values and beliefs would need to be present for an individual to act in an environmentally friendly manner. Thus, by reducing the prominence paid to the product's environmental attributes, the message aligns with a consumer's interest, enhancing autonomy. In fact, past literature has shown that performance is often valued than sustainability (Luchs & Kumar, 2015) and that the inclusion of environmental information may degrade perceptions of product performance (Newman et al., 2014). Additionally, autonomy has been shown to increase positive feelings towards a given activity (Deci, Eghrari, Patrick & Leone, 1994), and thus we anticipate that performance evaluations will increase. Thus:

H2: Autonomous motivation mediates the effect of the green product communication strategy on performance evaluations.

3.4 The Moderating Role of Performance Criticality

Derived from past work in the domain of categorization, we examine performance criticality and the role of schema congruity. In the evaluation of a target product, consumers often rely on the benefits provided (Meyvis and Janiszeski, 2002). These benefits, such as performance may be derived from inferences based on the category to which the product belongs (LeBoeuf and Simmons, 2010). This concept is termed performance criticality, which relates to the notion that the performance of a given product can be more or less critical depending on the category to which the product belongs. At the most basic level of categorization exists the product level. For instance, sports cars and family cars serve under the main superordinate category of cars. It is based on these categories that consumers draw inferences that are evaluative in character. For example, a sports car may be described as having good handling or superior performance compared to a family car.

In relation to product categorization and green product communication strategy, we extend the work of schema congruity to posit that performance evaluations will either enhance or degrade based on the information provided. In our manipulation of green product communication strategy, we aim to make salient specific product attributes. In doing so, select product information is being made accessible to consumers. This enhanced accessibility increases the perceived diagnosticity of the information, as it easily aids in product categorization. However, the information that is made accessible will differ depending on the selected green product communication strategy. In an explicit green product communication appeal, environmental information is made prominent. Such information may be deemed unique if the product is launched into a performance critical category, leading consumers to generate inferences about missing information (Einhorn and Hogarth, 1986; McGill and Anand, 1989). Given the fact

that consumers often perceive environmental to be orthogonal to product performance, such inferences may be damaging and reduce performance evaluations.

However, as stated, green products are not inherently performance adverse (Newman, et al. 2014). To combat these lay inferences, Bodur, et al. (2014) argued for the use of congruity. According to Fiske (1982), congruity is represented between the schema and the relevant attributes of the product. In a communication perspective, congruity exists when there is alignment with the relevant product attributes and the communicated information. Mandler (1982) has argued that congruity results in a more favourable reaction among consumers, due to the notion that people like objects that conform their previously held expectations. However, congruity may be violated if a performance critical product is promoted on its environmental attributes.

Thus, when consumers desire a product that belongs to a performance critical schema, salient and congruent information will likely confirm that the product will meet their performance expectations (Meyvis and Janiszewski, 2002). In this instance, a green understatement communication strategy employing the use of subtle signals will make more performance-relevant information visible and thus, aid schema congruity and enhance performance evaluations. However, when a green product is launched in a non-performance schema, the impact of a green product communication strategy is negated, as explicit green signals no longer act to disconfirm expectations. Although one may argue that moderate incongruity may exist, even in the non-performance critical schema, Mandler (1982) stated that moderate incongruity is often able to be resolved by the consumer and in some cases, may be preferred to congruity.

H3: The negative effect of an explicit, versus subtle, green product communication strategy on performance evaluations is magnified when performance criticality is high compared to when it is low.

3.5 The Moderating Role of Social Distance

As stated in Chapter 2, construal level theory has two distinct psychosocial distance aspects. The first is a low construal level construal that represents a close psychological distance and is more concrete in terms of specific and contextualized features. In contrast, a high construal level is more abstract and represents more general and de-contextualized features (Liberman and Trope, 1998). Based on this, we posit that any action, including the evaluation of a green product, can be altered based on one's psychological distance level.

In this research, we employ social distance, one of the prime tenants of construal level theory. In doing so, we have the distinction between high and low social distance. When social distance is high, one is more likely to have an abstract mindset. In this instance, one is more likely to omit features that are not deemed important, while linking the activity with a more generalized set of events (Liberman and Trope, 1998). Moreover, an abstract mindset increases one focus on desirability and the product's central attribute (Kray, 2000). Alternatively, a low social distance will evoke a more concrete mindset, whereby one focuses upon feasibility and peripheral components. Furthermore, a low level construal may lead towards more rich details (Trope and Liberman, 2010).

Based on this, we expect that an individuals' level of social distance, or the space between social groups or individuals, will have an impact on how the selected green product communication strategy effects performance evaluations. When an abstract mindset is evoked when social distance is far, we posit that the negative effect of an explicit green signals strategy on performance evaluations will be enhanced, while the effect of green product communication

strategy will be reduced when social distance is low. We argue that this is due to the process of abstraction, whereby one focuses on the central attribute of the product and its desirability. In the explicit green signals condition, the main attribute is presented as environmental. Moreover, performance is often more desired that than of environmentalism. For instance, Green, Tinson and Peloza (2016) found that desirability of the environmental attribute in a green product was a contributing factor in consumer reluctance to purchase the product for another individual.

In contrast, when social distance is low, a concrete mindset is activated. In this situation, we posit that the impact of a green product communication strategy on performance evaluations will be nullified. This mindset enhances one's focus on feasibility and peripheral cues. Moreover, it allows one to utilize more rich details in their evaluation (Trope and Liberman, 2010). In the explicit signals condition, while the green attribute is the focus of the message, other information is present. Thus, individuals with a low level construct are better able to view and process these peripheral cues. Therefore:

H4: Subtle green signals lead to higher performance evaluations when an individual has an abstract (far social distance) compared to a concrete mindset (near social distance).

3.6 The Moderating role of Green Attribute Optionality

The majority of green product literature has focused upon core innovations (e.g. Newman, et al. 2014). Specifically, these innovations that are integrated into product subsystems and are vital to product operation. For example, car manufacturers have attempted to enhance their environmental credential via the development of hybrid systems that are required for it to function. In past green marketing literature, such systems have enhanced perceptions of greenness (Gershoff and Frels, 2014), but also degrade performance evaluations (Newman, et al. 2014). It has been shown that this occurs due to the very nature of a core component. A core

system is interdependent with other subsystems (Gatignon, et al. 2002) and when making changes to a core subsystem, it is more likely that it will have an impact throughout the product. Thus, when a new green attribute is a core component, a violation may be perceived, causing consumers to change their previously held beliefs regarding the product category (Bagga, et al., 2016). In this instance, consumers may feel as though they need to re-evaluate the product category and determine if it can still meet previously held expectations. Given the negative performance connotations held about green attributes, it is likely that this violation will result in a reduction in performance evaluations.

However, peripheral components are those that are weakly coupled or less interdependent with other subsystems. One form of peripheral components is optional attributes. Optional attributes are those that may add additional utility, but are not required for the functioning of the base product (Ma, et al. 2015). Extending this to our context, we propose the concept of green attribute optionality, which refers to an attribute that enhances the product environmental standing while not being needed for the base product to function. We posit that such an approach may alleviate the potentially harmful effects of green attribute development, as alternations to peripheral components may have minimal impact on other subsystems. This may occur even if the green attribute is seen as a violation, as peripheral violations only impact on attributes that are not sufficient for category membership (Bagga, et al., 2016).

In light of this argumentation, we propose that the impact of a green product communication strategy will be heighted when the attribute is non-optional, while being negated when it is optional. Thus, subtle green signals are best employed when paired with a non-optional green attribute. This is due to the notion that consumers often infer reduced performance from environmental attributes (Newman, et al. 2014) and thus, a non-optional core environmental attribute will be viewed as coupled with other product subsystems, decreasing performance evaluations for the product as a whole in the explicit green signals communication strategy.

However, optionality moves the green attribute away from the core and thus, the performance inference transfer will not be made to other product subsystems. In this case, regardless of the green product communication strategy, performance evaluations will not be negatively affected by the addition of the environmental attribute. Thus:

H5: Non-optionality decreases performance evaluations when explicit signals, compared to subtle signals, are employed. Conversely, the effect of green product communication strategy is negated when the environmental attribute is optional.

3.7 Chapter Summary

In this chapter, we presented the hypotheses that were generated in order to empirically test the objectives of this research. In total, five hypotheses were generated in relation green product communication strategy. We presented the direct hypotheses, in which green attribute optionality impacts on performance evaluations, the mediating hypotheses for autonomous motivation and the three boundary conditions that may alter these relationships. We will test these predictions in three experimental studies. The following chapter presents the motivations and the philosophical rationale behind our decision to select the experimental methodology. In addition, we discuss the main elements of the experimental methodology, outlining both its positives and solutions to overcome its negatives.

Chapter 4 – Research Methodology

4.1 Chapter Overview

In this chapter, we examine the methods that were implemented for this research, as well as their rational. The arguments put forward here apply to both the green product communication strategy and green attribute optionality parts of this research. Thus, this section will only be presented once.

First, we discuss the philosophical explanation underlying the selected research method, specifically, that of logical positivism. Second, this chapter examines the numerous advantages of using a casual research design in consumer behaviour research and the specific characteristics associated with an experimental design. This includes techniques to ensure internal and external validity. Third, we explore the issue of participants' sampling and their assignment to the experiment conditions. Finally, the end of this chapter presents an overview of the experiments conducted for this research, which will then be presented in detail in the following chapters.

4.2 Philosophical Explanation for Research Methods

In the domain of marketing and consumer behaviour research, scholars have debated on the nature of marketing as a distinct discipline, with influences coming from areas such as psychology, sociology, anthropology and economics (Lazer and Kelley, 1960). In relation to consumer research, two unique schools of thought have emerged. The first has followed a more philosophical and sociological foundation, often applying postmodern theories regarding self-construction, as well as relationships between consumption and individuals. The second has applied theories and methods based on psychological science, aiming to understand patterns in human behaviour. Unlike the former, which relies more heavily on a continuous construction of reality among actors, the latter encompasses a more positivistic view. In this instance, an

explanation of phenomena is derived from the study of a cause and effect relationship controlled through empirical analysis (Anderson, 1983; Cartwright, 1983).

As a philosophy, positivism, most notably that of a logical positivism, views reality as independent from human perception, and that its discovery starts from the observation of a single phenomenon that constitutes small parts of reality as a whole. Repeat observation of phenomena allows scientists to develop theories, often derived from a degree of intuition, seen as the use of personal senses to understand reality (Cozby and Bates, 2011). However, such observations cannot be sufficient for theory acceptance, as observations may be influenced by perceptive, motivational and cognitive biases of the observers (Fiske and Taylor, 1991). Thus, it is not deemed possible to establish a link between a cause and an effect without hypothesis formulation, which can be empirically tested to support or reject a given theory. Based on this line of thought, a formulated theory may only be supported when the hypotheses are confirmed by objective data. Nevertheless, scholars have debated on the results commonly associated with logical positivism. For example, Carnap (1936), a member of the Vienna circle of positivists, addressed concerns laid out by Karl Popper in his critique of inductive research in stating that outliers could be responsible for the findings shown in observable quantitative data. However, through replications and continuous study of hypotheses, such an issue may be resolved (Anderson, 1983).

Given that consumer research aims to examine human tendencies and their consumption behaviour, as well as, in some instances, predict behaviour via casual links between phenomena, we employ the philosophical underpinning of logical positivism.

4.3 Research Design

In order to collect data from respondents to support or reject the formulated hypotheses, we must establish a research design. A research design details a clear outline on how the researcher intends to collect and analyse data (Creswell, 2013).

4.3.1 Nature of casual research design

Within the domain of consumer behaviour research, as well as in the broad field of behavioural science, there exists three main research designs: exploratory, descriptive and casual designs (Cozby and Bates, 2011). An exploratory design is typically implemented when the nature of a particular phenomenon has yet to be clarified, or when researchers require preliminary information in order to generate detailed hypotheses. Within this design includes systematic reviews of literature (Robson, 2002), as well as the use of methodologies that are aimed at providing varying levels of depth. These include interviews or focus groups where the primary aim is to obtain a large quantity of information about the target topic. Based on this information, sub-dimensions may be generated leading to alternative research questions and more detailed hypotheses (Creswell, 2013). Alternatively, a descriptive design is one that aims to have a view on the characteristic of a phenomenon, behaviour or population that constitutes the object of the research (Robson, 2002). In this instance, an adequate level of knowledge is required regarding the phenomenon under investigation, which may be acquired via the use of the aforementioned exploratory design. When undertaking a descriptive research design, both qualitative and quantitative methods may be employed, with the latter involving statistical techniques that are defined as descriptive statistics (Mann, 1995). Finally, the casual design approach aims to test casual relationships among variables. Hair, Black, Babin and Anderson (2014) defined casual research as a "principle by which cause and effect are established between two variables. It requires a sufficient degree of association (covariance) between the two variables, that one variable occurs before the other (i.e. that one variable is clearly the

outcome of the other), and that no other reasonable causes for the outcome are present" (p. 542). Put in another way, casual research is implemented by a researcher in order to test whether a variable X is not only related to a variable Y, but also demonstrates that a change in variable X directly causes a change in variable Y (Saunders, et al., 2009). For example, researchers may be interested in examining the effect of advertising (X) on a consumers' purchase intention (Y).

In the present research, the researcher aims to examine the effect of green product communication strategy and green attribute optionality on performance evaluations of an environmental product. Put in a causal research design, it is hypothesized the green product communication strategy and green attribute optionality to be the X variable directly impacting on the Y variable of performance evaluations.

In order to test this relationship, an experimental design has been selected. According to Bush, Hair and Ortinau (2003), experimental designs are the primary methodology used to test causal claims. An experimental design involves the direct manipulation, as well as the control of variables, in which the researcher manipulates the first variable of interest and then observes its impact (Cozby and Bates, 2011). In other words, experiments are research designs that test the effect of a variable on another variable maintaining control of other potential variables that may interfere in the relationship (Calder, Phillip and Tybout, 1981). In these instances, the researcher manipulates the independent variable (IV), as it is often the variable that is believed to have a causal effect on the other, known as the dependent variable (DV). Thus, it is assumed that the DV will be impacted in accordance to the state of the IV.

4.3.2 Internal and external validity of experimental designs

Based on the characteristics outlined in the last section, experimental researchers must take steps to ensure both internal and external validity. Internal validity in an experimental setting refers to the extent to which inferences may be drawn regarding a cause and effect relationship (Tabachnik and Fidell, 2007). The key issue with internal validity is whether or not the observed changes on the DV can be attributed to the cause, or the IV, and not to alternative explanations. When assessing internal validity, researchers should follow three main strategies. First, the IV must come before the DV in order to establish a causal relationship. Thus, respondents must be subjected to the manipulated variable and then the DV, in order to determine whether the manipulation had an effect. Second, the effect of the manipulation has to covariate with the DV. In other words, in order to establish both internal validity and causality, the effect of the manipulation on the DV should only occur for those that were subjected to the manipulation. Third, the manipulation should be the reason for any alteration seen on the DV, rather than any confounding factors. For example, at the time of the experiments conducting for this research, the researcher was not present and participants were given instructions to answer in an honest manner. Moreover, mechanisms were put in place to ensure that the respondents could not participate in the study again.

External validity refers to the ability to generalize the results of a given experiment to other populations, settings or with different manipulations of the variable (Cozby and Bates, 2011). Specifically, external validity relates to whether the findings of an experiment reflect what actually happens in the real world (Pelham, 2006). In some instances, experiments may be conducted in peculiar and unrealistic settings, which are seen as disconnected from the real world. Thus, the aim to external validity is to ensure that experimental results bear some resemblance to the here and now and may be generalized (Lynch, 1982). In the case of external validity, generalization of the casual relationship between the IV and the DV is paramount

compared to the reality or the believability of the manipulation. This gives rise to experimental research that may not naturally occur in a consumer setting, but may aid in unravelling the causes of a particular behaviour.

Based on this, we aim to ensure external validity through a variety of means. First, we replicate our findings with the use of different product categories. Second, we ran the studies at different points in time, reducing the possibility of bias through an external event. Finally, we used a representative sample of consumers in each study (e.g. various age groups) through the use of Amazon's Mechanical Turk as a respondent recruitment tool. We will discuss this further in section 4.4.3.

In addition to external validity, we aim to ensure a high level of realism within the manipulation. In the development of both the advertisements and press releases for the environmental products, we manipulate green product communication strategy and green attribute optionality, comparing whether these phenomena can contribute in alleviating performance risk associated with environmental products. As shown in the introduction through anecdotal examples, the use of signals, as well as optionality, are common in the development of both environmental products and their associated advertisements. Therefore, the manipulation of the IVs relates to a real consumption setting.

4.3.3 Advantages and disadvantages of causal research and experimental methods

As stated previously, experimental research contains within it a distinct advantage in establishing relationships among variables. Moreover, it is well suited to test whether a variable determines another. This method allows the researcher to test whether the manipulation of a certain condition has an effect on a series of dependent variables. In this regard, the researcher is also able to determine the direction of the relationship, testing whether X actually effects the variable Y (Cozby and Bates, 2011).

However, like non-experimental research, an experimental approach is subject to the third-party variable problem, or the presence of one or more confounding variables. Confounding variables may be described as those that correlate with both the independent and dependent variables (Frank, 2000). In this instance, the causal link between the independent and dependent variables is threatened, as the results may not reflect the actual relationship between the selected variables. In dealing with confounding variables, researchers may face three potential challenges. The first is operational, which relates to a situation in which the measurement tool, such as an attitudinal scale, assesses both the desired chosen variable, as well as another, extraneous variable (Pelham 2006). Second, termed procedural, concerns situational factors. For example, when conducting a lab experiment, a researcher may fail to take into account differences in the chosen laboratories. One group may be placed into a crowded room, while the second could be situated in a quiet corridor. This situation may alter the way in which respondents completed the tasks. Thus, a comparison of the results becomes impossible. The last potential confound is the person confound. This relates to individual differences between respondents. This may relate to age, gender, income and educational level. Such differences may alter the relationship between the independent and the dependent variable.

In order to prevent potential confounds, researchers may utilize experimental control. In doing so, the researcher is attempting to prevent confounding variables from endangering the cause-effect link. Experimental control aims to keep consistent all the variables in a given study, aside from the one being manipulated by the researcher. Thus, the researcher may ensure that observed results are statistically related to the manipulation, rather than a set of confounding variables. An often employed method of experimental control is that of pre-tests, whereby the manipulation is tested among a smaller group of respondents featuring the same set of characteristics to that of the population used in the main study. While a pre-test may not ensure

complete success in the main study, it can ensure that respondents were able to, among other benefits, understand instructions, test the adequacy of the research instruments and to assess the sampling frame. Upon completion of the pre-test, the researcher should be able to identify potential confounds that may jeopardize the main data collection.

In addition to pre-tests, the researcher may also introduce manipulation checks within the experimental design. These checks are designed to measure whether variation in the manipulated variable impacted upon the dependent variable (Cozby and Bates, 2011). In other words, manipulation checks ensure that an experiment has actually been conducted (Perdue and Summers, 1986). Manipulation checks may be self-reported (i.e. Likert scales), behavioural (i.e. respondent actions) or even psychological (i.e. heartbeat measurement).

Finally, to reduce the potential for person confounds, researchers employ randomization in the experiment condition, thus minimizing the risk posed by individual differences among respondents. Randomized assignment is a technique to ensure that respondents are assigned to different experimental groups by chance rather than set criteria (i.e. order in which respondents arrive at a lab), and that individual differences between and within groups are not biasing the manipulation. Moreover, as respondent groups are generated through a random process, the distribution of any potential confounding variable is theoretically identical in both groups, preventing extraneous variables from affecting the relationship between the independent and dependent variables as the confounding variables becomes constant. To date, randomization is one of the most important tools for experimental researchers in maintaining internal validity (Cozby and Bates, 2011).

In this research, we employ manipulation checks in order to reduce the potential for operational confounds. Furthermore, allocation of respondents to experimental conditions was randomized, and that each variable is identical apart from the manipulated variable. In doing so, we aimed

to negate any potential procedural and person confounds. In Table 8, we summarize the procedures that a researcher may implement in experimental designs.

Table 7 Summary of potential biases and control procedures in experimental research

Potential bias	Bias description	Effect of bias on the research design	Control procedure
An asymmetric direction of the casual relationship	Where the IV is influenced by one or more DV(s)	It becomes problematic to infer a causal relationship.	The IV is presented to respondents before the DVs (Pelham, 2006).
Operational confounds	The measurement tool assesses more than one construct	An absence of construct validity	The use of established measurement items and the implementation of manipulation checks (Cozby and Bates, 2011).
Procedural confounds	Situational factors are present that interferes with the collection of data	An absence of internal validity	By keeping constant all variables, aside from the one being manipulated, the risk of procedural confounds may reduce (Cozby and Bates, 2011).
Person confounds	There exist individual differences between respondents that interfere with the data collection	An absence of internal validity	The implementation of randomization, whereby respondents are randomly assigned to the experimental conditions (Tabachnik and Fidel, 2007).

4.4 Design of the Experiments and Data Collection Strategies

Following a secondary data collection via an examination of the relevant literature, as shown in Chapter 2, we will start the collection of primary data through a series of experiments aimed at testing the hypotheses presented in Chapter 3 and 8. While this research presents two distinct subject matter in relation to the study of the green product performance liability, the data collection methods employed all the same in each experimentation chapter.

4.4.1 Between subjects and within subject designs

In this research, a between subjects' design was selected for all the presented experiments. In a between subject design, the experiment will have two or more groups of subjects that will each be placed in a separate experimental condition simultaneously (Pelham, 2006). Thus, each respondent is only presented with one condition. In contrast, a within subject design ensures that respondents view more than one condition.

There are several advantages in the between subject approach as compared to within subject. First, the approach aids in negating the sequence effect, whereby a confounding influence may occur due to exposure to multiple conditions. In some instances, this effect is brought on by variables related to the individual, such as fatigue, or conditions related to the testing procedure, such as time differences between condition exposure (McBurney and White 2009). The second advantage is the absence of a carryover effect, in which prior task completion by respondents in one condition may impact on their ability to complete a task in another condition. Specifically, prior experience can lead to biased responses by respondents due to the effects of the test design. For example, the presentation of multiple conditions may allow respondents to uncover the research hypotheses and either act accordingly (i.e. social desirability bias), or behave in a manner that disconfirms the formulated hypotheses. Moreover, it is likely that completion of a task in one condition impacts on a respondents' ability to complete the next

condition, either positively or negatively. In either case, carryover effects should call into question the validity of the casual relationship.

In order to reduce the potential for the biases aforementioned, we selected the between subjects' design. In this instance, a respondent X may be assigned to condition A, while respondent Y is assigned to condition B and respondent Z to condition C. This may help alleviate the potential downsides of a within-subjects design. In addition, the research question that was developed (examining the role of green product communication strategy and green attribute optionality on performance evaluations of a green product), may not benefit through the use of a within-subjects design.

4.4.2 One way and factorial designs

In order to test the hypotheses that were outlined in Chapter 3 and 8, both a one-way and factorial designs will be implemented. A one-way is where only one independent variable is tested on multiple groups of respondents. This experimental design is simplistic and is aimed at testing the simple effect of an IV on either one or multiple DVs (Hinkelmann and Kempthorne, 2011). In contrast, a factorial design is an experimental approach consisting of two or more IVs. Each IV is tested simultaneously and may generate a combination of any possible values or levels in each condition. For example, a researcher may want to test the interacting effect of gender, containing two levels (gender: male vs. female) with another IV that may also contain two levels (type of product: non-green vs. green). This results in a 2x2 experimental design, in which the researcher will have four groups to compare on a set of DVs. Figure 2 illustrates a 2x2 experimental design.

Figure 2 Example of a 2x2 experimental design

		Type of Product	
		Non-Green	Green
	Male	*Group 1*	*Group 2*
Gender			
	Female	*Group 3*	*Group 4*

One of the downsides associated with a factorial design relates to the number of participants often required. As can be seen in Figure 2, factorial designs, while allowing a researcher to examine multiple IVs simultaneously, an adequate number of participants will be required to accurately test differences between groups (Pelham, 2006). Moreover, larger sample sizes increase statistical power and more accurately reflect the characteristics of the population from which the sample was accessed (Cronbach, 1951).

4.4.3 Participant sampling and recruitment

Sampling is a process by which a predetermined selection of observations is taken from a larger population. As it is often impossible to study a population as a whole due to time and resource constraints (Hair, et al. 2014), sampling is a common research technique. Within the concept of sampling, there are two main techniques. The first is that of probability sampling, which assumes that each individual of a given population has a random chance of being selected to participate in the study. Alternatively, a non-probability sampling technique does not involve random selection, but instead relies on different criteria to select participants. For example, researcher might require respondents who have an expertise in a given area (experts). This is known as judgement sampling (Cochran, 2007). Moreover, the quota technique involves the selection of people non-randomly according to a set quota, such as gender percentages.

In this research, we employ the non-probability technique. Specifically, that of the convenience sampling method. This technique selects respondents based on their availability to participate in a study. Put in simple terms, respondents are selected based on their convenient accessibility. Such an approach is the most widely employed within behavioural research (Gravetter and Forzano 2011).

In relation to sample selection, the majority of consumer behaviour research has utilized university students as the target sample (Peterson, 2001). While this process has been defended by scholars, such as Kardes (1996), who argue that external validity is not compromised using convenience sampling of students, specifically in tasks related to mental processing, others have stated that university students' consumption habits may not be able to be generalized to the general population (Sears, 1986). In this instance, external validity is threatened. In addition, researchers have stated that student sampling should not be considered when one would expect differences between groups (Hawkins, Albaum and Best 1977). Moreover, as this study aims to examine environmental consumer behaviour, we must ensure that we have a generalizable sample, as differences have been uncovered among genders and age groups in relation to pro-environmental behaviour (Zelezny, Chua and Aldrich, 2000).

As this research aims to achieve both a high level of internal validity, as well as strong generalizability of the results, a non-probability convenience sampling technique has been selected that will aim to recruit respondents with varying demographic and psychographic characteristics. The researchers will collect data from respondents through the online crowdsourcing platform Amazon Mechanical Turk (MTurk). MTurk allows for the recruitment of respondents via the posting of experiments online that may be completed by individuals if they meet researcher set requirements. For example, researchers may restrict access to respondents based on approval rating, percentage of tasks completed or location (Casler, Bickel and Hackett, 2013). The efficacy of this platform, as well as the reliability of the responses, has

been debated in past literature (e.g. Paolacci, et al., 2010; Buhrmester, et al., 2011; Goodman, et al., 2013). However, despite the debate, scholars have concluded that there exists a high correspondence between the characteristics of MTurk workers, including demographics and psychographics and those found within other consumer samples in laboratory experiments (Goodman, et al., 2013). In addition, from the standpoint of diversity, respondents gathered from MTurk are more demographically varied than those that are recruited through traditional means (Berinsky, Huber and Lenz, 2012). Therefore, we will employ this crowdsourcing platform to collect data. Each respondent received a small incentive for their participation. Furthermore, randomized assignment will be used to assign respondents to a single experimental condition in order to reduce potential biases that may be caused by the non-probability sampling method.

4.4.4 Data collection strategy

In order to test the hypotheses developed in Chapter 3 and 8, a series of convenience samples will be generated to collect primary data. All data will be collected through a series of online-based experiments, whereby an electronic version will be completed by respondents via computer interaction (Foddy, 1994). In order to gather data via online-based collection, the software *Qualtrics*, licensed to Leeds University Business School, will be used.

Qualtrics was selected based on several advantages. First, given that this research will employ both text and images, the ability to create high resolution visuals that may be used as experimental stimuli is a significant asset. Second, the software contains features that automatically adapt the layout of the experiment to fit multiple platforms, including computer, smartphone and tablet. Thus, for respondents, the structure is more user friendly, avoiding potential biases in the competition of the study. Third, Qualtrics allows for randomization of the different experimental conditions. Fourth, researchers may restrict advancement in the study if missing values are present. Thus, full completion of the study is compulsory. Finally,

the platform allows researchers to easily download the data and the relevant codings in a variety of formats (i.e. Excel and SPSS for Windows). This reduces the time between data collection and analysis. It is for these reasons that Qualtrics was selected as a primary support tool for primary online-based data collection.

4.4.5 Data analysis plan

To analyse the data, two different analysis strategies will be conducted: *descriptive* and *inferential procedures*. The former is described as a summary of the main characteristics of the chosen sample, such as measures of central tendency (i.e. mean and median) and data dispersion in the distribution (i.e. standard deviation, skewness and kurtosis; Healey, 2009). The latter aims to test hypotheses that have been formulated by the researcher (Black, 2011). In testing the hypotheses, an analysis of variance (ANOVA) will be conducted in order to examine differences among experimental groups and to compare the effect of the IVs on the DVs, as well as the relative error (Tabachnick and Fidell, 2007).

In analysing one-way experimental designs, a One-Way Between Subjects ANOVA will be used. For factional designs, a Factorial Between Subjects ANOVA will be employed to test multiple IVs. In doing so, three basic types of effects are tested: the main effect of the IV on the DV, the main effect of the second IV (moderator) on the DV, and effect for the interaction of the two IVs on the DV. In some instances, the one-way experiments will have more than two conditions (groups). When this occurs, both a One-Way Between Subjects ANOVA and Post-Hoc tests will be used to examine the mean difference among all the experimental conditions and to see how groups differ from one another.

While these tests are most widely used in consumer behaviour experimental research, other more specific data analysis techniques will be used to test particular hypotheses. These techniques will be discussed in the following chapters.

In order to analyse the collected data, we will use the twenty-second version of the Statistical Pack for Social Sciences (SPSS 22) software. This is an analytical program developed by IBM for Windows.

4.5 Chapter Summary and Layout of the Experiments

In this chapter, we outlined both the methodology and the philosophical underpinning of its selection. The quantitative casual approach was justified, supported by the philosophical concept of logical positivism and the belief that an experimental design is the most suitable methodology to examine a cause-effect hypothesis. Moreover, we discussed how internal and external validity will be ensured, the selected sampling data collection techniques and data analysis strategies.

As each experiment offers a differing operationalization of the manipulated IVs, specific details of the methodology selected for the single experiments will be discussed in more detail in the following chapters. An overview of the experiments to be conducted is displayed in Table 9.

Table 8 Summary of experiments in this research

	Section	Relationship/effect examined.	Type of design	Hypotheses tested
Experiment 1	Section 5.2	The impact of subtle signals and performance criticality on performance evaluations	Factorial Design (2x2)	H1, H2, H3
Experiment 2	Section 5.3	The effect of subtle signals and social distance on performance evaluations.	Factorial Design (2x2)	H1, H2, H4
Experiment 3	Section 5.4	The effect of subtle signals and optionality on performance evaluations.	Factorial Design (2x2)	H5

Chapter 5 – Experimental Results for Green Product Communication Strategy

5.1 Chapter Overview

In this chapter, we will present the design and the results for the experimental studies conducted in relation to the first part of this thesis (green product communication strategy). In each section, we present the design of the experimental stimuli, as well as the layout of the questionnaire. Second, the relevant preliminary data screening techniques are shown to examine the distribution of the sample and to cope with any values that may be missing. Third, the main data analyzation method is shown. Finally, at the end of the chapter we present a brief discussion of the results.

5.2 Experiment 1

As previously discussed, the study will employ an experimental design to determine whether there is a casual link between one or more of the IVs and a series of DVs. In this first experiment, we test the impact of green product communication strategy and performance criticality on performance evaluations of a green product, mediated by autonomous motivation derived from SDT.

In order to examine these relationships, we employ a factorial experimental design with two independent variables, forming a two-by-two (2x2) experiment. Moreover, as mentioned in the previous chapter, we use a between-subjects approach. Thus, respondents are only exposed to one of the four experimental conditions.

In the first study, the hypotheses are tested using a product advertisement as an experimental stimulus to test the impact of green product communication strategy on performance evaluations. The advertisement includes a photograph of an automobile, which represented the performance criticality manipulation. Moreover, to examine the role of green product communication strategy, the advertisement included a headline in bold at the top of the page,

three product attributes in bold, and two unrelated product attributes in smaller text placed at the bottom. Based on this, the aim of this first experiment was do examine the role of signalling and product categorization on performance evaluations. Specifically, we examine green product communication strategy and how subtle, as compared to more explicit product signals interact with performance criticality to influence an individuals' evaluation of the product's performance ability.

5.2.1 Procedures undertaken to design the experimental manipulations

To test the hypotheses, we designed an advertisement based manipulation. This technique consists of a fictitious advertisement developed by the researcher that was designed to mimic what respondents might see in the real world. Four unique advertisements were created based on an environmentally-friendly automobile. To manipulate performance criticality, we selected two unique vehicle subcategories. A fundamental premise in categorization literature is that objects can be grouped at varying levels of specificity (Sujan and Dekleva, 1987). Vehicles, for example, may be grouped into different subordinate or product class categories, such as sports cars. Moreover, these subcategories, such as sports cars or family cars, are likely to be perceived as distinct and consumers are likely to draw inferences based on this product type level categorization. Thus, to test performance criticality, two unique subcategories of vehicles were chosen to be included in the product advertisements. In particular, when performance criticality was high, a sports car was shown to respondents. A vehicle may be categorized as a sports car when it features district performance characteristics, such as lower ride height and two doors. When performance criticality was low, a smaller economy car was displayed. Each vehicle was shown from the side and all brand information was removed. Moreover, the cars selected were not for sale in the market that was selected for this study (i.e. the United States).

Next, to examine green product communication strategy, we manipulated the effect of subtle (vs. explicit) green signals. In doing so, we altered the extent to which respondents were

exposed to either green (explicit) or non-green (subtle) product attributes via the use of bold letters, larger font and page placement. This design follows past research in advertising that has demonstrated the usefulness of page design in influencing the extent to which a product is viewed as green (Schuhwerk and Lefkoff-Hagius, 1995). In the explicit green signals condition, three environmental attributes were made prominent on the page (i.e., carbon emissions, energy efficiency and sustainable lifespan). In addition, there was a headline in the advertisement that encouraged consumers to "buy green" for lower carbon emissions. In the subtle green signals condition, prominence was given to non-green product attributes (i.e., build quality, acceleration, and the vehicle's handling ability), while a headline stated that consumers should buy green for incredible quality and performance. In both conditions, the layout and design of each advertisement was held constant. Table 10 presents the final four advertisements that were developed, divided by performance criticality (rows) and green product understatement strategy (columns).

Table 9 Advertisements used in Study 1

	High Performance Criticality	Low Performance Criticality
SUBTLE GREEN SIGNAL	**Buy Green For Incredible Quality and Performance** — Top Notch Materials for Great Build Quality and Safety. Advanced Powertrain Technology to Deliver 0-60 MPH in 4.5 Seconds. Superb Ride Quality and Handling. — Save with Great Fuel Economy and Tax Credits / Help Improve the Environment with Low Emissions	**Buy Green For Incredible Quality and Performance** — Top Notch Materials for Great Build Quality and Safety. Advanced Powertrain Technology to Deliver 0-60 MPH in 7.5 Seconds. Superb Ride Quality and Handling. — Save with Great Fuel Economy and Tax Credits / Help Improve the Environment with Low Emissions
EXPLICIT GREEN SIGNAL	**Buy Green For Incredibly Low Carbon Emissions** — Lower Your Carbon Emissions by 25%. Reduce the Demand on Energy with Incredible Efficiency. Low Environmental Impact from Production to Disposal. — Premium-Level Quality and Driving Performance / Save with Great Fuel Economy and Tax Credits	**Buy Green For Incredibly Low Carbon Emissions** — Lower Your Carbon Emissions by 25%. Reduce the Demand on Energy with Incredible Efficiency. Low Environmental Impact from Production to Disposal. — Premium-Level Quality and Driving Performance / Save with Great Fuel Economy and Tax Credits

5.2.2 Dependent and mediating variable, manipulation checks and demographics

For this study, we selected one DV and a mediating variable to test the impact of the manipulated IVs. First, we included a variable to measure performance evaluations. A four item, seven-point bipolar scale (1 = *strongly disagree* to 7 = *strongly agree*) was employed (i.e., *"not effective/effective"*, *"poor performance/good performance"*, *"not attractive/attractive"*, and *"low quality/high quality")* was used. This scale was adapted from the effectiveness measurements outlined by Campbell and Goodstein (2001).

To measure autonomous motivation, four items were used, two of which measured autonomous motivation, while the latter two measured controlled motivation. After viewing the green product advertisement, respondents were asked to indicate their motivation regulation (e.g. whether they felt autonomous or controlled based on the information provided). Accordingly, the autonomous motivation questions related to value and interest in the green product (e.g., *"Because I like using an environmentally friendly product"*, *"Because I value environmentally friendly products wholeheartedly"* 1 = strongly disagree, 7 = strongly agree). The controlled motivation statements represent a motivation that stems from interpersonal and intrapersonal pressure (e.g., *"Because I would feel ashamed, guilty or anxious if I did not consider this environmental product"*, *"Because I feel a sense of external pressure or control to consider the environmental product",* 1 = strongly disagree, 7 = strongly agree) (Ryan and Connell 1989; Ryan and Deci 2000; Hagger et al. 2006). Amotivation was excluded from the controlled motivation scale. This is consistent with past psychological research, as amotivation is characterized by a lack of motivation and is therefore, neither autonomous nor controlled (Ryan and Deci 2000; Ratelle et al. 2007).

Finally, as a control measure, environmental consciousness was included to ensure that the impact of green product communication strategy on performance evaluations was driven by the manipulations, rather than the individual's level of environmental concern. To measure this

variable, a four-item seven-point Likert scale was used (i.e. *"Mankind is severely abusing the environment."*

"I am very concerned about the environment", "Major social changes are necessary to protect the natural environment", "The so-called "ecological crisis", facing humankind has been greatly exaggerated", 1 = *strongly disagree*, 7 = *strongly agree*). In order to ensure internal validity, a manipulation check was included. Two statements were presented to respondents to assess their level of agreement on a seven-point Likert scale (anchored from 1 = *strongly disagree* to 7 = *strongly agree*). The first statement read, *"This advertisement highlighted the product's non-green attributes*", while the second stated, "*This advertisement highlighted the product's green attributes*".

Finally, we included a set of basic demographic characteristics, such as respondent's gender (assessed via a dichotomous variable 'Male' and 'Female'). In addition, we asked respondents to report their level of education based on the highest qualification gained. Table 11 summarizes the variables measure in the questionnaire.

Table 10 Summary of measures in Experiment 1

Measure	Item(s)	Type of Measure and Anchoring
Performance Evaluations	"Not Effective – Effective" "Poor Performance – Good Performance" "Not Attractive – Attractive" "Low Quality – High Quality"	Bipolar type scale
Autonomous Motivation	"Because I like using an environmentally friendly product." "Because I value environmentally friendly products wholeheartedly." "Because I would feel ashamed, guilty or anxious if I did not consider this environmental product." "Because I feel a sense of external pressure or control to consider the environmental product."	Likert type scale anchored: 1 = "strongly disagree" to 7 = strongly agree"
Environmental Consciousness	"Mankind is severely abusing the environment." "I am very concerned about the environment." "Major social changes are necessary to protect the natural environment." "The so-called "ecological crisis" facing humankind has been greatly exaggerated."	Likert type scale anchored: 1 = "strongly disagree" to 7 = "strongly agree"
Manipulation Checks	"This advertisement highlighted the product's non-green attributes" "This advertisement highlighted the product's green attributes"	Likert type scale anchored: 1 = "strongly disagree" to 7 = "strongly agree"
Gender	"Please indicate your gender."	Dichotomous: 'Male' and 'Female'
Education	"Please indicate the education level that you have completed"	Nominal with order: 'High School', 'Associates Degree', 'Bachelor's Degree' and 'Post Graduate'

5.2.3 Design of the questionnaire

To collect the data, a short questionnaire was developed using the online platform Qualtrics with an account licensed by Leeds University Business School. The advantages of using the Qualtrics platform has been discussed in Chapter 4. For this specific study, Qualtrics has been selected due to its ability to display high resolution images and its ability to randomize respondents across the different experimental conditions. The full version of the Questionnaire in an off-line format can be found in Appendix A.

In the design of the experiment, Qualtrics allows for the use of clusters, known as blocks. These blocks may contain any number of questions and allows the researcher do determine whether the items should be grouped into a single, or multiple blocks. In the latter scenario, the blocks are shown to respondents on separate pages. In the design of Experiment 1, we selected this technique and grouped questions in distinct blocks that were separated based on theme and topic. We believe that this enhances the flow of the questionnaire.

The first two blocks of the questionnaire were visible to all respondents and contained information regarding the purpose of the survey, question types and a statement requesting that they express their honest opinion. The second block assured respondents that the information and data collected would be confidential and displayed information regarding data protection. Finally, the block contained a reference to the ethical approval that was granted by the University of Leeds.

Each of the four manipulated conditions was placed into a separate block. This block features an image that was designed in Microsoft Office Powerpoint. These images consist of a product photo and attribute information. Using the Qualtrics platform, we computed a script to allow the system to randomize the presentation of the four IVs to respondents after having read the

first two blocks containing the survey and ethical information. In doing so, the risk posed by person confounds on internal validity was reduced (Cozby and Bates, 2011). Following presentation of the manipulated variables, respondents viewed the DV, the mediator, the manipulation checks and the control variables in this exact order. Finally, the last block, that was shown to all respondents, contained measures for gender and education level.

5.2.4 Data collection and preliminary screening

In order to recruit respondents, a survey link was generated by Qualtrics and placed onto the crowdsourcing platform Amazon Mechanical Turk (MTurk). Respondents were able to access this survey if they were based in the United States, had previously completed 5,000 tasks and had an approval rating of 98-percent. In total 162 participants completed the survey. Following this, the data was downloaded in the format utilized by the statistical software SPSS 22 for Windows.

5.2.5 Missing data

One of the benefits associated with Qualtrics is the ability to force respondents to answer all the questions in each block. If questions remained uncompleted, respondents could not proceed. Thus, there were no missing data in dataset for Experiment 1. Moreover, no manipulation check issues were found and thus, we did not remove any respondents.

5.2.6 Reliability analysis of the performance evaluations scale

We then analysed the reliability of the performance evaluations scale. Reliability indicates the level of internal consistency of the variable. In other words, reliability relates to the extent to which each item selected measures the same construct (Cortina, 1993). The most common indicator of reliability is that of the Cronbach alpha (α) coefficient. This is calculated based on a pairwise correlation among each of the items (Cronbach, 1951). The reliability result for performance evaluation demonstrated a good fit among the items ($\alpha = .85$), indicating a high

level of internal consistency. Thus, the four items were averaged to create a composite score (M = 5.12, SD = 1.11).

5.2.7 Reliability analysis of the autonomous motivation scale.

Next, we tested the reliability of both the autonomy and controlled motivation scales using a bivariate correlation. The result for the autonomy scale showed strong reliability (r = .87) without removal of any of the items. For controlled motivation, the results also demonstrated a high level of reliability (r = .78). Thus, a composite score was generated by subtracting the composite score of controlled motivation to that of autonomous motivation (M = -2.87, SD = 1.57). This approach is in line with past research in psychology that has explored autonomous motivation as a mediating variable (Black and Deci, 2000; Weinstein and Ryan, 2010).

5.2.8 Reliability analysis of the environmental consciousness scale

Finally, we examined the reliability of the control measure environmental consciousness. As with performance evaluations, a Cronbach's alpha test was conducted. The results showed that the scale was highly reliable (α = .91) and thus, a composite score was generated (M = 5.32, SD = 1.41).

5.2.9 Descriptive statistics

The descriptive statistics for Experiment 1 are in Table 12. It was found that the sample contained a slightly higher concentration of males than females (N = 82, 51.9%).

Table 11 Distribution of gender for Experiment 1

Gender	Frequency	Percent	Cumulative Percent
Male	84	51.9%	51.9%
Female	78	48.1%	100.0
Total	162	100.0	

Education level is presented in Table 13 and showed that most participants had completed their

Bachelor's degree (N = 85, 52.5%). This was followed by thirty-eight high school graduates

(23.5%), twenty-seven with an associate's degree (16.7%) and only twelve with a post graduate

degree (7.4%).

Table 12 Distribution of education level for Experiment 1

Gender	Frequency	Percent	Cumulative Percent
High School	38	23.5%	23.5%
Associates' Degree	27	16.7%	40.1%
Bachelors' Degree	85	52.5%	92.6%
Post Graduate Degree	12	7.4%	100.0
Total	162	100.0	

The descriptive statistics of the DV of performance evaluations, including the range, mean and

standard deviation are shown. Moreover, we present the statistics for both skewness and

kurtosis. These measures are indicators used to examine the distribution around the mean.

Skewness refers to the extent to which the distribution is asymmetric from a normal random

distribution. Specifically, whether the distribution is skewed towards the minimum or the

maximum. Kurtosis relates to the peak of the distribution curve (Dodge, 2003). Scholars argue

that the optimal range for skewness is -2 to +2 (George and Mallery, 2010). A similar result is

expected for kurtosis. Thus, using these two statistics, we will analyse the normality of the

distributions in each DV, mediator and control variables used throughout this research.

The descriptive statistics were analysed for performance evaluations. We found no problems

in relation to the skewness and the kurtosis of the distribution. The full descriptive statistics are

found in Table 14.

Table 13 Descriptive statistics for performance evaluations in Experiment 1

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
5.00	2.00	7.00	5.00	5.12	1.11	-.190	.191	-.402	.379

Similarly, no problem was found in relation to autonomous motivation (see Table 15). To analyse the descriptive statistics of the items, a composite score was created. To do so, the score for controlled motivation was subtracted from autonomous motivation to form a total score for autonomous motivation (see e.g., Sheldon and Elliot 1998).

Table 14 Descriptive statistics for autonomous motivation in Experiment 1

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
7.00	-6.00	1.00	-3.00	-2.88	1.57	.463	.191	-.279	.379

Finally, we analysed the descriptive statistics for the control variable of environmental consciousness. The full statistics can be found in Table 16. Respondents generally seemed to have a high level of environmental consciousness (M = 5.32).

Table 15 Descriptive statistics for environmental consciousness in Experiment 1

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
6.00	1.00	7.00	5.50	5.32	1.41	-1.055	.191	.628	.379

5.2.10 Normality assumptions of the measured variables

Before proceeding with data analysis, we demonstrated the nature of the distribution for the dependent, mediating and control variables. The results presented met the normality assumptions and thus, no special violation of normality was found in the dataset for Experiment 1.

5.2.11 Analysis and Results

In order to analyse the data collected, an Analysis of Covariance (ANCOVA) was conducted to test whether the IVs and their interaction had an impact on performance evaluations taking into account the environmental consciousness level of respondents.

5.2.12 Test for the fit of the covariates

Before the ANCOVA was conducted, we tested a series of assumptions to assess whether the covariate, environmental consciousness, was an adequate fit. First, a bivariate Pearson correlation test was run and indicated that environmental consciousness did not correlate significantly with the DV of performance evaluations ($r = .099$). This indicates that the covariate is a good fit (Tabachnik and Fidell, 2007). Table 17 presents the correlation statistics.

Table 16 Correlations between the DV and the Covariate in Experiment 1

		Performance Evaluations	Environmental Consciousness
Performance Evaluations	Pearson Correlation	1	.099
	Sig. (2-tailed)		.211
	N	162	162
Environmental Consciousness	Pearson Correlation	.099	1
	Sig. (2-tailed)	.211	
	N	162	162

Next, we tested the homogeneity of the regression slope of the covariate. This helps indicate the relationship between the covariate and the dependent variable, taking into account the experimental groups. This test allows the researcher to examine whether there is an interaction effect between the IVs and the covariates (Tabachnik and Fidell, 2007). The results show that the interaction between the IV green product communications strategy and the covariate of environmental consciousness did not significantly impact on the DV of performance evaluations ($F (1, 120) = .946$, $p = .523$). Similar results were found for the IV performance criticality and the covariate on performance evaluations ($F (1, 122) = .652$, $p = .826$).

Based on these tests, we can assume that the covariate of environmental consciousness is fit to be included in Experiment 1. Next, we conducted an ANCOVA using the two IVs as predictors of performance evaluations along with environmental consciousness.

5.2.13 Descriptive statistics and Levene homogeneity test ANCOVA

The descriptive statistics show that respondents were evenly distributed across all the conditions included in this experiment. The minimum was 36, the maximum was 44 per group (see Table 18).

Table 17 Descriptive statistics for the ANCOVA in Experiment 1

Green Product Communication Strategy	Performance Criticality	Mean	STD. Deviation	N
Subtle Signals	Low Performance Criticality	5.88	.92062	41
	High Performance Criticality	4.66	.87455	36
	Total	5.31	1.08317	77
Explicit Signals	Low Performance Criticality	4.65	1.21592	44
	High Performance Criticality	5.22	.91665	41
	Total	4.94	1.11228	85
Total	Low Performance Criticality	5.54	1.12761	85
	High Performance Criticality	4.66	.89133	77
	Total	5.12	1.11028	162

The Levene Test for Equality of the Error Variances confirmed no significant differences across the four groups (F (3, 158) = 1.746, p = .160; see Table 19).

Table 18 Levene test for ANCOVA in Experiment 1

F	DF1	DF2	SIG.
1.746	3	158	.160

5.2.14 Manipulation checks

The analysis of the manipulation checks revealed that respondents understood the green product communication strategy manipulations. The effect was tested in a One-Way ANOVA and it was shown that when respondents were presented with the advertisement in the subtle signals condition, the question, "*This advertisement highlighted the product's non-green attributes*" was scored significantly higher by respondents ($M_{\text{(subtle signals)}} = 5.55$; $M_{\text{(explicit signals)}} = 3.71$, $F(1, 160) = 63.824$, $p < .01$). Similarly, when respondents were shown the explicit signals condition, the item "*This advertisement highlighted the product's green attributes*" was scored significantly higher ($M_{\text{(subtle signals)}} = 5.99$; $M_{\text{(explicit signals)}} = 6.51$, $F(1, 160) = 13.423$, $p < .01$). These results are shown in Figure 3 and 4.

Figure 3 Manipulation check "This advertisement highlighted the product's non-green attributes"
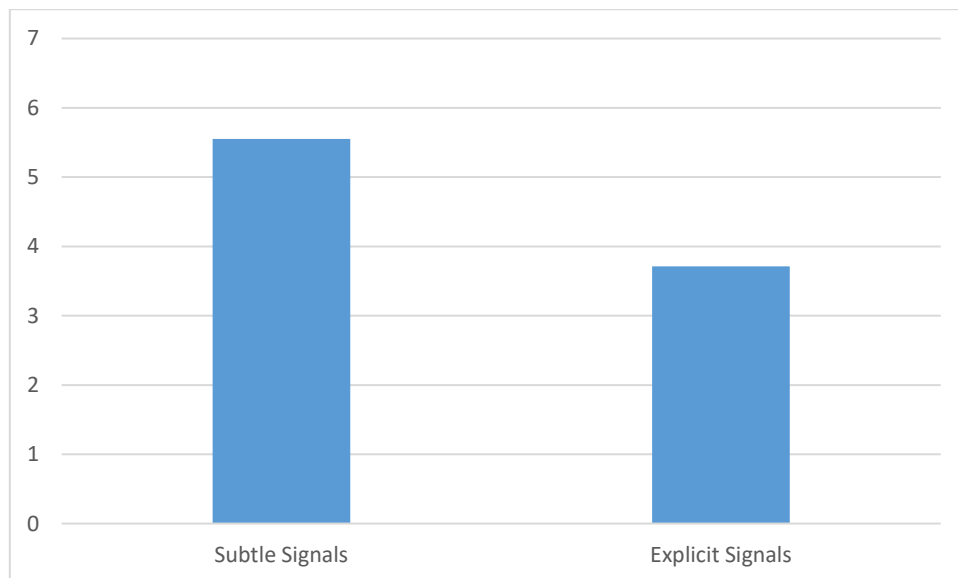
Figure 4 Manipulation check "This advertisement highlighted the product's green attributes"
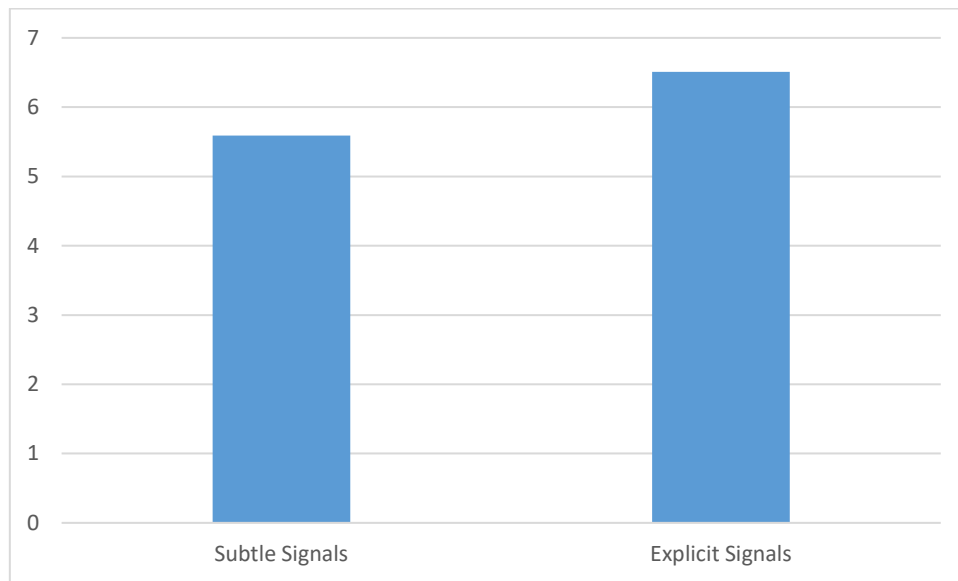
5.2.15 Main effects of the ANCOVA analysis

We combined the four performance evaluation items to form a single composite measure and used this as the dependent variable in an ANCOVA that includes the green product communication strategy (subtle vs. explicit green signals), and performance criticality (low vs. high) as independent variables and environmental consciousness as covariate. As predicted, a significant direct effect was found for green product communication strategy on performance evaluations, whereby the use of subtle green signals leads to higher performance evaluations (M = 5.30), than explicit green signals (M = 4.94; $F (1, 157) = 3.947$, $p < .05$). Thus, we can confirm H1. We also find a significant direct effect for performance criticality on performance evaluations ($F (1, 157) = 31.537$ $p < .05$), whereby high-performance criticality led to higher performance evaluations.

5.2.16 Interaction effects of the ANCOVA analysis

We found a significant interaction ($F (1, 157) = 4.181$, $p < 0.05$) between green product communication strategy and performance criticality, with the positive effect of subtle green

signals on performance evaluations being stronger when performance criticality was high. However, when performance criticality was low, the positive impact was reduced. Follow-up analysis showed that in the case of the high performance criticality condition, there was a significant (t = 2.819, p < .05) difference between the subtle (M = 5.88) and explicit (M = 5.22) green signals conditions. When the advertisement featured the low performance criticality condition, no significant difference between (t = .036, p = .97) the subtle (M = 4.66) and the explicit (M = 4.65) conditions was found. Thus, we find support for H3. Interestingly, we find that, in the explicit green signals condition, high performance criticality had a higher mean score (M = 5.22) compared to the low performance criticality condition (M = 4.65). Such a result is at odds with our initial assumption that explicit green signals should degrade performance evaluations to a greater extent when performance criticality is high. The results are shown in Figure 5.

Figure 5 Interaction effect of the IVs Green Product Communication Strategy and Performance Criticality on the DV of Performance Evaluations
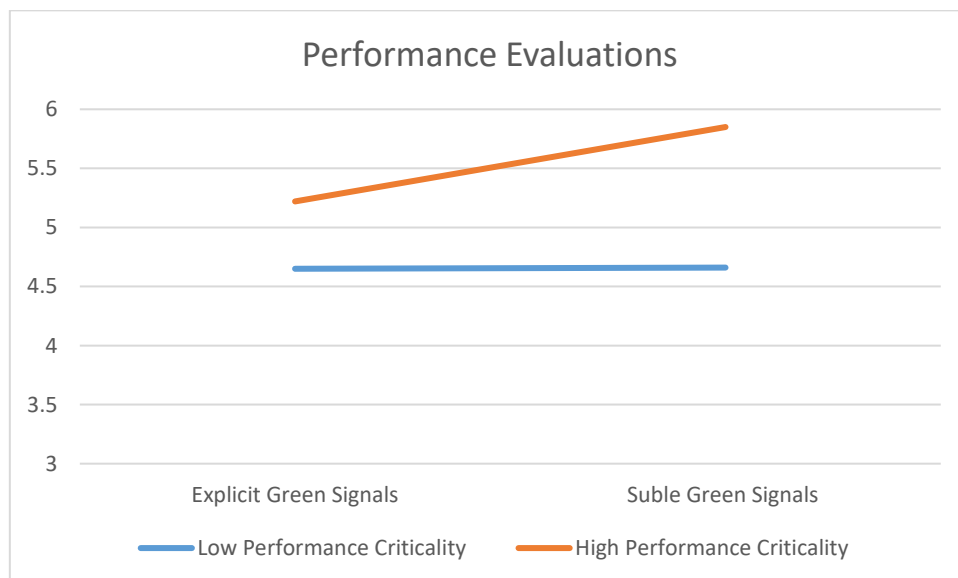
5.2.17 Mediation analysis for autonomous motivation

Next, we tested the mediating role of autonomous motivation in the relationship between green product communication strategy and performance evaluations. This analysis was undertaken using the bootstrapping procedure outlined by Preacher and Hayes (2004). A bootstrapping procedure is a non-parametric method that is based on resampling with replacement that is done many times over. The resample has the same size of the starting sample n. From these samples, the indirect effect is gathered allowing the sampling distribution to be empirically generated (Shrout and Bolger, 2002). Literature has shown this procedure to be robust, as it can control for covariance among variables, whereby each sample is independent from the previous (Preacher and Hayes, 2004).

An initial mediation analysis was conducted via the 'INDIRECT' add-on for SPSS developed by Preacher and Hayes (2008). The predictor was green product communication strategy, while the outcome was performance evaluations. Autonomous motivation was included as the mediating variable. To estimate the robustness of the effect, the recommended 5,000 bootstrap resamples and 95% Bias Corrected Confidence Intervals (BCCI) was implemented. The results show that there exists a direct effect of green product communication strategy on performance evaluations as shown by the linear regression analysis (β = -.365, SE = .173, t = -2.111, p < .05). This effect was shown to be mediated by autonomous motivation, as the direct effect becomes insignificant when the mediator is added (β = -.242, SE = .165, t = -1.46, p = .145). The results of the BCCI confirm this finding, with lower value of -.2841 and an upper value of -.0160. As the value '0' is not included in the interval, we can safely assume that there is a mediating effect. The presence of '0' within the confidence intervals may result in an assumption of the null value (Hayes, 2009). The mediating relationship is shown in Figure 6.

Figure 6 Direct and mediated paths between Green Product Communication Strategy and Performance Evaluations

High Performance Criticality (LLCI = -.6902; ULCI = -.1338)
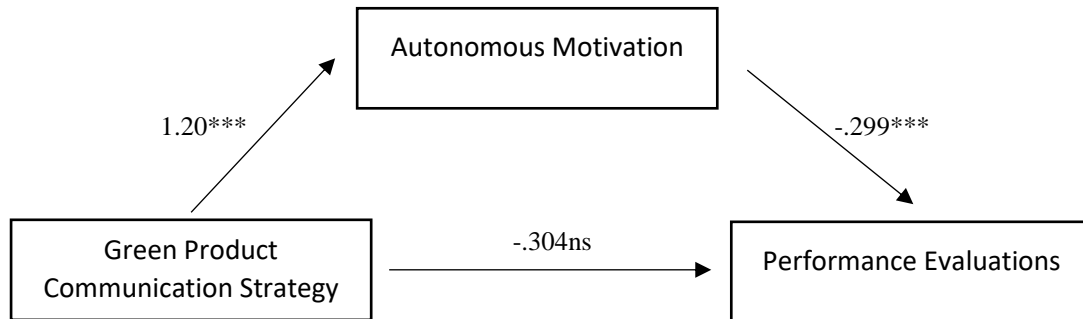
Low Performance Criticality (LLCI = -.0286; ULCI = .1504)
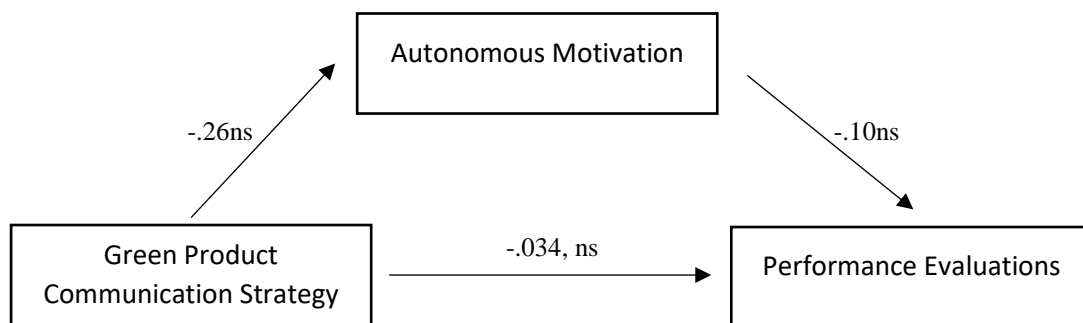
Note: *p<.05; **p<.01; ***p<.001

5.2.18 The moderating role of performance criticality

Next, we proceeded to examine whether performance criticality can act as a moderator in the mediating relationship between green product communication strategy, autonomous motivation and performance evaluations. In testing this, we employed Hayes' (2013) PROCESS macro from SPSS. This macro allows for the examination of the size of the direct effect at different levels of the moderating variable within one standard deviation above (+1) and below (-1) the mean value. In this instance, we examined whether performance criticality moderates the relationship between green product communication strategy and autonomous

motivation. In order to test this moderated mediation, we ran PROCESS model 7 with the two IVs of green product communication strategy and performance criticality, the mediator of autonomous motivation and the DV of performance evaluations. A multiple regression including the independent variable (i.e. subtle vs. explicit green signals), the moderator (high vs. low performance criticality) and the interaction of the two IVs showed that all factors were significantly related to the mediating variable, autonomous motivation ($R^2 = .0867$; $p < .05$). An additional multiple regression including green product communication strategy and autonomous motivation as predictors of performance evaluations was conducted. It demonstrated that the autonomous motivation was significantly associated with performance evaluations ($\beta = -.2395$, $t = -4.54$, $p < .01$), while green product communication strategy was not significant ($\beta = -.2420$, $t = -1.46$, $p = .1452$). Based on this, we can conclude that both the path from the IV to the mediator (*a* path), as well as the path from the mediator to the DV (b path) were significant. Hence, a moderated mediation test was conducted with 5,000 bootstrap samples and a 95% BCCI.

In line with H2, the inclusion of the mediator autonomous motivation led to an insignificant direct relationship between green product communication strategy on performance evaluations (LLCI = -.5685; ULCI = .0845). Moreover, the analysis showed a significant indirect effect of autonomous motivation between the IVs of green product communication strategy and performance criticality on performance evaluation (LLCI = .1164; ULCI = .6828). In the case of high performance criticality, a significant effect was found (LLCI = -.5340; ULCI = -.1166). However, in the case of low performance criticality, there was no significant effect (LLCI = -.1015; ULCI = .2462), indicating the moderating effect of performance criticality between green product communication strategy and autonomous motivation only exists in the cases of a high performing product. The moderated mediation can be seen in Figure 7.

Figure 7 Moderated mediation model for Experiment 1
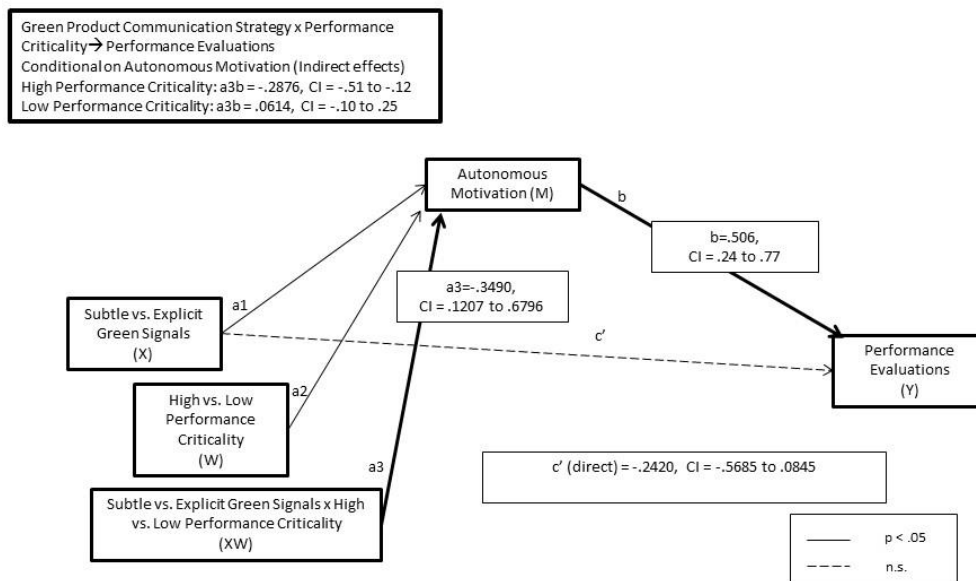
5.2.19 Discussion

The results for Experiment 1 provide an initial examination into the role of subtle green signals and their power to overcome the performance liability that exists for products marketed as green. Compared to explicit green signals, which places emphasis upon a product's green attributes, subtle signals were able to significantly increase the performance evaluations of the target product. In other words, the downplaying of greenness allowed consumers to make stronger performance inferences about the product shown in the manipulation. Moreover, we examined the role of performance criticality and found that when a product is classified into a performance-oriented subcategory, the impact of a green product communication strategy is heightened. However, for products viewed as more economical in the low performance criticality condition, a firms' communication strategy selection becomes less vital. Finally, we found that autonomous motivation acts as a mediator between green product communication

strategy and performance evaluations, in that a sense of autonomy for consumers is a critical aspect during product evaluations. Interestingly, performance criticality acted as a moderator in this relationship, but only when the performance criticality was high. It may be argued that when purchasing a product that sits in a performance subcategory, consumers want to feel as though the choice is their own and that environmental information may be seen as contradictory and unwelcomed.

5.3 Experiment 2: The Role of Social Distance

5.3.1 Section Overview

In this chapter, we start by discussing the design of the experiment, followed by the analysis and results for Experiment 2. In line with Chapter 2, this experiment introduces the concept of social distance, derived from construal level theory, as moderating variable. In addition, unlike Experiment 1, we examine green product communication strategy via language selection. Specifically, the role of assertiveness as a communication tactic to motivate consumers.

5.3.2 Design of the Experiment

As discussed in Chapter 2, the role of green product communication strategy does not always indicate product attribute prominence. On the same account, numerous advertisements, most notably in print, exclude attribute information in exchange for a slogan or a tag line aimed at encouraging a specific consumer action.

In relation to environmental marketing, managers and public policy makers are often concerned with the effectiveness of various approaches to encourage consumers to translate their behaviours into actions (Lefebvre, 2013). On the one hand, many environmental issues are promoted via assertive terminology employing the imperative form, such as "do" and "go", or leaves the viewer with little option to refuse, as in "you must" (Brown and Levinson, 1987; Kronrod, et al. 2012). On the other hand, past literature strongly suggests that such a communication strategy may have adverse effects, decreasing an individual's sense of autonomy (Deci, et al. 1994; Vansteenkiste, et al. 2004) and their willingness to comply (Edwards, Li and Lee, 2002; Kronrod, et al. 2012). In this current study, we extend this line of reasoning by demonstrating that, although assertive terminology may increase one's perception of message priority, it does in fact, have harmful consequences.

In addition, Experiment 2 introduces the moderating variable of social distance. In line with Construal Level Theory, near social distance evokes a more concrete mindset, while an abstract mindset is generated when social distance is far (Liberman and Trope, 1998). Thus, we posit that any action, such as the evaluation of a green product may be viewed at different levels of abstraction, from low to high. Building on past literature (e.g. Kray, 2000; Trope and Liberman, 2010), we argue that an abstract mindset evokes an increased focus on desirability, resulting in an enhancement of the positive effect of subtle green signals and the negative impact of explicit green signals on performance evaluations. Alternatively, a concrete mindset and a focus on feasibility will nullify the impact of the selected green product communication strategy.

5.3.3 Procedures undertaken to design the experimental manipulations

For Experiment 2, an advertisement was generated in different manner to that of Experiment 1. The design featured two distinct advertisements for a laptop computer. An image was shown in the centre of the advertisement of a black, unbranded laptop. We took inspiration from Gershoff and Frels (2014) and selected a CPU motherboard as the focal green attribute. Respondents were told that it was made from recyclable materials in order to reduce waste. This information, as well as the photograph, was held constant across both conditions.

Derived from past literature on assertiveness in communication appeals (e.g. Kronrod, et al. 2011), we manipulated green product communication strategy by employing either assertive or non-assertive appeals. In the subtle green signals condition, respondents were told that they "may" help the environment by "considering" the personal laptop computer and that they had the "ability" to go green. In the explicit green signals condition, respondents were informed that they "must" help the environment by "purchasing" the personal laptop computer and that they had an "obligation" to go green. Table 20 provides the full manipulations for both conditions.

Table 19 Advertisements used in Experiment 2

Subtle Green Signals	Explicit Green Signals
New Laptop Computer with an Environmentally Friendly CPU Motherboard Made from Recyclable Materials to Reduce Waste You May Help the Environment by Considering this Work Laptop Computer with an Environmentally Friendly CPU Motherboard **You Have the Ability to Go Green.**	**New Laptop Computer with an Environmentally Friendly CPU Motherboard** Made from Recyclable Materials to Reduce Waste You Must Help the Environment by Purchasing this Personal Laptop Computer with an Environmentally Friendly CPU Motherboard **You Have an Obligation to Go Green.**

The second IV, social distance, was manipulated based on past work from Yan and Sengupta (2011), in which participants were asked to imagine that they were purchasing the laptop for themselves in the near condition ("for your personal use") or for another individual in the far condition ("gift for another individual"). Such a manipulation has been shown to be effective in generating either an abstract or a concrete mindset. The full manipulation can be found in Table 21.

Table 20 Social distance manipulations in Experiment 2

Near Social Distance	Far Social Distance
Imagine that you are required to purchase a new laptop computer for **your personal use**	Imagine that you are required to purchase a new laptop computer as a **gift for another individual**

5.3.4 Dependent variables, manipulation checks and demographics

The main DV of performance evaluations was measured using the same scale as in Experiment 1. By adapting the scale from Campbell and Goodstein (2001) participants were asked to rate their performance evaluations on a four item, seven-point bipolar scale (i.e., *"not effective/effective"*, *"poor performance/good performance"*, *"not attractive/attractive"*, *"low quality/high quality"*).

Next, autonomous motivation was measured identically to that of Experiment 1. Two measures for autonomy were presented on a two-item (e.g., "*Because I like using an environmentally friendly product*", "*Because I value environmentally friendly products wholeheartedly*) seven-point Likert scale anchored from 1 = *Strongly Disagree* to 7 = *Strongly Agree.* To measure controlled motivation, a two-item (e.g., *"Because I would feel ashamed, guilty or anxious if I did not consider this environmental product"*, *"Because I feel a sense of external pressure or control to consider the environmental product")* seven-point Likert scale was used, anchored by 1 = *Strongly Disagree* to 7 = *Strongly Agree.*

Next, we presented the control variable of product familiarity. This was employed to ensure that participants were familiar with the product and the attribute highlighted. A seven-point Likert scale was used to measure the degree of familiarity (e.g., *"I am familiar with CPU Motherboards"*, *"I don't know much about CPU Motherboards*", 1 = *strongly disagree*, 7 = *strongly agree*) (Gershoff and Frels 2014). Finally, we asked respondents to report their gender

and education level. We captured gender with the same dichotomous variable 'Male' and 'Female' as in Experiment 1. Moreover, we asked respondents to report their level of education based on the highest qualification gained. The full list of items can be seen in Table 22.

Table 21 Summary of measures in Experiment 2

Measure	Item(s)	Type of Measure and Anchoring
Performance Evaluations	"Not Effective – Effective" "Poor Performance – Good Performance" "Not Attractive – Attractive" "Low Quality – High Quality"	Bipolar type scale
Autonomous Motivation	"Because I like using an environmentally friendly product." "Because I value environmentally friendly products wholeheartedly." "Because I would feel ashamed, guilty or anxious if I did not consider this environmental product." "Because I feel a sense of external pressure or control to consider the environmental product."	Likert type scale anchored: 1 = "strongly disagree" to 7 = strongly agree"
Familiarity	"I am familiar with CPU Motherboards" "I don't know much about CPU Motherboards"	Likert type scale anchored: 1 = "strongly disagree" to 7 = "strongly agree"
Gender	"Please indicate your gender."	Dichotomous: 'Male' and 'Female'
Education	"Please indicate the education level that you have completed"	Nominal with order: 'High School', 'Associates Degree', 'Bachelor's Degree' and 'Post Graduate'

5.3.5 Data collection and Preliminary Screening of the Results

As in Experiment 1, this study was designed by the researchers to be used on the online platform Qualtrics. A similar procedure was implemented, including randomization of the subjects between the four experimental conditions. Following the creation of the survey instrument, a link was generated that was placed on the crowdsourcing platform Amazon

Mechanical Turk (MTurk). Respondents were able to access the survey if the met set criteria, including the completion of 5,000 tasks with an approval rating of 98-percent, and being located in the United States. A full offline version of the survey can be found in Appendix B.

In total, we recruited 147 American respondents. Following collection of data, we downloaded the dataset from Qualtrics to be analysed on the statistical software SPSS 22 for Windows. As with Experiment 1, there was no missing data in the dataset.

5.3.6. Reliability analysis for performance evaluations

Before creating a composite score for the four items selected to measure performance evaluations, we examined the reliability of the measurement scale. The result indicated a high level of reliability (Cronbach's α for performance evaluations: .94). Thus, a composite score was generated (M = 4.459, SD = 1.49).

5.3.7 Reliability analysis for autonomous motivation

Next, we examined the reliability of the two measurement items selected to capture an individual's sense of autonomous motivation. To measure the reliability of the two-items, we conducted a correlation analysis to see whether the two items shared a significant proportion of variance. The results showed a high level of correlation among the two items for autonomous ($r = .61$, p < .001) and controlled motivation ($r = .70$, p < .001). Thus, the total score for controlled motivation was subtracted from autonomous motivation to create a composite score (M = .915, SD = 1.95).

5.3.8 Reliability analysis for familiarity

Finally, we examined the reliability of the control measure of familiarity. To assess the reliability of the two-item familiarity scale, a simple correlation was conducted, similar to the test run to examine the reliability of both the autonomous and controlled motivation scales.

The results show a strong correlation (r = .884, p < .001), and thus, a composite score was generated (M = 4.82, SD = 1.72).

5.3.9 Descriptive statistics and familiarity checks

Descriptive statistics for gender show that the sample is composed of a slightly higher percentage of males (N = 75, 51%) compared to females (N = 72, 49%). A full list of the descriptive statistics for gender can be found in Table 23.

Table 22 Distribution of gender for Experiment 2

Gender	Frequency	Percent	Cumulative Percent
Male	75	51%	51%
Female	72	49%	100.0
Total	162	100.0	

In relation to education level, the majority of respondents had achieved a Bachelors' degree (N = 63, 42.9%). A high school diploma was the second highest selection (N = 53, 36.1%), followed by Associates' Degree (N = 25, 17%) and post graduate (N = 6, 4.1%). A full table of the descriptive statistics for education can be found in Table 24.

Table 23 Distribution of education level for Experiment 2

Gender	Frequency	Percent	Cumulative Percent
High School	53	36.1%	36.6%
Associates' Degree	25	17%	53.1%
Bachelors' Degree	63	42.9%	95.9%
Post Graduate Degree	6	4.1%	100.0
Total	147	100.0	

Next, we examined the descriptive statistics for the DV of performance evaluations. No problems were found in relation to skewness and the kurtosis of the distribution. The statistical information is presented in Table 25.

Table 24 Descriptive statistics for performance evaluations in Experiment 2

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
5.00	2.00	7.00	5.00	5.12	1.11	-.190	.191	-.402	.379

In addition, no problems were found for the autonomous motivation scale in relation to the skewness and the kurtosis of the distribution as can be seen in Table 26.

Table 25 Descriptive statistics for autonomous motivation in Experiment 2

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
7.00	-6.00	1.00	-3.00	-2.88	1.57	.463	.191	-.279	.379

Finally, we examined whether respondents were familiar with the product and attribute shown in the advertisements, as well the descriptive statistics for the item battery (see Table 27). As expected, the results show that familiarity was at the midpoint in both the subtle and explicit green signal conditions (M $_{(subtle\ signals)}$ = 4.80; M $_{(explicit\ signals)}$ = 4.84, F (1, 145) = .019, p = .891), and that no issues in relation to skewness or kurtosis was found.

Table 26 Descriptive statistics for familiarity in Experiment 2

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
7.00	-6.00	1.00	-3.00	-2.88	1.57	.463	.191	-.279	.379

5.3.10 Normality assumptions of the measured variables

Before proceeding with the analysis of the data collected, we tested the nature of the distribution for the dependent, control and mediating variables. The results showed that variables met the normality assumptions and thus, no special violation of normality was found in the dataset for Experiment 2.

5.3.11 Analysis and Results

In order to examine the impact of green product communication strategy and social distance on performance evaluations, mediated by autonomous motivation, an Analysis of Covariance (ANCOVA) was conducted.

5.3.12 Test for the fit of the covariates

Before an ANCOVA is conducted, we examined whether familiarity was fit to be a covariate. First, a bivariate Pearson correlation test was conducted. We found that performance evaluations and familiarity were not strongly correlated (r = -.048). Table 28 presents the correlations and significant levels for three variables.

Table 27 Correlations between the DV and the Covariate in Experiment 2

		Performance Evaluations	Familiarity
Performance Evaluations	Pearson Correlation	1	-.048
	Sig. (2-tailed)		.561
	N	147	147
Familiarity	Pearson Correlation	-.048	1
	Sig. (2-tailed)	.561	
	N	147	147

Next, the homogeneity of the regressions slopes of the covariates is examined. The result of the analysis for the covariate of familiarity demonstrated no interaction on the IV of green product communication strategy ($F (1, 107) = 1.072$, $p = .390$) and social distance ($F (1, 107) = .669$, $p = .735$) on performance evaluations. Based on these findings, we show that the covariate is fit to be included in the analysis. Thus, the main ANCOVA will be conducted using the two IVs and predictors of performance evaluations, along with the covariate of familiarity.

5.3.13 Descriptive statistics and Levene homogeneity test ANCOVA

The descriptive statistics show that the respondents are presented evenly across the green product communication strategy and social distance conditions (see Table 29).

Table 28 Descriptive statistics for the ANCOVA in Experiment 2

Green Product Communication Strategy	Social Distance	Mean	STD. Deviation	N
Non-Assertiveness	Near Social Distance	4.52	1.29398	41
	Far Social Distance	5.10	1.35843	37
	Total	4.798	1.34783	78
Assertiveness	Near Social Distance	4.55	1.64739	33
	Far Social Distance	3.64	1.35283	36
	Total	4.08	1.55907	69
Total	Near Social Distance	4.54	1.45167	74
	Far Social Distance	4.38	1.53439	73
	Total	4.46	1.49028	147

Next, the Levene Test for Equality of the Error Variances was conducted (see Table 30). The results show no significant differences across the groups (F (3, 143) = .784, p = .505).

Table 29 Levene test for ANCOVA in Experiment 2

F	DF1	DF2	SIG.
.784	3	143	.505

5.3.14. Main effects of the ANCOVA analysis

The analysis of the main effect of green product communication strategy on performance evaluations was significant (F (1, 142) = 15.127, p < .05), whereby in the explicit signals condition, performance evaluations decreased (M = 4.01), while in the subtle signals condition, performance evaluations increased (M = 4.86). This result provides further support for H1. There was no significant direct effect between social distance and the DV of performance evaluations (F (1, 142) = .394, p = .531). Such a result in somewhat surprising given the potential impact of abstract versus concrete thinking on one's product evaluation.

5.3.15 Interaction effects of the ANCOVA

Next, the role of social distance was examined. A significant interaction was found (f = (1, 142) 7.326, p < .05), whereby the "far" condition enhanced the positive impact of subtle green signals on performance evaluations, while the "near" condition attenuated this effect. Further analysis showed that in the near condition, the effect of subtle (M = 4.52) and explicit green signals (M = 4.55) on performance evaluations was non-significant (t = -.84, p = .933). In the far condition, the effect was significant (t = 4.608, p < .05), whereby the subtle green signals condition had a more positive impact on performance evaluations (M = 5.10) compared to the explicit green signals condition (M = 3.64). Thus, H4 is supported. The results are shown in a graph in Figure 8.

Figure 8 Interaction effects of the IVs green product communication strategy and social distance on performance evaluations.
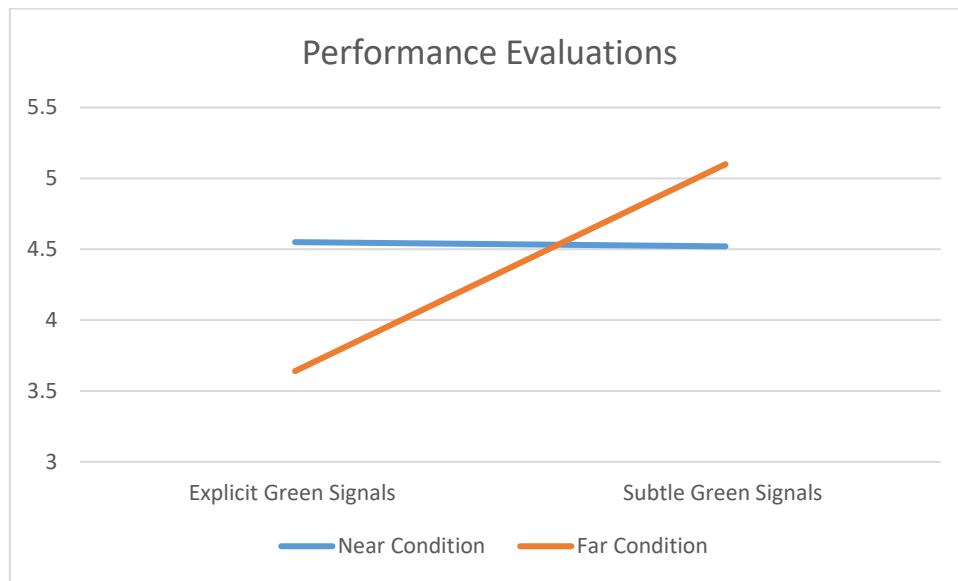
5.3.16 Mediation Analysis

Next, we examined the mediating role of autonomous motivation in the relationship between green product communication strategy and performance evaluations. The analysis was performed via the bootstrapping technique employed by the INDIRECT add-on for SPSS (Preacher and Hayes, 2008). In this instance, green product communication strategy was the predictor, autonomous motivation the mediator and performance evaluations the outcome. The recommend 5,000 bootstrapping resamples was chosen along with a 95% BCCI. The results of this test indicate a direct effect of green product communication strategy on performance evaluations as shown by the linear regression analysis (β = -.722, SE = .240, t = -3.011, p < .05). This effect was shown to be mediated by autonomous motivation, whereby the direct effect became insignificant (β = -.2699, SE = .220, t = -1.223, p = .224). The full mediation is confirmed by the BBCI with lower value of -.7590 and an upper value of -.2292. The mediating relationship is shown in Figure 9.

Figure 9 Direct and mediated paths between Green Product Communication Strategy and Performance Evaluations

Near Condition (LLCI: -.4511; ULCI = .2473)
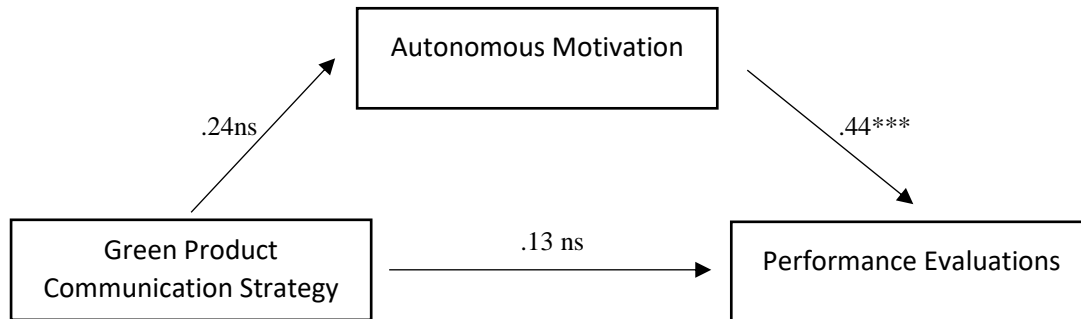
Far Condition (LLCI: -1.1117; ULCI = -.2197)
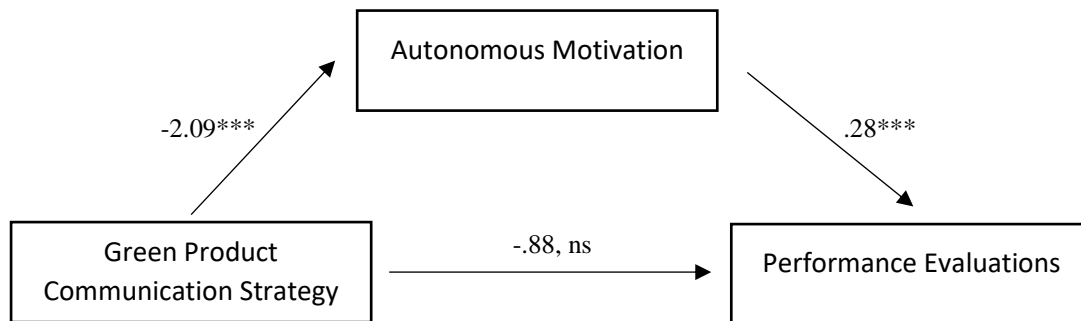
Note: *p<.05; **p<.01; ***p<.001

5.3.17 The moderating role of social distance

Next, we conducted a moderated mediation test to see whether social distance will act as a moderator in the mediating relationship of green product communication strategy, autonomous motivation and performance evaluations. To do so, we employed PROCESS model 7 (Hayes, 2013) via the add-on to SPSS. Green product communication strategy was added as the predictor, social distance as the moderator, autonomous motivation the mediator, and performance evaluations as the outcome. A multiple regression including the independent variable (i.e. subtle vs. explicit green signals), the moderator (near vs. far social distance) and the interaction of those two IVs showed that they were significantly related to the mediating variable of autonomous motivation ($R^2 = .1717$; p < .01). Next, another multiple regression was

conducted on the outcome variable of performance evaluations. We found that the overall model was significant ($R^2 = .2817$; $p < .01$), and that autonomous motivation was significantly related to the DV ($\beta = .3793$, $t = 6.68$, $p < .01$), while green product communication strategy was not significant ($\beta = -.2699$, $t = -1.22$, $p = .2235$). Thus, as in Experiment 1, we can show that the path from the IV to mediator (*a* path) and the path from the mediator to the DV (b path) was significant.

Next, we conducted a moderated mediation test with 5,000 resamples and a 95% BCCI. In line with hypothesis 2, autonomous motivation rendered the direct effect between green product communication strategy and performance evaluations insignificant (LLCI = -.7064; ULCI = .1665). Moreover, the index of moderated mediation demonstrated a significant indirect effect of autonomous motivation between the IVs of green product communication strategy and social distance on performance evaluations (LLCI = -1.2728; ULCI = -.2538). In relation to the two moderating conditions of near and far social distance, the results showed a significant moderating effect between the IV and the mediator for the far social distance condition (LLCI = -1.2741; ULCI = -.4309). However, in the near social distance condition, there was no significant effect (LLCI = -.4000; ULCI = .1990). Figure 10 shows the full moderated mediation model.

Figure 10 Moderated mediation model for Experiment 2
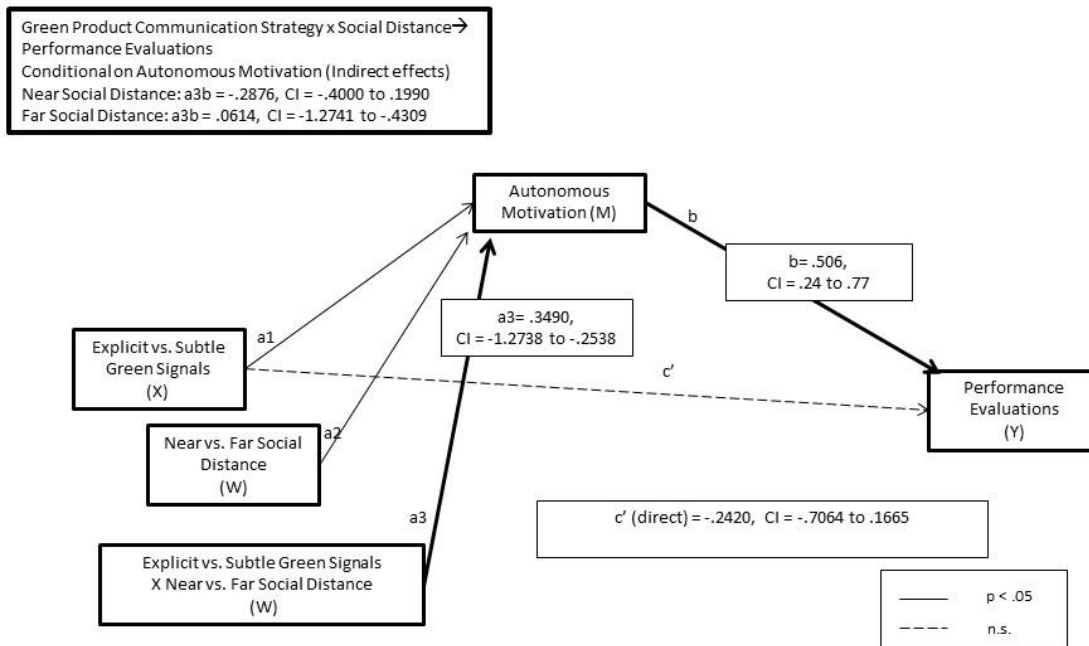
5.3.18 Discussion

In Experiment 2, we introduce a new operationalization of green product communication strategy. We held constant the product information, including the type of product and the green attribute. However, we employed the concept of assertiveness and confirmed findings of past communication language (e.g. Kronrod, et al. 2011) that overly assertive language decreases product evaluations, as well as autonomous motivation (Moller, et al. 2006). Thus, although assertive terminology may increase the perceived urgency of the call to action, following this approach can be detrimental. Based on this, we again conclude that subtle green signals, whether they be a reduction in the green attribute emphasis or the avoidance of assertive language, is an ideal approach to maximize performance evaluations. In addition, we introduce the moderating variable of social distance and show that when purchasing for another

individual representing the far social distance condition, the evoked abstract mindset increases focus on desirability, enhancing the negative effect of an explicit green signal strategy (assertiveness). However, this effect is attenuated when purchasing for the self (near social distance condition). Moreover, the results of Experiment 2 help to confirm the mediating role of autonomous motivation. In the selection of an environmental product, a consumer's sense of autonomy is an important aspect in their product evaluations. Interestingly though, the results show that autonomy becomes more vital when paired with an abstract mindset (far social distance condition). It may be argued that when purchasing for another individual a consumer aims to feel as though the action was self-initiated and endorsed. However, when being pushed via controlling language (assertiveness) to act in certain manner, ownership of the behaviour is lost (Deci and Ryan, 1985) and the experience of autonomy is degraded.

5.4 Experiment 3: The Moderating Role of Green Attribute Optionality

5.4.1 Chapter Overview

In this chapter, we present the design, analysis and the results of Experiment 3. In line with Experiment 1 and 2, we continue to examine the role of green product communication strategy and its impact on performance evaluations. However, green attribute optionality is introduced as a moderating variable, which seeks to provide a new solution to the green product performance liability. Moreover, we did not measure autonomous motivation in this experiment.

Green attribute optionality relates to choice, in that firms' present consumers with the ability to decide for themselves whether or not to employ the green attribute during product usage. Thus, we define green attribute optionality as a green attribute that is attached to a product and designed to enhance its environmental credentials, but is not required to operate the core product. Therefore, when using the product, consumers are not obliged to use the green attribute and the product will function normally with it deactivated. An example of this is an eco-mode commonly found in many household appliances or automobiles. The mode is there as requested and will provide environmental benefits if selected by the consumer.

In this study, green attribute optionality takes the form of an opt-in condition, whereby the green attribute is not active by default and must be explicitly selected by the consumer before activation. This is paired with the Experiment 1 version of the green product communication strategy manipulation that focused on green attributes, as compared to the language manipulation in Experiment 2. Moreover, to ensure that the results are not driven by perceived greenness trade-offs, we also examine green evaluations as a dependent variable.

5.4.2 Design of the Experiment

This study was designed following a similar procedure to that of Experiment 1. Specifically, either environmental (i.e., explicit green signals condition) or non-environment-related (subtle green signals condition) attributes were made more prominent. On the top of the advertisement in the subtle green signals condition a statement read, "powerful washing and gentle care at the same time". Under the main heading, a sub heading highlighted a new drum that "protects clothes and prevents damage". In smaller print at the bottom was an environmental statement indicating that the machine "has reduced environmental impact". In particular, it reduced water and electricity consumption. In the explicit green signals condition, the environmental headline and subheading were moved to the top of the advertisement with larger font. The heading stated "eco-friendly washing machine" with reduced water and electricity consumption in the subheading. Non-environmental information was placed at the bottom of the advertisement. Identical statements were shown to that of the subtle green signals condition.

To manipulate optionality, we placed an asterisk to the right of the environmental headline in both the subtle and explicit green signal conditions. Located at the bottom of the advertisement, a statement indicated that the eco-mode was user-activated. Specifically, it stated "only when the user-activated eco-friendly mode is switched on". In the non-optional condition, the asterisk and the optionality statement were removed.

Following the development of these manipulations, they were uploaded to Qualtrics for data collection. Table 31 presents the four conditions used for Experiment 3.

Table 30 Advertisements used in Study 3

	Non-Optional	Optional
SUBTLE GREEN SIGNAL	**Powerful washing and gentle care at the same time** With the new drum that protects clothes and prevents damage Eco-Friendly Washing Machine Reduced environmental impact with lower water and electricity consumption	**Powerful washing and gentle care at the same time** With the new drum that protects clothes and prevents damage Eco- Friendly Washing Machine* Reduced environmental impact with lower water and electricity consumption *Only when the user-activated eco-friendly mode is switched on.*
EXPLICIT GREEN SIGNAL	**Eco-Friendly Washing Machine** Reduced environmental impact with lower water and electricity consumption Powerful washing and gentle care in the same time With the new drum that protects clothes and prevents damage	**Eco-Friendly Washing Machine*** Reduced environmental impact with lower water and electricity consumption Powerful washing and gentle care in the same time With the new drum that protects clothes and prevents damage *Only when the user-activated eco-friendly mode is switched on.*

5.4.3 Dependent variables

The dependent variable of performance evaluations was measured in similar manner to that of Experiment 1 and 2. The variable was captured using the measure developed by Campbell and Goodstein (2001) on a four item, seven-point bipolar scale (1 = *strongly disagree* to 7 = *strongly agree*) was employed (i.e., *"not effective/effective"*, *"poor performance/good performance"*, *"not attractive/attractive"*, and *"low quality/high quality")*. Next, we introduce the variable of green evaluations, measured on a four-item seven-point bipolar scale ("*Not environmentally friendly/environmentally friendly", "not green/green", "not harmful to the environment/ harmful to the environment" and "not harmful to society/harmful to society"*). This item battery was employed to examine the degree to which respondents felt the product in the advertisement was environmentally friendly.

Next, we included the control variable of familiarity. We presented familiarity, designed to ensure that respondents were familiar with the product and the attribute highlighted. We captured this using a two item seven-point bipolar scale (*"Not at all familiar/extremely familiar", "Know very little/know a lot").*

Moreover, in an attempt to ensure the internal validity of the experiment, two manipulation checks were included. Two statements were presented to respondents that were answered via a two-item dichotomous scale. The first item read *"The eco-friendly attributes of this product were*". Respondents were able to select from 'automatic' or 'optional'. The second item related to the green product communication strategy *("What do you feel was emphasised in this advertisement")*. Two possible answers were presented to respondents, 'environmental attributes' and 'non-environmental attributes'.

Finally, we measured demographic variables, such as gender and education level. Gender was assessed via a dichotomous scale with 'Male' and 'Female'. In addition, we asked respondents

to report their level of education based on the highest qualification gained. Table 32 summarized the variables used to measure the items in the questionnaire, while the full-offline survey can be found in Appendix C.

Table 31 Summary of measures in Experiment 3

Measure	Item(s)	Type of Measure and Anchoring
Performance Evaluations	"Not Effective – Effective" "Poor Performance – Good Performance" "Not Attractive – Attractive" "Low Quality – High Quality"	Bipolar type scale
Green Evaluations	"Not environmentally friendly - environmentally friendly" "not green - green" "not harmful to the environment - harmful to the environment" "not harmful to society - harmful to society"	Bipolar type scale
Familiarity	"Not at all familiar/extremely familiar" "Know very little/know a lot"	Bipolar type scale
Manipulation Checks	"This advertisement highlighted the product's non-green attributes" "This advertisement highlighted the product's green attributes"	Likert type scale anchored: 1 = "strongly disagree" to 7 = "strongly agree"
Gender	"Please indicate your gender."	Dichotomous: 'Male' and 'Female'
Education	"Please indicate the education level that you have completed"	Nominal with order: 'High School', 'Associates Degree', 'Bachelor's Degree' and 'Post Graduate'

5.4.4 Data Collection and Preliminary Screening

For this study, we followed a similar procedure to that of Experiment 1 and 2. The four experimental conditions were generated and placed on Qualtrics with randomization enabled, so that respondents were only subjected to one of the four manipulations. Following exposure to the product advertisement, the items for performance evaluations, green evaluations and the

control variable familiarity were presented. Then, respondents viewed the two dichotomous manipulation checks and the demographic variables of gender and education level.

Following the development of the survey, a link was generated by Qualtrics that was placed on the platform Amazon Mechanical Turk (MTurk). Respondents were able to participate in the study if they had previously completed 5,000 tasks with an approval rating of 98%. Moreover, they had to be located in the United States. In total, we collected 189 usable responses, the data of which was subsequently analysed on SPSS 22 for Windows. Given the ability to force respondents to complete each question before advancing, there was no missing data in this experiment.

In total, 29 respondents had to be removed from the dataset and excluded from further analysis as they failed the manipulation checks relating to either green attribute optionality or green product communication strategy. This screening was conducted by cross-tabulating the answers selected in the manipulation checks with the actual manipulation in which the respondents were exposed. After this screening was complete, we were left with 170 respondents in the main dataset.

The familiarity checks demonstrated no significant difference for the green product communication strategy conditions ($F (1, 168) = .000$, $p = .989$). Furthermore, there was no significant difference for familiarity between the green attribute optionality conditions ($F (1, 168) = 2.005$, $p = .159$). Thus, we were able to conclude that any result generated would not be related to differences in product familiarity.

5.4.5 Reliability analysis of the performance evaluations scale

In order to create a composite score for performance evaluations, we conducted a reliability analysis via the Cronbach's alpha test. The reliability result indicated good fit between the four

items ($\alpha = 0.92$), indicating a high level of internal consistency. Thus, we generated a composite variable to be used as the DV in Experiment 3 (M = 5.74, SD = .934).

5.4.6 Reliability analysis of the green evaluations scale

As this was the first examination of the green evaluations scale, we conducted a reliability analysis to ensure its internal consistency. A Cronbach's alpha test demonstrated good reliability between the items ($\alpha = 0.88$). Thus, a composite score was created (M = 5.97, SD = 1.01).

5.4.7 Reliability analysis of the familiarity scale

Finally, we examined the reliability of the control variable of familiarity. A simple correlation test showed good reliability (r = .77). Therefore, we created composite scores for variable of familiarity (M = 4.73, SD = 1.29).

5.4.8 Descriptive statistics

The descriptive statistics for gender are located in Table 33. We found a slightly higher concentration of males than females (N = 94, 55.3%).

Table 32 Distribution of gender for Experiment 3

Gender	Frequency	Percent	Cumulative Percent
Male	94	55.3%	55.3%
Female	76	44.7%	100.0
Total	170	100.0	

Education level is presented in Table 34. We found that the majority of respondents had a Bachelor's degree (N = 77, 45.3%), as is consistent with Experiment 1 and 2. Second was high school diploma (N = 48, 28.2%), Associates' degree (N = 38, 22.4%) and then post graduate (N = 7, 4.1%).

Table 33 Distribution of education level for Experiment 3

Gender	Frequency	Percent	Cumulative Percent
High School	48	28.2%	28.2%
Associates' Degree	38	22.4%	50.6%
Bachelors' Degree	77	45.3%	95.9%
Post Graduate Degree	7	4.1%	100.0
Total	162	100.0	

Next, we examined the descriptive statistics for the DV of performance evaluations. We did not find any problems in relation to skewness and the kurtosis of the distribution. This information is presented in Table 35.

Table 34 Descriptive statistics for performance evaluations in Experiment 3

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
3.50	3.50	7.00	6.00	5.74	.934	-.497	.186	-.502	.370

In addition, there was no problem associated with skewness and the kurtosis of the distribution for green evaluations. Moreover, the mean score was above the midpoint, indicating the product was generally viewed as being environmentally friendly. The descriptive statistics are shown in Table 36.

Table 35 Descriptive statistics for green evaluations in Experiment 3

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
4.00	3.00	7.00	6.00	5.97	1.01	-.839	.186	-.124	.370

Finally, we analysed the descriptive statistics for the control variable of familiarity. The full statistics can be found in Table 37, indicating no problem with the skewness and the kurtosis of the distributions.

Table 36 Descriptive statistics for familiarity in Experiment 3

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
6.00	1.00	7.00	5.00	4.73	1.29	-.791	.186	.343	.370

5.4.9 Normality assumptions of the measured variables

Following data collection, we examined the nature of the distribution for the dependent variables. The results showed that the variables met the normality assumptions, indicating that no special violation of normality was found in the data for Experiment 3.

5.4.10 Analysis and Results

In order to analyse the collected data, an Analysis of Covariance (ANCOVA) was conducted

to test whether the IVs and their interaction had an impact on performance evaluations taking

into account familiarity.

5.4.11. Test for the fit of the covariates

Before the ANCOVA was conducted, we tested a series of assumptions to assess whether the

covariate, familiarity, was an adequate fit in this study. First, a bivariate Pearson correlation

test was run, and indicated that familiarity did not strongly correlate with the dependent

variable of performance evaluations (r = .244). Thus, we perceived a strong fit of the

covariate. The full correlation results can be seen in Table 38.

Table 37 Correlations between the DV and the Covariate in Experiment 3

		Performance Evaluations	Environmental Consciousness
Performance Evaluations	Pearson Correlation	1	.244
	Sig. (2-tailed)		.001
	N	170	170
Familiarity	Pearson Correlation	.244	1
	Sig. (2-tailed)	.001	
	N	170	170

Finally, we examined the homogeneity of the regression slope of the covariate. The results

show that the interaction between the IV green product communications strategy and the

covariate of familiarity did not significantly impact on the DV of performance evaluations (F

(1, 132) = .619, p = .777). Similar results were found for the IV green attribute optionality

and the covariate on performance evaluations (F (1, 132) = .602, p = .755).

Based on these tests, it is assumed that familiarity is of good fit to be included in Experiment 3. Next, we conducted an ANCOVA using the two IVs as predictors of performance evaluations along with familiarity

5.4.12 Descriptive statistics and Levene homogeneity test for ANCOVA

An analysis of the descriptive statistics indicated that respondents were evenly distributed across all the conditions included in this experiment. The minimum was 39, the maximum was 50 per group (see Table 39).

Table 38 Descriptive statistics for the ANCOVA in Experiment 3

Green Product Communication Strategy	Green Attribute Optionality	Mean	STD. Deviation	N
Subtle Signals	Non-optional green attribute	6.07	.70481	40
	Optional Green Attribute	5.54	1.06229	50
	Total	5.78	.95330	90
Explicit Signals	Non-optional green attribute	5.59	.89127	39
	Optional Green Attribute	5.79	.94025	41
	Total	5.69	.91660	80
Total	Non-optional green attribute	5.83	.83274	79
	Optional Green Attribute	5.65	1.01158	91
	Total	5.74	.93433	170

The Levene Test for the Error Variances indicated no significant result at a 95% confidence level (F (3, 166) = 2.273, p = .082). Moreover, since the variables met the normality assumptions and the data were collected via a randomized process, it is possible to carry out the analysis. The result of the test can be seen in Table 40.

Table 39 Levene test for ANCOVA in Experiment 3

F	DF1	DF2	SIG.
2.273	3	166	.082

5.4.13 Interaction effects of the ANCOVA analysis

In order to examine the moderating effect of green attribute optionality on the relationship between green product communication strategy and performance evaluations, a two-way ANCOVA was conducted with familiarity as a covariate. Performance evaluations were averaged to form a composite score and acted as the dependent variable. Green product communication strategy was used as the independent variable, with green attribute optionality as the moderator. There was a significant interaction found (F (1, 165) = 6.063 p < .05), where optionality mitigated the positive effect of the subtle green signals condition on performance evaluations. Further analysis showed that when the environmental attribute was non-optional, there was a significant (t = 2.653, p < .05) difference between the subtle (M = 6.07) and the explicit (M = 5.59) green signals conditions. When the environmental attribute was optional, there was no significant difference (t = -1.188, p = .238) between the subtle (M = 5.54) and explicit (M = 5.79) green signal conditions. Therefore, we can confirm H5 and the results are shown in Figure 11. Unlike it previous experiments, there was no main effect of green product communication strategy on performance evaluations (F (1, 165) = .538, p = .412). Moreover, it is interesting to note that the non-optional condition (M = 6.07) had higher performance evaluations compared to the optional condition (M = 5.54) when subtle signals were employed.

Figure 11 Interaction effect of the IVs Green Product Communication Strategy and Performance Criticality on the DV of Performance Evaluations
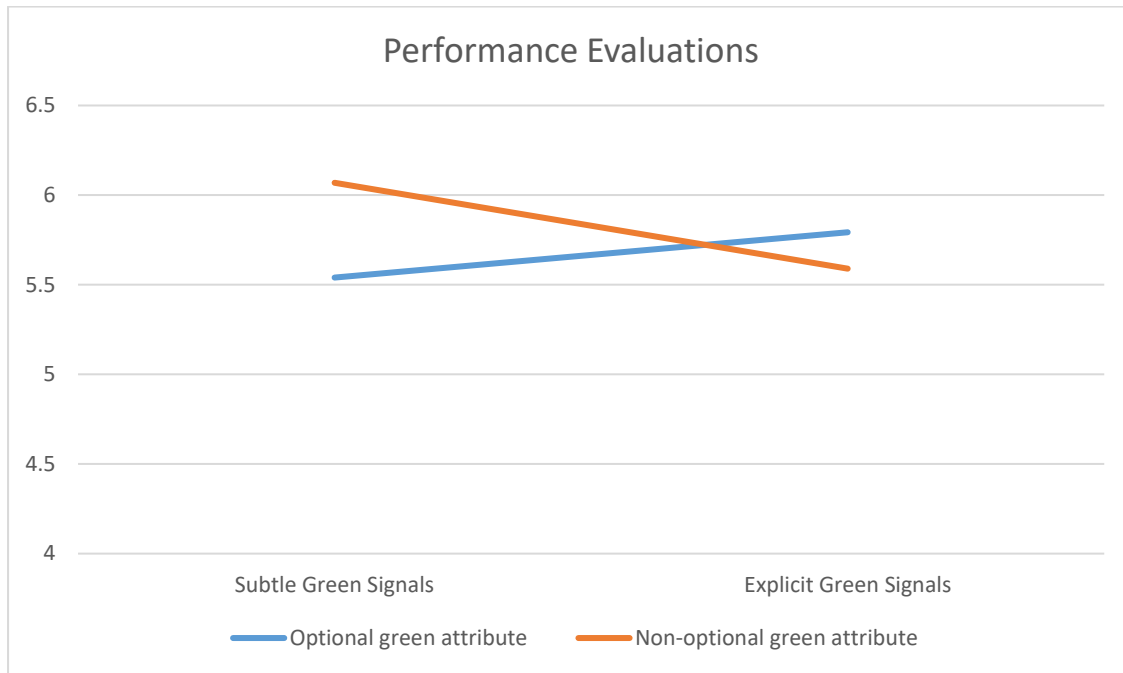
A second ANCOVA was conducted to examine the impact of green attribute optionality and green product communication strategy on green evaluations. We found no significant interaction (f (1, 165) = 1.909 p = .169) and no significant main effect of the IV of green product communication strategy (f (1, 165) = .044 p .834) and green attribute optionality (f (1, 165) = .137 p = .711). The results are shown in Figure 12.

Figure 12 Interaction effect of the IVs Green Product Communication Strategy and Performance Criticality on the DV of Green Evaluations

5.4.14 Discussion

The results of Experiment 3 indicated that green attribute optionality is an interesting and realistic concept that allows consumers to actively choose whether or not they want to activate the green attribute. In doing so, firms employing an explicit green product communication strategy may not experience a decline in performance evaluations, as compared to when the attribute is non-optional. By allowing consumers to choose, the attribute becomes distinct from the core product, and thus, performance inferences in relation to the attribute are not transferred. Therefore, although a product may feature a green attribute, it does not experience a decline in performance perceptions as would a product with a non-optional green attribute. In addition, we demonstrated that the impact of green attribute optionality, as well as green product communication strategy on performance evaluations is not driven by perceptions of greenness. Specifically, the notion that a subtle green signal indicates a trade-off of greenness for performance.

These results demonstrate important implications in understanding how to overcome the green product performance liability. On the one hand, firms can downplay a green attribute in a communication appeal. Alternatively, the product could be developed with an optional green attribute. Both of these approaches do not imply a reduction in greenness, but do in fact aid in performance perceptions.

5.5 Chapter Summary

In this chapter, we have presented the experimental results for the three studies that have investigated the role of green product communications and subtle green signals. In total, we have demonstrated the beneficial role of subtle green signals in overcoming the green product performance liability and that its use can be impacted by both benefit-category congruity, known as performance criticality, as well as social distance and the mindset that can be generated based on both low and high levels of distance. In addition, we demonstrated the vital role of autonomous motivation in Experiment 1 and 2.

Experiment 3 introduced green attribute optionality and the notion that a green attribute need not be automatically activated. This concept will be further explored in Experiment 4, 5 and 6. Moreover, new moderators and mediating variables will be examined, including cognitive style and green product typicality.

Chapter 6 – Literature Review for Green Attribute Default Policy

6.1 Chapter Overview

In this chapter, we present a review of different streams of literature that make up the second part of this thesis (green attribute default policy). The first section examines the role of choice architecture. The second section outlines cognitive style, including its development, meaning and usage. The third section presents past literature on the mediating variable of green product typicality.

6.2 Choice Architecture

In order to further expand on the concept of optionality, we explore choice architecture literature. In general, the concept of choice architecture states that there are many ways in which an option can be presented to the decision maker (Thaler and Sunstein, 2008). Choice architects, such as firms, have a great deal of influence. In doing so, choice architects can vary the presentation order of choice alternatives, the order of attributes and their ease of use and the selection of defaults. The concept of defaults is particularly relevant, as all choice presentations usually feature a default. Defaults, in a choice context, are the setting or choice that is applied to individuals when they do not take active steps to choose otherwise (Brown and Krishna, 2004).

In addition to defaults, one of the biggest challenges facing choice architects is how many choices should they present to individuals (Johnson, et al. 2012). In the current market, firms open present more, rather than fewer, options to the consumer. However, additional options may have negative implications, as they may complicate choice. Thus, when deciding upon the number of options to present, firms need to balance their desire to increase option amount in order to enhance the possibility of preference match, with the inclination that too many options can place a great cognitive load onto consumers, as they must evaluate more and more options

(Johnson, et al. 2012). For example, in the domain of eating decisions, consumers often spend significant amount of time, effort and money seeking to modify their diet. However, given that people often make a considerable amount of decisions each day (Wansink and Sobal, 2007), they often make decisions that are less than optimal in accordance with their diet goals.

Past literature has attempted to offer guidance as to the optimum balance (e.g. Scheibehenne, et al. 2010) and determined that such a balance offers a unique challenge, in that there is optimal number of choice to present. However, Johnson, et al. (2012) has offered several guidelines. First, he states that the choice architect should present the fewest amount of options that will allow consumers to engage is reasoned consideration of the alternatives, while at the same time not overwhelming them. Second, if the choice architect presents too few options consumers may generate context specific preferences. In other words, it is the presence or absence of an option that leads a consumer to make a choice. Thus, it is recommended that, in order to balance these issues, four or five non-dominating options could be a reasonable starting point, whereby more options can be presented if desired.

In addition to option presentation, one of the most powerful tools at the choice architects' disposable is the use of defaults. As previously stated, defaults are the setting or choice that a consumer will receive if they do not explicit select otherwise (Brown and Krishna, 2004). The default may determine the way in which a consumer initially encounters a product, service or a policy. Johnson, et al. (2002) offered a simplistic operationalization of defaults, whereby an electronic form can have a pre-checked box and unless consumers' state otherwise, the box will remain checked. The power of defaults has been demonstrated in a variety of domains, including, insurance (Johnson, et al. 1993), organ donation (Johnson and Goldstein, 2003), investment (Cronqvist and Thaler, 2004; Madrian and Shea, 2001) and even in marketing (Goldstein, et al. 2008; Theotokis and Manganari, 2015). Sunstein and Thaler (2003) argued that defaults appeal to wide range of contexts due to their ability to guide choice, while

simultaneously preserving one's freedom to choose. The range of potential strategies in the domain of defaults is that of the simple default (choosing one default for all), random defaults (assigning a configuration at random), forced choice (withholding a product or service by default and making consumers explicit choose between two or more options), and sensory defaults (defaults that change based on what can be inferred about the user). Moreover, defaults that exist in the longitudinal domain include persistent defaults (where past choices are remembered) or reverting defaults (which forget the last changes made to the default configuration). Furthermore, there exist predictive defaults, which alters the default after reuse based on observation of the user. However, despite their benefits, one of the challenges associated with defaults are their ethical properties. For instance, Dinner, et al. (2011) argued that the ethical issues surrounding the use of defaults relates to their ability to have effect. Consumers who become aware of the use of defaults may react in one of two ways. First, they may view the default as a recommendation. Second, the default may be seen as a manipulative attempt (Brown and Krishna, 2004). In both instances, consumers may enact marketplace metacognition in which they prefer to successfully retain autonomy and freedom of choice. In contrast, if defaults are effective because consumers are not aware that they have choices or because the cost of not accepting the default is too high, the decision makers' autonomy is undermined. Thus, a prudent policy may be to make the default the option that is most likely to be chosen when one is making an active choice.

The structuring of choice not only impacts on the way in which consumers select among options, but also on how they explore the option space. Specifically, consumers must choose what information to examine and what to ignore as they narrow down the choice set. For example, Johnson, et al. (2002) considered the differences between making a single choice versus making a series of configuration decisions, such as selecting features when customizing a car or a computer. As compared to selecting one object from a set of alternatives, when

confronted with a configuration decision one may employ different strategies when dealing with the complexity of multiple decisions. These strategies alter the outcomes of consumer choice and therefore, different choice architecture tools may be useful. Furthermore, a common finding in relation to consumer choice is that when evaluating a set of alternatives, consumers first screen them based on a subset of attributes and only after do they make alternative-based comparisons for the remaining set (Hauser and Wernerfelt, 1990). Building upon this, Diehl, et al. (2003) state that choice architects can facilitate comparisons on one attribute but not others, thus leading to a higher preference for options that are favoured by the focal attribute.

6.2.1 Describing choice options

One aspect that can have a dramatic impact on choice behaviour is the way in which a set of options, attributes or events is split up into different groups or categories. It has been demonstrated that partitioning allows for the creation of distinct categories that may influence allocations involving simultaneous choices (Fox and Clemen, 2005). For instance, Thaler and Sunstein (2008) found that consumers allocated resources evenly across different contexts when they are separated into categories than when they were listed together. This notion has been supported in the context of charitable donation decisions (Fox and Clemen, 2005). Moreover, Wansink, et al. (2012) found that when creating a separate shopping cart for fruits and vegetables, consumers ended up purchasing more than if the cart was not partitioned.

When selecting among alternatives, consumers often weight the pros and cons on different attributes. The choice architect can play a role in this process by making select attributes more or less salient (Johnson, et al. 2002). For example, consider an individual who is contemplating the purchase of a new computer. They are likely to examine attributes such as battery life, performance and build quality, among many others. Each of these attributes may be important and an ideal decision would incorporate all the relevant attributes, allowing consumers to weigh them on the degree to which they allow one to achieve their objectives (Keeney, 1996). The

choice architect can aid in this process by adhering to certain principals, such as parsimony, linearity, comparability and evaluability (Johnson, et al. 2002). Moreover, they can make certain attributes that would normally be in the background more salient through the use of attribute translation and attribute expansion.

When making a decision, a consumer must select the best alternative via the use of attribute information. In this instance, the choice architect can aid in this process via the tool of parsimony. When presented with numerous attributes, a consumer may be overwhelmed and thus, focus only a few attributes resulting in a sub-optimal selection (Johnson, et al. 2002). However, Peters, et al. (2007) stated that this issue could be alleviated when decisions require less cognitive effort. This can be accomplished via the use of a smaller attribute set and highlighting information about only important attributes. However, this process needs to be balanced by the need to include all the attributes. The second tool available to the choice architect that is used to aid consumers in making decisions is that of linearity. A decision attribute may have a non-linear relationship to a consumer objective. For example, the measure of energy efficiency used in automobiles in the United States, miles per gallon (MPG), has a non-linear relationship to energy consumption. In order to address this, it may be beneficial to alter MPG into a measure, such as gallons per 100 miles in order to achieve a linear relationship (Johnson, et al. 2002).

The final two tools in the tool belt of the choice architect are comparability and evaluability. For instance, there are attributes that can be expressed in a multitude of ways. Thus, in order to enhance comparability, one can place activities or products on the same scale will allow consumer to compare value more easily and accurately (Johnson, et al. 2012). Furthermore, there are attributes that may be defined by information that is hard to process or is unfamiliar to the consumer. In this instance, the choice architect can enhance evaluability by separating information into categories (Johnson, et al. 2012). For example, the Environmental Protection

Agency (EPA) has issued labels in vehicles to indicate their carbon emissions. However, consumers are often unaware of what constitutes good or bad emission levels. Thus, the EPA has presented a rating scale from 1 to 10 on each car that relates linearly with carbon reduction (Peters, et al. 2007).

There may be situations in which the choice architect wishes to make salient a certain attribute. In this instance, the tools of attribute translation and attribute expansion may be useful (Johnson, et al. 2002). When evaluating among alternatives, research has shown that consumers only bring to mind half of the objectives that they care about (Johnson, et al. 2012). Thus, there may be benefits to explicitly mapping an attribute to its consequences for other objectives (Johnson, et al. 2002). A second method is to change the scale in which the attribute is expressed.

Finally, another tool at the choice architects disposal is the use of either an opt-in or an opt-out default strategy (e.g. Johnson and Goldstein, 2003), presenting consumers with a" base model" default configuration, whereby they can add or subtract features (e.g. Park, Jun and MacInnis, 2000) or telling the consumer that they can choose between two options, but are presented only with one (the default), while requiring that they request the second in order to receive it (McKenzie, Liersch and Finkelstein, 2006). These default options can have a dramatic impact on consumer choice (Johnson, et al., 2002; Johnson and Goldstein, 2003, 2004; Thaler and Sunstein, 2008). Furthermore, consumers may not even be aware of this influence (Smith, Goldstein and Johnson, 2013).

The two main alternative default policies are known as opt-in and opt-out. The former is an approach whereby consumer choice is considered to be explicit and consumers are required to state their option. The former presumes consumer choice and unless they state otherwise, they will be ascribed to that option (Theotokis and Manganari, 2015). For example, computers often

run normally unless the battery saving mode is activated by the user (opt-in). Alternatively, washing machines often feature eco-modes that are activated by default unless the user states otherwise (opt-out). Research has often demonstrated the power of the opt-out approach in that it captures higher levels of consumer compliance with the desired option. For example, Johnson and Goldstein (2003) showed that organ donation rates increased when an opt-out policy was used compared to an opt-in policy, while participation in organ donation programs was significantly higher when consent was presumed (opt-out) compared to participation rates in countries that had an opt-in program. However, the power of the opt-out approach has been debated with scholars calling for further evidence (Carroll, et al. 2009; Keller, et al. 2011). Moreover, Agnew, et al. (2008) failed to find support for the power of defaults in annuity choice.

Table 40 Key Literature for Choice Architecture

Author(s) and Year	Title and Journal	Methodology	Main Variables	Research Summary
Brown and Krishna (2004)	The Skeptical Shopper: A Metacognitive Account for the Effects of Default Options on Choice Journal of Consumer Research	Experimental Design	Defaults, Attitudes, Likelihood of Counterarguments	Defaults act as a carrier of meaning and consumers treat them as though they relate to the marketers themselves. To process this info, consumers rely on marketplace metacognition.
Goswami and Urminsky (2016)	When Should the Ask be a Nudge? The Effect of Default Amounts on Charitable Donations Journal of Marketing Research	Experimental Design	Defaults, donation rates.	While a low default donation rate increased donation amounts, it increased the likelihood of donation.
Johnson, et al. (2012)	Beyond Nudges: Tools of Choice Architecture Marketing Letters	Conceptual Paper	Defaults	In this paper, the authors explore past literature in choice architecture, while highlighting potential applications.
Johnson and Goldstein (2002)	Defaults, Framing and Privacy: Why Opting In-Opting Out Marketing Letters	Experimental Design	Defaults, privacy and consumer choice	The authors find support for the differing role of opt-in and opt-out. Moreover, they show that opt-out has a more influential effect on participation.

Keller, Harlam, Loewenstein and Volpp (2011)	Enhanced Active Choice: A New Method to Motivate Behavior Change Journal of Consumer Psychology	Experimental Design	Choice, persuasion, automatic enrollment and social marketing	The authors develop and test the concept of "enhanced active choice", whereby it is recommended as a complement to automatic enrollment.

6.3 Cognitive Style

"Thinking is the hardest work there is, which is probably the reason why so few engage in it."

(Henry Ford)

6.3.1 Cultural Distinction in Cognitive Style

While research on cultural influences on perception originated in the late 1940s, nearly all of the evidence for the existence of this relationship has been produced in the last decade. For example, Abel and Hsu (1949) found that Asians tended to have a more holistic approach in their cognitive style. Specifically, they uncovered that when presented with a Rorschach test, Chinese Americans tended to emphasize all aspects of the card. In contrast, Americans with European ancestry were more likely to emphasize single aspects of the picture.

In an early study in the domain of perception, Jones and Harris (1967) had student respondents read an essay that was allegedly written by a fellow pupil. Moreover, they were told that the student was either for or against an important social issue of the day and that they were instructed to hold this view due to the pressure from a political science instructor, debate coach or an experimenter. Next, respondents were asked to estimate the actual opinion held by the essayist. It was shown that when making this assessment, respondents tended to ignore the situational constraints. In other words, the influential component was ignored and opinion of essayist was determined based on was presented. This finding, known as the attribution paradigm, has been extensively supported by subsequent literature (Gilbert and Jones, 1986; Gilbert and Malone, 1995; Jones, Riggs and Quattrone, 1979).

The findings presented by Jones and Harris (1967) supported the notion that individuals tend to focus upon the behaviour of others, while ignoring environmental factors, supporting the notions of Heider (1958). Put in another way, Jones, et al., (1979) stated that when observing

an action, it, as well as the actor, become salient and thus, people tend to attribute outcomes to the actor's internal states or dispositions rather than situational factors that may not be as salient. In fact, Gilbert and Malone (1995) stated that this lack of awareness on situational factors is the root cause of the correspondence bias, which has formed the backbone for a great deal of social psychology research.

It has been shown in research that the correspondence bias tends to vary among cultures, in that it is perceived to be weaker in some non-Western countries (Nisbett, et al. 2001). In fact, there has been a plethora of research that has shown that those in an Asian culture tend to attribute another persons' behaviour to situational factors, whereas Americans are more likely to explain the behaviour in relation to characteristics that are internal to the individual, such as personality traits (Lee, Hallahan and Herzog, 1996; Miller, 1984; Morris and Peng, 1994; Norenzayan, Choi and Nisbett, 1999). Moreover, extending the work of Jones and Harris (1967), it was found that the correspondence bias is likely to be present even when situational factors are made salient, in that Americans will attribute the behaviour to the individual, while Asians focus on the situations (Choi and Nisbett, 1998; Masuda and Kitayama, 2003; Masuda and Nisbett, 2001). In another set of studies, individuals were asked to read descriptions that were assigned to them regarding personality traits. In this study, it was shown that East Asians, rather than Westerners, were more likely to believe that the descriptions of an individuals' personality traits were reflective of their actual personality traits (Van Boven, White and Kamada, 2003; Van Boven, Kamada and Gilovich, 1999). Furthermore, another stream of literature has shown that East Asians, as compared to Westerners, were less likely to infer that one's own behaviour corresponds with their actual attitudes (Kashima, et al., 1992).

Thus, scholars have shown that an individual's inferential processes are altered by culture. For example, those in Western culture tend to attribute events or behaviours to the internal characteristics of an individual, whereas Asians are more likely to contribute it the context or

situation (Miller, 1984; Norenzayan and Nisbett, 2000). Furthermore, those in a Western culture are more likely to use categorization and rules when making assumptions about everyday life. In comparison, East Asians have a greater likelihood of emphasizing relationships and similarities (Norenzayan, Choi and Nisbett, 2002). For example, Chiu (1972), in the examination of culture differences between American and Chinese children, found that the latter were more likely to be relational contextual in their grouping of items that belonged together, compared to American children that were more categorical. Based on this, it can be argued that there are unique differences in the way culture can alter one's perception (Nisbett and Masuda, 20003), suggesting that these individuals focus on different aspects of the environment. On the one hand, if one believes that causality is located in the environment, they may pay closer attention to the field as a whole. On the other hand, if causality is perceived to exist outside of the environment, one may focus more on the object rather than the field. From a cultural perspective, the findings suggest that Westerners tend to engage in context-independent and analytic perceptual processes, as compared to non-Westerners, such as East-Asians, who are context-dependent in their perception viewpoint, employing a holistic approach in analyzing the relationship between the target object and the context to which the object is located (Nisbett and Miyamoto, 2005).

6.3.2 Analytical and Holistic Thinking

The two distinct thinking styles of analytical and holistic were generated based on the work of Nisbett, et al. (2001), in which the authors developed a theoretical model in which one may be able to explain the perceptual differences between cultures. They argue that these differences between East and West are rooted in the long-standing differences between each civilization. In the West, the intellectual traditions that were derived in Ancient Greece placed emphasis upon analytical thought. Analytical is defined as a detachment of the object from its context and a tendency to focus on the attributes of the object in order to aid categorization, as well as

a focus on rules about categories that were used to explain and predict the object's behaviour. Thus, one's inferences are derived from decontextualization, a focus on formal logic and avoidance of contradiction (Nisbett, et al. 2001). It is this process that has permeated Western culture and given rise to analytical traditions within systems of thought.

In contrast to Western thought, intellectual traditions in China have emphasized a holistic approach. Nisbett, et al. (2001) defined holistic thought as a focus on the context or the field as a whole. This includes attention towards relationships between the field and the target object and a preference for explaining and predicting events based on these relationships. Such thinking may rely on experience-based knowledge, as well as an attempt to uncover a middle ground between two varying propositions. Thus, Nisbett, et al. (2001) argues that East Asian thought is highly influenced by this process.

In addition, Nisbett, et al. (2001) followed the work of Witkin and Berry (1975), by stating that these cultural differences are derived from the complexities within both East Asian and Western societies. In addition, Nisbett, et al. (2001) followed the work of Witkin and Berry (1975), by stating that these cultural differences are derived from the complexities within both East Asian and Western societies. The authors state that in Asia, individuals developed close and well-structured social relationships due to the complexity of the culture. Based on this, Asians tend to pay close attention to context and subtle alterations in social situations and relationships. Alternatively, Nisbett, et al. (2001) states that Western cultures, such as ancient Greece, were less socially complex and less role-dependent. Thus, people had more impact over their environment. In these societies, people need not focus on all aspects of their environment, but rather on a particular object and on how it impacts their personal goals. It is based on these cultural differences that we see varying approaches to perception and attention, whereby East Asians have a generally interdependent society, while Westerners have a more independent society.

The notion that cognitive and perceptual orientations can differ among cultures and the degree to which one is analytical or holistic may be related to the concept of field dependence (Witkin and Berry, 1975; Witken and Goodenough, 1977). According to this research, some individuals are better able to separate an object form the field in which it is embedded. Extending the work of Nisbett, et al. (2001), the authors argue that such perceptional tendencies may be influenced by economic and social factors. For example, Witkin and Berry (1975) stated that some societies more than others require analyzing the visual field in a way that allows one not to be thrown off by external cues. It is similar to this reasoning that Ji, Peng and Nisbett (2000) uncovered the cultural differences in one's cognitive style. The authors employed a Rod and Frame Test, in which a large square is rotated independently of a rod that sits inside of the frame. Respondents must report when they perceive the rod to be vertical, thus indicating one's level of field dependence. East Asian respondents made more errors than their Western counterparts. Furthermore, Kitayama, et al., (2003), via a framed line test, found that individuals in an Asian culture were more capable of incorporating contextual information than those in Western cultures.

Based on the research shown above, there can little argument that culture can play a role in how one perceives their environment. Moreover, other factors may be impacted by the outlined cultural differences. The first aspect is that of attention. Specifically, how differences in thinking styles can alter attention on either the field or the individual parts. As was previously stated, the holistic style employed by East Asians leads towards a focus on the whole and the relationship between objects and the field in which these objects are presented. In contrast, an analytical thinking style leads Westerners to focus upon the object itself, rather than on the field in which it belongs (Ji, et al. 2000; Masuda and Nisbett, 2001). Thus, this difference in one's focus means that East Asians are able to see the whole more easily than individual parts, while Westerners are able to dissect the individual parts of the whole more easily than East

Asians. Witkin, et al. (1974) states that due to this difference, it can be argued that East Asians are more field dependent that Westerners, in that they face more challenges when attempting to view the individual parts of a given field. By the same logic, Westerners face more difficulty in identifying relationships between objects in the field than do East Asians (Ji, et al. 2000).

The second area is that of causality and how one's thinking style impacts in casual relationships. In this area, East Asians focus on complex causalities. Moreover, they focus on the relationships and interactions between an actor and their surrounding environment. In contrast, Westerners tend to focus on an actor's own internal dispositions. Thus, it is argued that the holistic thinking style allows one to collect and process a greater level of information before reaching a final conclusion compared to the analytical thinking style (Choi, Koo and Choi, 2007). Moreover, scholars have stated that this approach to causality reduces the likelihood that an East Asian will make the fundamental attribution error, also known as the correspondence bias (Choi and Nisbett, 1998; Choi, Nisbett and Norenzayan, 1999; Lee, Hallahan and Herzog, 1996; Miller, 1984).

The third aspect is the concept of perception, whereby East Asians employing a holistic thinking style view objects and interconnected. Thus, they tend to view a phenomenon as changeable. Moreover, they tend to view change as constant due to their belief that there exists a complex pattern of interactions among elements. Alternatively, analytical thinkers in Western cultures view an object as independent and thus, the essence of that object is static and resistant to change based other factors (Nisbett, et al. 2001). Therefore, when predicting future events Westerners assume a linear perspective, whereby they expect a similar pattern of change or stability to occur as it had in the past. In contrast, East Asians possess a cyclical viewpoint, in that an alteration is likely to take place (Ji, Nisbett and Su, 2001; Peng and Nisbett, 1999).

Finally, we examine the differences found in these two cultures based on their perception of contradiction. When there are two contradictory opposites, East Asians tend to seek the middle ground. For example, in the hypothetical scenario of a political argument whereby there are two sides that hold contradictory viewpoints, East Asians will seek compromise based on the assumption that both parties can be true that one side may eventually succumb to the arguments put forward by the other. Peng and Nisbett (1999) refer to this approach as naïve dialecticism, whereby any contradiction can be solved and that even two positions that are opposed to one another can be simultaneously accepted as partially true. In contrast, Westerners employ the formal logic approach, whereby selecting one of the two contradictory propositions solves the contradiction. Their research supported this argument, which showed that Chinese students preferred contradictory arguments, whereby American students preferred the opposite.

6.3.3 Holistic and Analytical Thinking Styles in Marketing Research

A number of studies have been conducted that has applied to concepts outlined by Nisbett, et al. (2001) in the domain of marketing. Some studies have examined cultural differences through cross-cultural research techniques. Others, however, have employed a priming manipulation. Regardless of the methodological approach selected, research has supported the claims put forward by past literature.

In a study conducted by Monga and John (2007), the authors argue that cultural differences can impact on how brand extensions are evaluated. They take the perspective that analytical thinkers focus on attributes and categories to generate inferences and make judgments. In the consumer behaviour domain, they state that Americans often judge brand extension fit on the basis of product class similarity. In other words, the extent to which the brand extension is similar to the associated parent brand. Moreover, they focus heavily on attribute transference, which refers to the perception that the brand extension contains attributes derived from the parent brand that are relevant in this new category. If a brand extension cannot provide

sufficient answers to these questions, analytical thinkers will view the extension as a poor fit. In contrast, holistic thinkers are said to place emphasis on inter-object and object-field relationships (Masuda and Nisbett, 2001). This increased focus on the field may allow holistic thinkers to identify other relationships between a brand extension in a new category and the parent brand. This argument is based on the notion that Easterners often focus on the situation rather than the focal object (Choi, Nisbett and Noranzayan, 1999), thus suggesting that complementarity may be used to as a basis for judgment in terms of brand extension and parent brand fit. Furthermore, Monga and John (2007) argued that they might also judge a brand extension on the basis of the overall reputation or feeling that they possess about the parent brand. Thus, they posit that a holistic thinking style is better able to perceive fit between a brand extension and a parent brand. Their results support these conclusions in that styles of thinking impacted on both brand extensions fit and brand extension evaluation.

Again, Monga and John (2010) examined the role of cognitive style, although in this instance, in the domain of brand elasticity. Building upon the same argument put forward in their 2007 article, the authors argue and find that analytical thinkers focus more on attributes and categories when making judgments and thus, in the case of functional brand extensions, they are more likely to have negative evaluations unless there is some similarity between the functional attributes. However, as holistic thinkers focus upon relationships and the field as a whole, the authors posit that they will find alternative means to assess fit. Moreover, it is argued that for prestige brands, abstract associations are easily available to both analytical and holistic thinkers, thus negating the impact of thinking style.

In 2008, Monga and John (2008) apply the concept of thinking style to negative brand publicity. When a negative event takes place around a product or a brand, consumers often seek out a cause for the behaviour (Klein and Dawar, 2004; Wong and Weiner, 1981). These causes, per Weiner (1985) can be based on internal or external attributions. If the locus is internal,

consumers place blame at the feet of the company. If there are external attributions, people assign blame to external factors. The authors state that thinking styles are likely to influence the way in which a consumer interprets a brand's actions. They posit that holistic thinkers are more likely to consider external factors, as well as internal factors. In contrast, analytical thinkers will emphasize internal, object-based, factors. The results indicated that analytical thinkers are likely to attribute negative events to the brand itself, whereas holistic thinkers also consider external context-dependent explanations. Moreover, when a negative event takes place, holistic thinkers, as compared to analytical thinkers, are less likely to change their previously held attitudes and beliefs about the brand.

Furthermore, Mao, et al. (2016) examined the role of thinking style and feature centrality. The authors define centrality as a feature that is the focal aspect of the product concept. Core features are able to provide information directly to the consumer in relation to the product's functionality. In contrast, less central features are more contextual and not directly associated with the product's functionality. They argue that analytical thinkers tend to focus more on core features and thus, should assign a greater weight to the products to it compared to holistic thinkers. Their results support their assumptions.

Finally, in the product information context, DeMotta, Chao and Kramer (2016) found that contradictory information is less fluently processed by consumers with a low level of dialectic thinking (i.e. analytical thinking), as compared to those with high dialectic thinking (i.e. holistic). For low dialectic thinkers, this results in lower judgement confidence and more moderate attitudes. However, these findings are at odds with Peng and Nisbett (1991). The authors argue that this difference may be due to different modes of processing. For instance, the procedures employed by Peng and Nisbett (1999) may have evoked a heuristic processing style, whereas in DeMotta, Chao and Kramer (2016), respondents might have used a more systemic processing style, as they evaluated a target product rather than two arguments.

Table 41 Key Literature for Cognitive Style

Author(s) and Year	Title and Journal	Methodology	Main Variables	Research Summary
Jones and Harris (1967)	The Attribution of Attitudes. Journal of Experimental Social Psychology	Experimental Design	Correspondent inference	The authors conducted three experiments that provided an initial look into the impact of culture and the role of correspondence bias.
Choi and Nisbett (1998)	Situational Salience and Cultural Differences in the Correspondence Bias and Actor-Observer Bias Personality and Social Psychology Bulletin.	Experimental Design	Innovation, locus, competence, core, peripheral	The authors further examine the role of the correspondence bias in differing cultures (i.e. Western and Eastern). In summary, they find that Asians may be less influenced by important situational factors that are Westerners.
Nisbett, Peng, Choi and Norenzayan (2001).	Culture and Systems of Thought: Holistic versus Analytical Cognition. Psychological Review	Experimental Design	Culture, holistic and analytical	The authors find that East Asians employ a more holistic mindset, whereas Westerners are more analytical. They posit that these differences may be rooted in social systems.
Masuda and Nisbett (2001)	Attending Holistically Versus Analytically: Comparing the Context Sensitivity of Japanese and Americans. Personality Processes and	Experimental Design	Culture, holistic and analytical, context sensitivity	The authors hypothesize and find support for the notion that East Asians are more holistic in their mindset, while Western cultures follow more of an analytical thought process via a recognition test.

	Individual Differences			
Kitayama, Duffy, Kawamura and Larsen (2003)	Perceiving an Object and its Context in Different Cultures. Psychological Science	Experimental Design	Culture, holistic and analytical, context	The authors examine the role of culture via a framed line test. They showed that Asians (i.e. Japanese) were more capable of incorporating contextual information in their judgement making than Westerners.
Monga and John (2007)	Cultural Differences in Brand Extension Evaluation: The Influence of Analytic versus Holistic Thinking Journal of Consumer Research	Experimental Design	Culture, analytical, holistic, brand extension, evaluation	Based on prior literature on cognitive style, the authors examine cultural differences in brand extension evaluation. They find that Asians, employing a holistic mindset, perceive higher brand extension fit than those with an analytical mindset in Western cultures.
Monga and John (2010)	What Makes Brands Elastic? The Influence of Brand Concept and Styles of Thinking on Brand Extension Evaluation Journal of Marketing	Experimental Design	Culture, analytical, holistic, brand elasticity, evaluation	The authors examine the role of thinking styles and its impact on brand extension evaluation. For functional brands, holistic thinkers perceive stronger fit and thus, a better evaluation, for distant brand extensions than analytical thinkers. However, the impact of thinking styles was negated for prestige brands.

6.4 Green Product Typicality

6.4.1 Categorization in Marketing

The key aspect that underlies the notion of categorization is that categories are functional. They are shaped by one's personal goals, values or the need to respond to a situation in a specific manner. In the product context, one many generate subcategories based on different subsets, as well as one's subset evaluation (Cohen, 1982). This is due to the nature of consumer product interaction, in that it typically occurs in the evaluative context. Thus, categorization and evaluation are viewed as being linked from the initial category formation stage (Cohen 1982; Sujan 1985). Moreover, as highlighted in Section 3, categories may be defined by more than simply feature based results. For instance, they might be defined by a clear occurrence of that category. Given the plethora of research that explored consumer categorization (e.g. Alba and Hutchinson, 1987; Cohen and Basu, 1987; Mandler, 1982; Sujan and Dekleva, 1987), it is argued that route to category formation may vary. Therefore, such an examination regarding the formation of product categories is important to both marketing theory and practice. In addition, the impact of such categories on consumer evaluations should be explored.

While researchers have employed the concept of categorization to focus upon how people organize knowledge in memory and how they classify objects (Cohen and Basu 1987; Loken and Ward 1990; Sujan and Bettman 1989), recently, however, scholars have begun to examine how categorization can impact upon one's generated inferences about new objects (e.g. Markman et al. 1997; Moreau, Markman and Lehmann, 2001; Murphy and Ross 1994; Ross 1997; Thomas 1998). It is posited that when a new item is categorized into an existing category, information in that category is transferred to the new object and subsequently used to structure the new representation (Waldmann, Holyoak, and Fratianne 1995).

Past literature has suggested that knowledge transfer occurs via a three stage process. In this context, knowledge transfer refers to the process by which knowledge is transferred from an existing domain to an unfamiliar target. The three stages outlined by past research are access, mapping and transfer (Holyoak and Thagard 1989; Markman and Wisniewski 1997). Once a category has been accessed, its properties are mapped into the properties of the target, and thus, the transfer of knowledge may commence (Gentner 1983; Gentner and Markman 1997).

For example, let's assume that an individual is viewing a new digital camera. When attempting to map information from the film-camera category, the object's buttons, design and perhaps flash can be successfully mapped to the target digital camera. Once this map has been constructed, additional information about film-based cameras can then be transferred to the digital camera category, as the initial mappings are roadmaps for additional knowledge transfer (Moreau, Markman and Lehmann, 2001). This process may be aided by marketers via the use of category labels that may indicate the new product's category membership. A category label can encourage consumers to generate more extensive mappings from the category to the target object (Gregan-Paxton and John, 1997; Gregan-Paxton and Moreau, 2003). This effect occurs for three reasons. First, a category label allows consumers to think of the object in holistic terms, as the goal of categorization is to maximize within-category similarity, as compared to between category similarity (Medin and Schaffer 1978; Rosch and Mervis 1975). Thus, when a new object is shown to consumers, the category label will spark a knowledge transfer from the existing category to the new product in order to maximize the perceived similarity between the object and the category (Yamauchi and Markman 2000). The second reason is that a category label acts as a guide, focusing individuals on the features within the category, while simultaneously discouraging attention towards the features of other categories (Murphy and Ross 1994; Ross and Murphy 1996). Thus, when making inferences about a new object, consumers are likely to focus upon the feature information within a single category, rather than

the information found within multiple categories (Murphy and Ross 1994; Yamauchi and Markman 2000). Third, Gelman and Markman (1986) found that a category label can override feature similarity as the primary factor for the generation of inferences made about missing information. The authors demonstrated in a follow up study that this scenario occurred in children as young as three, whereby there was preference for inference generation based on an items' stated category membership, rather than on its features (Gelman and Markman, 1987). Taken together, the findings of category label research suggest that labels can aid mappings and knowledge transfer between a new object and an existing category.

Moreover, cognitive psychologists have begun to examine the role of typicality, whereby one category is more typical or prototypical of another category. Traditionally, typicality is defined as the degree to which an item is seen to represent a category (Campbell and Goodstein, 2001). Past literature has examined four main determinants of typicality. The first is whether or not an item shares attributes with other items. The second is familiarity with item's meaning, while the third is the frequency of exposure to the item. Finally, the fourth relates to one's attitude towards the item. Specifically, whether an individual holds a positive or negative attitude towards the value associated with the item. Each of these notions will be examined further.

In the examination of the attribute sharing tenant of typicality, two major approaches have been identified. The first is the family-resemblance approach developed by Rosch and Mervis (1975). The second is suggested by Tversky (1977) and relates to feature based similarity. Both of these approaches have differing implications for the relationship between attribute similarity and typicality.

The family resemblance approach is regarded as the most common conceptualisation of the relationship between perceived typicality and an object's attributes. It is defined as the degree to which a category member has attributes that are perceived to be similar to the attributes of

other category members (Rosch and Mervis, 1975). Thus, an increased perception of typicality is likely to occur when there is a degree of similarity between a target product and other members of a chosen category. This concept is often measured by asking respondents to list the attributes of a set of items from a category. In order to calculate a family resemblance score, one must weigh the attributes by the number of items that share each attribute. Following this, the sum of the weights is calculated (Rosch and Mervis, 1975). There are two features that distinguish the family resemblance measure from other approaches used to explore the relationship between attributes and perceived typicality. First, the measure places emphasis on common attributes, whereby an increase in this area enhances typicality compared to a larger assortment of distinctive attributes (Loken and Ward, 1990). The second states that the model developed by Rosch and Mervis (1975) focuses heavily on the relationships between the shared attributes and typicality, rather than on other aspects, such as salience, or attribute evaluation.

The next approach is that of feature-similarity developed by Tversky (1977). This model of attribute sharing states that similarity between objects is a function of their common features, minus the object's distractive features. In order words, object A and B are perceived to be typicality when both share common features, minus the distinctive features of both A and B (Loken and Ward, 1990). Similar to the family resemblance model, Tverksy's (1977) posited that typicality increases when a category member shares common attributes with other members. However, this models differs from the previous in that it assumes that typicality will negatively impacted by the number of distinctive attributes of A and B. Thus, not only do distinctive attributes harm typicality, in this instance, they are said to aid in its reduction. While there can be little argument against the notion that common attributes aid typicality compared to distinctive attribute, these two differing aspects argue that distinctive attributes are unrelated to perceived typicality (Rosch and Mervis, 1975), or may in fact be harmful (Tversky, 1977).

Each argument has some degree of merit. The mere concept of typicality suggests that shared attributes should be positive, enhancing typicality perceptions. Moreover, scholars have stated that if consumers view products as an alternative means of achieving or setting goals, they may indeed focus on similarities as compared to differences (e.g. Ratmeshwar, et a al., 2001). In addition, this perspective helps to underlie the multi-attribute model of consumer choice, which states that choice is made among alternatives that are compared based on a set of common attributes at varying levels of abstraction (Johnson, 1988). In contrast, it can be argued that distinctive attributes are employed to aid in uniqueness perceptions, which in turn, reduces typicality (Loken and Ward, 1990). In fact, marketing managers often attempt to develop products that are unique to others in terms of their distinctive attributes. For example, an automaker might release a new family car, but highlight the fact that it comes with features that cannot be found on any competing offering. Furthermore, consumer electronics are continuously promoted based on the latest developments in technology.

Next, we examine the familiarity and frequency of exposure to an item as it relates to typicality. This approach differs from the previous attribute sharing model, in that it focuses upon an items meaning, or one's frequency of exposure to the target item (Ashcraft 1978; Hampton and Gardiner 1983; Malt and Smith 1982). Scholars have debated on the merits of this approach. This debate is due to mixed results based on the vagueness of the meaningfulness and frequency of definitions related to the familiarity concept (Loken and Ward, 1990). In the domain of categorization research, familiarity is traditionally examined via the use of a perceived knowledge scale, whereby knowledge relating to an item is referred to as its meaningfulness (Malt and Smith 1982; McCloskey 1980). There have been a handful of studies that have explored the meaningfulness dimension in related to typicality (Hampton and Gardiner, 1983; McCloskey, 1980; Schwanenflugel and Ray, 1986). Both Hampton and Gardiner (1983) and Schwanenflugel and Ray (1986) found weak relationships between the meaningfulness ratings

and perceived typicality. In addition, researchers have also measured familiarity by asking respondents to list the attributes of words, which is assumed to be related to their meaningfulness. There have been a handful of studies that have supported this model, whereby the number of attributes listed was positively related to perceived typicality (Ashcraft 1978; Malt and Smith 1982). However, Woll and Craesser (1982) found that an increase is salience and a decrease in typicality enhanced once ability to remember individuals, concepts or events. Moreover, Loken and Ward (1990) argue that the meaningfulness approach is questionable.

Alternatively, frequency is often measured as knowledge of the repetitiveness to which an item appears in relation to a certain category (Barsalou, 1985). Indeed, the notion of feature frequency underlies many category learning models. Few studies have been conducted that have examined the frequency of instantiation and its impact on typicality. Barsalou (1985) proposed that frequency be measured in two ways. First, he asked participants about the frequency to which an object was encountered across all contexts in which this may occur. Second, he asked about their frequency of encountering this object as a member within a specific category. Despite measuring the concept of frequency, each item has differing implications. For example, a cup may be seen as a familiar object, but is rather unfamiliar in the electronics category. Indeed, Barsalou (1985) found that the latter measurement was in fact a better measure of typicality than the former. This was supported by literature that has stated that the more often a feature appears in a target category and less often it occurs in other categories, the more highly weighted the feature will be in category representation (Rosch and Mervis, 1975; Smith and Medin, 1981). Additional support has been found in select publications. For example, Barsalou, Huttenlocher and Lamberts (1998) found that an individuals' typicality in a category depended not only on feature similarity, but also on the frequency in which the individual has been encountered. Moreover, Nosofsky (1988) argued that similarity and frequency are joint, in that both can impact on category structure. In should

be noted as well, that the subjective frequency with which a person has experienced an object as an example of a particular category was used to assess frequency. However, Mervis, Catlin and Rosch (1976) found no support for the relationship between norms for word frequency and the rated typicality of category members. However, their measures are more related to the general frequency of occurrence, rather than the frequency of instantiation in a category (Loken and Ward, 1990). In addition, Rosch, Simpson and Miller (1976) manipulated the frequency in which members of an artificial category was presented. They found that frequency of presentation did not influence the relationship between typicality and category structure. Thus, research that has examined the relationship between typicality and familiarity and between typicality and frequency of instantiations vary and may be dependent on the measurement tool selected by the researcher.

In addition to the attribute sharing, familiarity and frequency models of typicality, research has also demonstrated another concept, whereby typicality is positively linked to an individual's attitude toward or overall evaluation of the item. The main premise underlying this notion that is typical objects are generally better liked (Barsalou 1985). Scholars have put forward several explanations for the attitude-typicality relationship. The first is that typical category items have more valued attributes. The second states that items that are more typical are more familiar, and thus better liked. The third posits that the relationship found between attitude and typicality is merely due to the measurement procedure (Loken and Ward, 1990). Within this model exists two approaches to understanding the relationship between attitude and typicality.

The first is the ideals construct developed by Barsalou (1983, 1985), in which he argues that typical category members have more value for fulfilling a goal, especially in categories that are "goal-derived". He suggests that individuals create categories that are either taxonomic or goal-derived. The former is defined as a category whereby members share attributes with each other to some degree. These categories are developed by one's own culture. In contrast, a goal-

derived category is developed ad hoc and relates to items that are correlated with goal achievement. These items may be psychically dissimilar and initially associated with each other in memory. Thus, the items are similar based on the goal in which they aid one in achieving. This differs greatly to the tenants outlined by the family resemblance approach, in which typically refers to feature physical similarities rather than on the extent to which an object may serve the goal or goals of a given category (Barsalou, 1983, 1985). For example, one may have a goal in which they want to lose weight. In this instance, food product that help one achieve this goal may be categorized, despite sharing little physical similarities. To support this idea, Barsalou (1985) generated both taxonomic and goal-derived category conceptualizations. In order to determine the extent to which the category members were ideal, he asked respondents to rate each item based the items' single ideal characteristic. The term ideal is dimension that is closely linked with a certain goal. A significant relationship was found between the single item measure and typicality. However, further research that has explored the concept of the ideal has done so without a clear direct link to an explicit goal (e.g. Lynch, Coley and Medin, 2000; Burnett, et al. 2005). In addition, the ideal representation view has received little empirical support outside of the initial findings (Barsalou, 1983, 1985). Thus, it may be argued that this approach has been not been utilized as the ideal view for typicality and thus, has escaped formal implementation. Interestingly Voorspoels, Vanpaemel and Storms (2011) attempted a new conceptualization of this approach, entitled the ideal dimension model. This model assumes that a single ideal dimension exists that is able to capture the typicality structure in a category. They find support for this notion, in that the ideal dimension model was able to account for the typicality gradient in the superordinate natural language categories that were examined.

Differing from this perspective, Loken and Ward (1987) developed the attribute structure model, whereby they argue that consumers judge the typicality of a target product not on its

family resemblance to other products, but on the degree to which the product has salient attributes that are related to the goals or uses of the category. This attribute-structure measure differs from that of Barsalou (1983, 1985) in that it focuses on a set of salient goals, rather a single goal, that are identified in a pre-test, rather than being subjectively chosen. The measure asks respondents to indicate the degree to which a category member possesses attributes that relevant to one's goals. Loken and Ward (1987) developed this measure based on the multi-attribute models, whereby one focuses upon the degree to which an object has a set of salient attributes. Thus, rather than just measuring attitude, this approach can explore the degree to which a category member's salient, goal-relevant attributes relate to its perceived typicality.

6.4.2 Assessments of Typicality

There is sustainable justification that suggests that attributes that are salient during evaluation are important in predicting and understanding typicality effects. This notion is supported by Murphy and Medin (1985), who state that similarity does not adequately explain category structure. Morover, Medin, Wattenmaker and Hampson (1987) state that concepts should be viewed as embedded in theories that are only coherent in that they correlate to one's background knowledge and naïve theories. Finally, Malt and Smith (1984) state that real world exemplars have properties that vary in salience and that this may alter one's judgement. This notion of salience has been examined in the accessibility-diagnosticity model, which states that accessible information is not used to form judgements when more diagnostic information is present (Feldman and Lynch, 1988). Information may be deemed diagnostic if it aids a consumer in assigning a specific product to one category. Alternatively, information that is hard to access, has multiple meanings or implies multiple categorizations is deemed to be non-diagnostic (Herr, et al. 1991). In their seminal work, Feldman and Lynch (1988) state that the probability to which information will be used to form inferences is based on three factors. First, the information needs to accessible at the time of input. The second factor relates to the

accessibility of alternative inputs. Finally, the extent to which information will be used to form a judgement is based on the diagnosticity of the input. Any single factor that enhances the accessibility of information should also lead to an increase in the extent to which the information will be used. Moreover, by enhancing the accessibility of a single piece of information the use of alternative inputs decreases (Herr, et al. 1991). According to choice architecture literature, a default attribute is often used by consumers to form a judgement, as the attribute is considered salient (Brown and Krishna, 2004). In this respect, we anticipate that the default attribute will be deemed diagnostic and aid in the formation of typicality assumptions and categorization. In fact, in singular evaluations, the presented information about a product attribute may set the evaluation agenda, as well-defined criteria for inferences may not be assessable (Sanbonmatsu, et al. 2003). This heuristic relates to a strategy whereby similarity is judged based on the available information and this is then used to predict behaviour (Kahneman and Tversky, 1972). This is due to the notion that available information is often highly representative of behaviour, while missing information is not. Therefore, a consumer may overweight the importance of the salient information when forming a product evaluation.

Firms may vary the extent to which a signal, or a cue, is deemed diagnostic by the consumer. In fact, products can be conceptualized as a range of cues that may serve to signal product quality (Rao and Monroe, 1988). The extent to which a cue is used to form a judgement depends on its diagnosticity. Product quality in this instance relates to a categorization process whereby a consumer uses diagnostic information to assign a product to a specific category (Feldman and Lynch, 1988). As diagnostic cues lead to more accurate categorization, diagnostic information is more likely to be used to assess product quality (Dick, et al. 1990). Thus, a default attribute is likely to be viewed as diagnostic, leading to more accurate categorization. This categorization will be used to judge green product's quality. In this instance, quality refers to the product's performance ability. If the product's default attribute is environmental, this

will aid consumers in categorizing it as a green product. However, given the performance liability often associated with green products, such categorization may be harmful.

Table 42 Key Literature for Green Product Typicality

Author(s) and Year	Title and Journal	Methodology	Main Variables	Research Summary
Rosch and Mervis (1975)	Family Resemblances: Studies in the Internal Structure of Categories Cognitive Psychology	Experimental Design	Categorization, family resemblance, attributes	In this study, the author posits that category members are considered prototypical when they possess similar attributes to members of the same category and a small number of similar attributes to members of other categories. Furthermore, they explore the role of family resemblance, which positively impacted upon ease of learning, reaction time, identification and rating of prototypicality.
Tversky (1977)	Features of Similarity Psychological Review	Modelling	Feature similarity, contrast model	The author develops a new approach to similarity, whereby objects are represented as collections of features. Thus, similarity is based on feature matching. This notion is tested and supported via the contrast model.
Medin and Schaffer (1978)	Context Theory of Classification Learning Psychological Review	Experimental Design	Classification, exemplar	The authors explore the context theory of classification, whereby judgements are assumed to derive exclusively from stored exemplar information. This notion was

				supported in four experimental studies.
Cohen (1982)	The Role of Affect in Categorization: Toward a Reconsideration of the Concept of Attitude Association for Consumer Research	Conceptual	Categorization, schema, evaluation	In this paper, the author presents an alternative conceptualization of an individual's evaluative process.
Barsalou (1985)	Ideals, Central Tendency, and Frequency of Instantiation as Determinants of Graded Structure in Categories Journal of Experimental Psychology: Learning, Memory and Cognition.	Experimental Design	Categorization, ideals, frequency of instantiation	In three studies, the author posits and finds support for the notion that both ideals and frequency of instantiation play a large role in determining graded structure.
Feldman and Lynch (1988)	Self-generated validity and other effects of measurement on belief, attitude, intention and behavior. Journal of Applied Psychology.	Conceptual	Accessibility-diagnosticity, beliefs, attitudes	The authors present a theory that aims to predict that an earlier response will be used as a basis for another response, if the former is accessible and diagnostic and other accessible inputs.
Loken and Ward (1990)	Alternative Approaches to Understanding the Determinants of Typicality	Experimental Design	Typicality, feature similarity, goal achievement	The authors explored the notion of typicality and found evidence that several variables may be determinants, including evaluative

				constructs, family resemblance and frequency of instantiation.
	Journal of Consumer Research			

6.5 Chapter Summary

In this section, we explore past research in the domain of choice architecture, cognitive style and product typicality. An important decision for firms is the development of new and innovative product attributes. In this instance, such attributes are beneficial to the environment. Derived from choice architecture, we posit that brands can either develop environment attributes that are default and require user deactivation, or opt-in, whereby the consumer must activate the attribute which is otherwise off during product usage. In this chapter, we extensively discussed the role of optionality and its can impact on product evaluations. In addition to this, we propose that one's evaluation of optionality can be impacted by their style of thinking. While an in-depth examination into this line of thinking will be explored in the hypotheses development chapter of this thesis, it is posited whether one has a holistic or an analytical mindset will determine how they evaluate a green product featuring an optional environmental attribute.

The final section of this chapter explored product typicality. In this research, typicality refers to the extent to which consumers perceive the presented green product as similar to other green products. Thus, we explored research into categorization and diagnosticity. It is posited that environmental attribute optionality will alter ones' perception of the green products typicality, as optionality can alter which attribute is default and thus, which attribute is deemed diagnostic. However, one's style of thinking may alter this judgement, as analytical individuals are able to view separate attributes to form inferences, rather than the whole.

In the next chapter, we develop the hypotheses based on the literature presented. These hypotheses will be tested and represent the second empirical part of this thesis.

Chapter 7 – Hypotheses Development for Green Attribute Optionality

7.1 The Impact of Green Attribute Optionality on Performance Evaluations

In order to concept of green attribute optionality, we examine the role of choice architecture. Specifically, we explore the role of defaults, which is the setting or option that a consumer will receive if they do not state otherwise (Brown and Krishna, 2004). A previously stated, an optional green attribute refers to an attribute that enhances the product environmental standing while not being needed for the base product to function. In this context, a green attribute may or may not be presented as the default. There are two main default strategies found within choice architecture. The first is the opt-in strategy, whereby the green attribute is not default, but may be activated by the user. The second is the opt-out approach in which the green attribute is default, but can be deactivated if the user so desires. This latter approach has been shown to be a powerful tool in enhancing compliance in a variety of domains (e.g. Theotokis and Manganari, 2015).

However, we posit that choice architecture may produce different results in the product evaluation context compared to the service or policy domains. A default is a carrier of meaning, transmitting information about the product to the consumer (Briley, Morris and Simonson, 2000). They are one of many marketing tools available to the choice architect to alter product perceptions. In particular, when considering a product among alternatives, consumers may use the default in order to reduce uncertainty and infer value (Brown and Krishna, 2004). This value inference may be damaging if the default attribute is environmentally friendly due to the negative correlation between greenness and performance. While an opt-out strategy does represent a form of optionality, consumers are likely to shift their reference point to include information about the default in their evaluation (Brown and Krishna, 2004), regardless of whether the attribute is opt-out or non-optional. In other words, despite the ability of consumers to opt-out of the green attribute, by placing it as the default, consumers will infer a reduction

in performance. In contrast, the opt-in approach may be ideal in the green product context. For example, a car may operate normally by default, but feature an eco-mode that can be activated to save fuel and reduce emissions. By allowing consumers to opt-in, the green attribute is no longer default and thus, will no longer be the focus of consumers who are attempting to infer the product's value. In this instance, optionality is achieved, whereby the green attribute is not perceived to have impacted on other product subsystems, but instead, only provides additional utility. Thus:

H6a: An opt-in (opt-out and non-optional) green attribute optionality strategy will have a positive (negative) impact on performance evaluations.

H6b: An opt-in (opt-out) green attribute optionality strategy will have a positive (negative) impact on performance evaluations.

7.2 The Moderating Role of Cognitive Style

There exists considerable research that has demonstrated the importance of an individuals' style of thinking on their judgments and perceptions. For instance, Zhu and Meyers-Levy (2009) found that when a product was placed on a table, holistic thinkers were more likely to view it as continuous parts of a larger whole, whereby there was a relationship between the table and the product. Alternatively, analytical thinkers viewed the product and the table as separate items, indicating the holistic thinkers, by contrast, are more included to view things as interconnected. This was supported by Masuda and Nisbett (2001) who found that holistic thinkers when asked to describe what they saw in pictures, reported more relationships between the main and the background objects that did analytical thinkers. For analytical thinkers, the separate features remained independent.

Based on this, it can be argued that holistic thinkers view attributes as connected thus forming a whole. In other words, when shown a product with multiple attributes, it is not the separate

attributes and their categories that form judgments and evaluations, but rather the relationship between the attributes. When an opt-out green attribute strategy is presented, the environmental is the default and is likely to be used by consumers to form a judgement, as that attribute is salient and thus, diagnostic. Holistic consumers will use this information to generate performance inferences, as the environmental attribute is deemed to be connected to other relevant product attributes. Due to the performance liability, this degrades their performance evaluations. The same may be said for when the green attribute is not default in the opt-in green attribute strategy. The green attribute becomes buried in other product subsystems and will likely not be used to assess its value. Thus, holistic thinkers are likely to posit that the product does not belong in the green product category, and thus, performance evaluations will enhance.

However, we posit that the effect of a green attribute optionality strategy will be negated when an analytical mindset is induced. Past work has shown that analytical thinkers are able to separate attributes from the whole and categorize them separately based on specific differences (Becerra, Badrinarayanan and Kin, 2013). In other words, if an analytical consumer were to view an orange, they would form a judgement based on the individual slices. This line of thinking suggests that analytical thinkers can see past the whole and judge a product based on its separate attributes. Therefore, we posit that analytical thinkers will be able to see past the default attribute and judgement the product based on its optional environmental attribute, whether that attribute is opt-in or opt-out.

H7: The negative effect of an opt-out green attribute optionality strategy on performance evaluations will be mitigated when individuals have an analytical cognitive style. In contrast, the effect will remain when individuals have a holistic cognitive style.

7.3 The Mediating Role of Green Product Typicality

Categories are mental groupings of objects that are considered relevant to one another, yet different to other objects (Rosch, et al. 1976). From the consumer behaviour perspective, categories may include products that a consumer finds related to some degree (Gershoff and Frels, 2014). Thus, categorization allows one to judge the extent to which a product is similar to other objects in a given category (Alba and Hutchinson, 1987). Moreover, firms can aid in the categorization process by giving consumers a plausible category label, or attribute information, that may suggest the new product's category membership. One way that this may be accomplished is through a green attribute optionality strategy.

When the green attribute is made the default via the opt-out strategy, it more likely to be perceived as similar to the attributes of the green product category. In other words, the product will be viewed as more typical of the green product category as it shares some degree of similarity. Moreover, as consumers often assess value via the default attribute, one may perceive that there is similarity between the product visible features and the features found in the green product category. Thus, when this occurs, stored information regarding green products will be transferred to the new product (Medin and Schaffer, 1978). In contrast, such a knowledge transfer is unlikely to take place if the attribute is opt-in, as it is not the default and thus not viewed as being tightly coupled with other subsystems.

Therefore, we posit that when a default green attribute is presented in the opt-out condition, the product will be viewed as more typical of the green product category. Inferences will then be generated based on within-category similarity (Murphy and Ross, 1994), reducing performance evaluations compared to an opt-in green attribute strategy. Thus:

H8: The opt-out, compared to opt-in, green attribute optionality condition will enhance green product typicality, which is in turn will reduce performance evaluations.

7.4 Chapter Summary

In this chapter, we presented the hypotheses to test empirically the objectives of this research related to green attribute optionality. In total, three hypotheses were developed to test the impact of green attribute optionality on performance evaluations. Moreover, we hypothesized the moderating variable of cognitive style and the mediating variable of green product typicality. We aim to test these predictions in three experimental studies.

Table 43 Summary of experiments in this research

	Section	Relationship/effect examined.	Type of design	Hypotheses tested
Experiment 4	Section 8.2	The effect of green attribute optionality (opt-in and opt-out) on performance evaluations.	One-way design (3 conditions).	H6
Experiment 5	Section 8.3	The effect of green attribute optionality and cognitive style on performance evaluations.	Factorial Design (2x2)	H6, H7
Experiment 6	Section 8.4	The effect of green attribute optionality and cognitive style on performance evaluations through the mediating variable of green product typicality.	Factorial Design (2x2)	H6, H7, H8

Chapter 8 – Experimental Results for the Role of Green Attribute Optionality

8.1 Chapter Overview

In this chapter, we will present the design and the results for the experimental studies conducted in relation to the second part of this thesis (green attribute default policy). In each section, we present the design of the experimental stimuli, as well as the layout of the questionnaire. Second, the relevant preliminary data screening techniques are shown to examine the distribution of the sample and to cope with any values that may be missing. Third, the main data analyzation method is shown. Finally, at the end of the chapter we present a brief discussion of the results.

8.2 Experiment 4 – Green Attribute Default Policy

In this chapter, the design, analysis and the results of Experiment 4 are presented. In line Experiment 3, we further explore the role of green attribute optionality and its impact on performance evaluations, while ceasing to examine green product communication strategy. As stated previously in Chapter 7, green attribute optionality relates to a green attribute that is attached to a product and designed to enhance its environmental credentials, but is not required to operate the core product.

Moreover, to examine green attribute optionality, Experiment 4 extends past work in the area of choice architecture (e.g. Brown and Krishna 2004; Häubl and Murray 2003; Levav, et al. 2010, Martin and Norton 2009). Choice architecture literature argues that when factors in the decision environment influence consumer evaluations, changes in those factors may impact on an individuals' evaluation of a specific product. These alterations may take the form of either an opt-in or an opt-out attribute strategy. In Experiment 3, the opt-in approach was examined alongside a non-optional condition. To extent those findings, we introduce the opt-out

approach, whereby consumer choice is considered to be presumed, and unless stated otherwise, is automatically assigned to the default.

Thus, in this study we examine both the opt-in and the opt-out green attribute optionality strategies, along with a non-optional condition as a control. Two DVs are selected, notably that of performance evaluations and green evaluations. In doing so, we aim to show that any perceived performance enhancement generated by green attribute optionality is not related to an anticipated reduction in greenness.

8.2.1 Design of the Experiment

In Experiment 4, we employ a one-factor experimental design to examine the role of green attribute optionality on both performance and green evaluations. In order to manipulate green attribute optionality, we created a press release for a new environmentally friendly washing machine. The press release format is ideal, as it allows the researcher to provide respondents with product-related information and specific elements of interest. Moreover, this approach is appealing as it is able to generate a high level of external validity and experimental flexibility (Johar and Pham, 1999).

Each press release features two main sentences containing product related information. This information remained constant in all conditions. The first sentence introduced the product by stating that a fictitious brand (Brand X) "*have announced a new environmentally friendly washing machine that features an eco-mode.*" Next, the aforementioned eco-mode is described in detail, stating that it "*helps reduce the machine's environmental impact by reducing water and electricity consumption*". In the control, non-optional condition, this represented the entire press release. However, in both opt-in and opt-out conditions, an additional sentence was developed. In the opt-in condition, respondents read about the modes ability to be activated ("*This new eco-friendly mode may be activated by pressing a button on the machine*"),

compared to the opt-out condition that featured deactivation information ("*This new eco-friendly mode may be deactivated by pressing a button on the machine*"). The full manipulations can be seen in Table 45.

Table 44 Press Releases in Experiment 4

Non-optional	Opt-in	Opt-out
Press Release from Brand X:	Press Release from Brand X:	Press Release from Brand X:
Brand X have announced a new environmentally friendly washing machine that features an eco-mode. This new eco-mode helps reduce the machine's environmental impact by reducing water and electricity consumption.	Brand X have announced a new environmentally friendly washing machine that features an eco-mode. This new eco-mode helps reduce the machine's environmental impact by reducing water and electricity consumption.	Brand X have announced a new environmentally friendly washing machine that features an eco-mode. This new eco-mode helps reduce the machine's environmental impact by reducing water and electricity consumption.
	This new eco-friendly mode may be activated by pressing a button on the machine.	This new eco-friendly mode may be deactivated by pressing a button on the machine.

In addition, both the opt-in and opt-out conditions contained images of the washing machines control panel. In order to generate the images, we employed Adobe Photoshop CS6 for Windows. A generic front control panel was located and all brand information was removed. We also removed the text above a main switch on the left side of the panel and inserted the text "eco-mode activation" or "eco-mode deactivation". An example of the images can be seen in Table 46.

Following the development of the manipulations, we uploaded them to Qualtrics in preparation for data collection.

Table 45 Visual manipulation used in Experiment 4

Opt-in	Opt-out
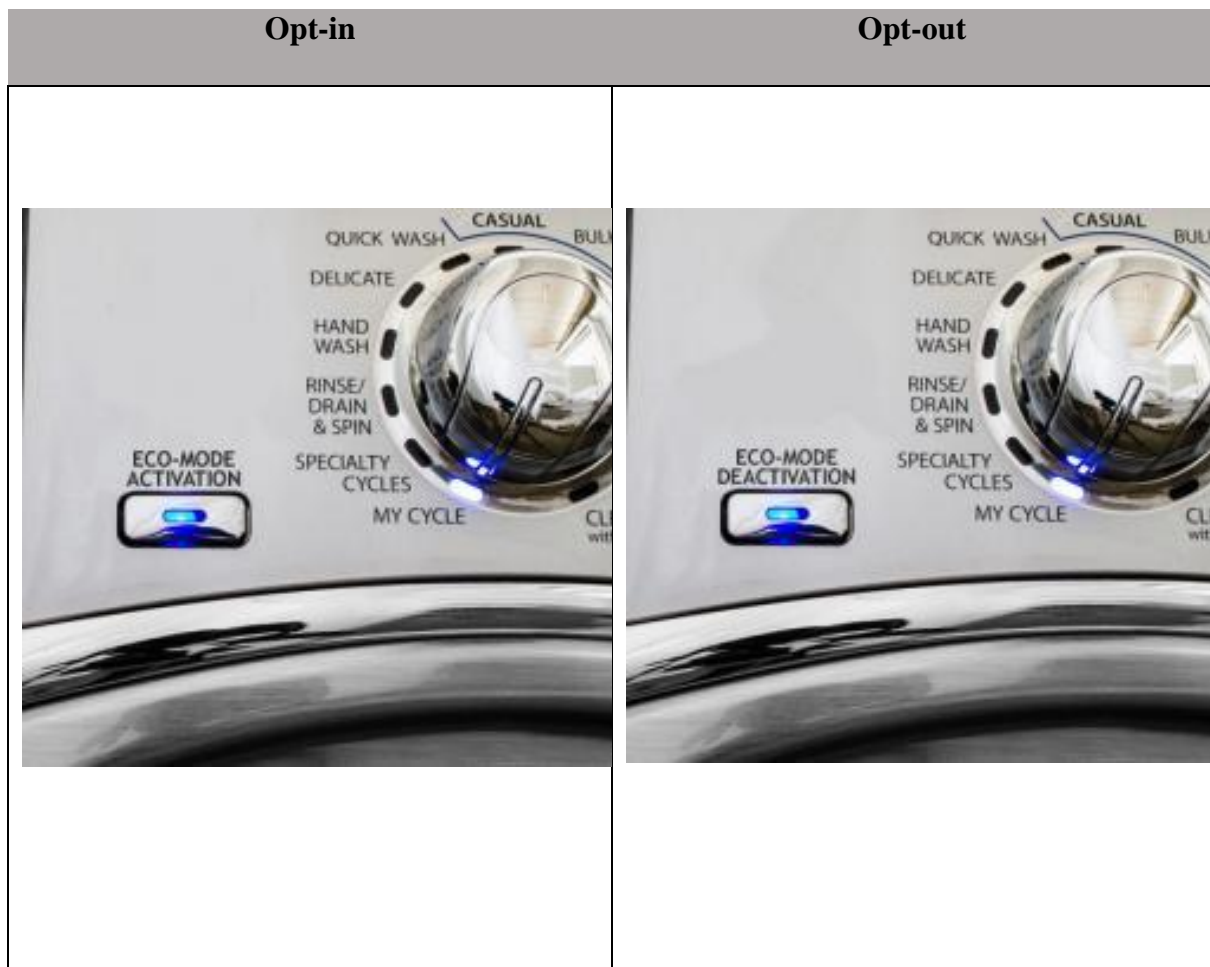
8.2.2 Dependent variables

In order to measure the performance evaluations of the washing machine, we presented respondents with a three-item seven-point bipolar scale derived from Campbell and Goodstein (2001) (*"not effective/effective"*, *"poor performance/good performance"* and *"low quality/high quality"*). Similarity, a two-item seven-point bipolar scale was employed for green evaluations *("Not environmentally friendly/environmentally friendly", "not green/green"*) in order to measure the extent to which respondents perceived the product as green.

Next, we included the control measure of environmental consciousness. To measure the degree to which respondents were environmentally conscious, we presented a four-item seven-point Likert scale anchored by 1 = *strongly disagree* to 7 = *strongly agree* ("*Mankind is severely*

abusing the environment", "I am very concerned about the environment", "Major social changes are necessary to protect the natural environment" and *"The so-called "ecological crisis" facing humankind has been greatly exaggerated"*).

Next, we included three manipulation checks to measure the extent to which respondents understood the optionality manipulations. The first was a dichotomous scale asking respondents to answer 'Yes' or 'No' to a statement reading "*In order to operate the machine, I needed to press a button to activate the EcoX technology*". Next, on the same dichotomous scale, we asked respondents whether the "*EcoX was the default option of the washing machine*". Finally, on a dichotomous with the items 'Regular Mode' and 'EcoX', we asked respondents "*If I did not press any button, this washing machine would operate on…"*.

Finally, we measured demographic variables, such as gender and education level. Gender was assessed via a dichotomous scale with 'Male' and 'Female'. Following this, we asked respondents to report their level of education based on the highest qualification gained. Table 47 provides an overview of the scales used in Experiment 4 and the full off-line survey can be seen in Appendix D.

Table 46 Summary of measures in Experiment 4

Measure	Item(s)	Type of Measure and Anchoring
Performance Evaluations	"Not Effective – Effective" "Poor Performance – Good Performance" "Low Quality – High Quality"	Bipolar type scale
Green Evaluations	"Not environmentally friendly - environmentally friendly" "not green - green"	Bipolar type scale
Environmental Consciousness	"Mankind is severely abusing the environment." "I am very concerned about the environment." "Major social changes are necessary to protect the natural environment." "The so-called "ecological crisis" facing humankind has been greatly exaggerated."	Likert type scale anchored: 1 = "strongly disagree" to 7 = "strongly agree"
Manipulation Check 1	"In order to operate the machine, I needed to press a button to activate the EcoX technology"	Dichotomous: 'Yes' and 'No'
Manipulation Check 2	"EcoX was the default option of the washing machine."	Dichotomous: 'Yes' and 'No'
Manipulation Check 3	"If I did not press any button, this washing machine would operate on…"	Dichotomous: 'Regular Mode' and 'EcoX'
Gender	"Please indicate your gender."	Dichotomous: 'Male' and 'Female'
Education	"Please indicate the education level that you have completed"	Nominal with order: 'High School', 'Associates Degree', 'Bachelor's Degree' and 'Post Graduate'

8.2.3 Data Collection and Preliminary Screening

The procedure implemented for Experiment 4 following the same approach used by the first three experiment studies in this research. The three experimental conditions that were generated to manipulate green attribute optionality were placed onto Qualtrics. Randomization was enabled to ensure that respondents were only subjected to one of the three manipulations. Following exposure to the manipulations, the items for performance evaluations, green

evaluations, environmental consciousness were presented. Following this, the two manipulation checks and demographic variables for gender and education level were displayed.

After uploading the survey to Qualtrics, a link was generated that was placed on the platform Amazon Mechanical Turk (MTurk). Similar to past experiments in this research, respondents were only allowed to access the survey is they had previously completed 5,000 tasks with an approval rating of 98% and located in the United States. In total, we collected 138 usable responses. The data was subsequently downloaded to be used on SPSS 22 for Windows. As Qualtrics allows researchers to force respondents to answer questions before advancing, there was no missing data in the experiment.

In total 13 respondents had to be removed from the dataset and excluded from further analysis due to failure of the manipulation checks related to green attribute optionality. We screened for manipulation check failures through a cross-tabulation of the answers selected in the manipulation checks with the actual manipulations shown to respondents. After this process, we were left with 125 usable responses in the main dataset.

8.2.4 Reliability analysis of the performance evaluations scale

In order to proceed with data analysis, a composite score for performance evaluations had to be created. Before this was conducted, we checked the reliability of the items via a Cronbach's alpha test. The reliability result demonstrated a good fit between the three items ($\alpha = 0.93$), indicating a high level of internal consistency. Thus, we generated a composite variable to be used as the DV in Experiment 4 ($M = 5.42$, $SD = 1.08$).

8.2.5 Reliability analysis of the green evaluations scale

Next, we conducted a reliability analysis for the two-items relating to green evaluations. A simple correlation was conducted, which showed that both items were strongly related to each

other (r = .897, p < .001). Based on this result, we created a composite score for green evaluations (M = 5.71, SD = 1.10).

8.2.6 Reliability analysis of the environmental consciousness

Finally, we examined the reliability of the environmental consciousness scale. A Cronbach's alpha test indicated strong reliability between the four items (α = .91). Therefore, we were able to create a composite score for this variable (M = 5.39, SD = 1.41).

8.2.7 Descriptive statistics

The full descriptive statistics can be seen in Table 48. It was found that in Experiment 4, we had a slightly higher percentage of females compared to males (N = 60, 48%).

Table 47 Distribution of gender for Experiment 4

Gender	Frequency	Percent	Cumulative Percent
Male	60	48%	48%
Female	65	52%	100.0%
Total	125	100.0	

In relation to education level, we found that the majority of respondents had a Bachelor's degree (N = 46, 36.8%), similar to the previous experiments in this research. High school diploma was the second highest education level attainted (N = 35, 28%), following by both Associate's degree (N = 22, 17.6%) and post graduate (N = 22, 17.6%). The full descriptive statistics can be found in Table 49.

Table 48 Distribution of education level for Experiment 4

Gender	Frequency	Percent	Cumulative Percent
High School	35	28%	28%
Associates' Degree	22	17.6%	45.6%
Bachelors' Degree	46	36.8%	82.5%
Post Graduate Degree	22	17.6%	100.0
Total	162	100.0	

Next, we examined the descriptive statistics of the main DV in Experiment 4, performance evaluations. The results indicated a mean above the midpoint and no issues with the skewness and the kurtosis of the distribution. This information can be found in Table 50.

Table 49 Descriptive statistics for performance evaluations in Experiment 4

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
3.50	3.50	7.00	5.00	5.74	.934	-.497	.186	-.502	.370

Moreover, we conducted a descriptive statistics analysis for the DV of green evaluations. Interestingly, the mean score was considerably higher than the midpoint, indicating that respondents generally thought the product was green. In addition, no problems were found in relation to skewness and the kurtosis of the distribution. The full information can be seen in Table 51.

Table 50 Descriptive statistics for green evaluations in Experiment 4

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
4.00	3.00	7.00	6.00	5.97	1.01	-.839	.186	-.124	.370

Finally, we analysed the descriptive statistics for environmental consciousness. In general, the mean score indicates an average level of environmental consciousness among the sample. Furthermore, there were no problems with the skewness and the kurtosis of the distributions. The full descriptive statistics for environmental consciousness can be found in Table 52.

Table 51 Descriptive statistics for environmental consciousness in Experiment 4

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
6.00	1.00	7.00	5.75	4.73	1.29	-.791	.186	.343	.370

8.2.8 Normality assumptions of the measured variables

Based on the descriptive statistics, we can conclude that the distribution for the dependent variables, as well as the control variable, met the normality assumptions. This indicates no special violation of normality and thus, we proceeded with data analysis.

8.2.9 Analysis and Results

To analyse the collected data, an Analysis of Covariance (ANCOVA) was employed. We aimed to test whether the IV of green attribute optionality had an impact on performance evaluations, as well as green evaluations, taking into account the covariate of environmental consciousness.

8.2.10 Test for the fit of the covariates

Before we conducted the ANCOVA, we tested a series of assumptions to assess whether the covariate, environmental consciousness, was an adequate fit in this study. A bivariate correlation test was conducted and indicated that environmental consciousness was not strongly correlated with the dependent variable of performance evaluations (r = .162). Thus, we perceived a strong fit of the covariate. The full correlation results can be seen in Table 53.

Table 52 Correlations between the DV and the Covariate in Experiment 4

		Performance Evaluations	**Environmental Consciousness**
Performance Evaluations	Pearson Correlation	1	.162
	Sig. (2-tailed)		.071
	N	125	125
Environmental Consciousness	Pearson Correlation	.162	1
	Sig. (2-tailed)	.071	
	N	125	125

Finally, to test for the homogeneity of the regression slope of the covariate, we examined whether the interaction between the IV of green attribute optionality and the covariate of environmental consciousness was significantly related to performance evaluations. We found no significant relationship for the IV and the covariate on the DV (F (1, 73) = 1.453, p = .123).

Based on the tests conducted, we can assume that environmental consciousness is a good fit to be included in Experiment 4 as a covariate. Next, we conduct the ANCOVA in order to examine the impact of the IV green attribute optionality on performance evaluations and green evaluations, along with the covariate of environmental consciousness.

8.2.11 Descriptive statistics and Levene homogeneity test for ANCOVA

The descriptive statistics generated by the ANCOVA indicated that the respondents were evenly distributed across the three conditions. The minimum level of respondents was 39 in the opt-out condition with a maximum of 44 in the opt-in condition (see Table 54).

Table 53 Descriptive statistics for the ANCOVA in Experiment 4

Green Attribute Optionality	Mean	STD. Deviation	N
Non-optional green attribute	5.18	1.08999	42
Opt-in green attribute	5.79	.99668	44
Opt-out green attribute	5.2393	1.06499	39
Total	5.42	1.07901	125

Next, we examined the Levene Test for the Error Variances and found no significant result (F (1, 122) = .168, p = .846). Moreover, the experiment conditions were randomized and the variables met the normality assumptions. Thus, the null hypothesis of equal variances is rejected and we continued with the primary analysis. The result can be seen in Table 55.

Table 54 Levene test for ANCOVA in Experiment 4

F	DF1	DF2	SIG.
.168	1	122	.846

8.2.12 One-Factor ANCOVA analysis

In order to examine impact of green attribute optionality on performance evaluations with the covariate of environmental consciousness, we conducted a one-factor ANCOVA. We found a significant main effect $(F (1, 121) = 4.364, p < .05)$. Follow up analysis revealed that the non-optional condition $(M = 5.18)$ significantly differed $(t = -2.723, p < .05)$ from the opt-in condition $(M = 5.80)$. More importantly, respondents rated the performance ability of the product significantly higher $(t = 2.457, p < .05)$ in the opt-in condition $(M = 5.80)$ compared to the opt-out condition $(M = 5.24)$. There was no significant difference $(t = -.237, p = .813)$ between the opt-out $(M = 5.24)$ and the non-optional conditions $(M = 5.18)$. Thus, we confirm H6 that the opt-in condition, as compared to both the non-optional and the opt-out condition, enhances performance evaluations for the green product. The results can be seen in Figure 13.

Figure 13 The effect of green attribute optionality on performance evaluations
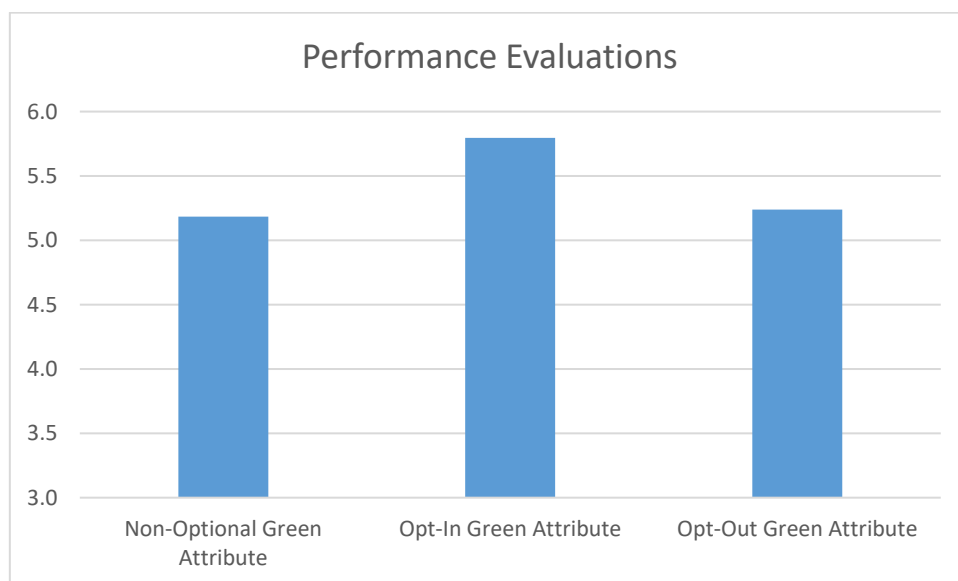
Next, green evaluations was included as the DV. We conducted an ANCOVA that showed a non-significant direct effect ($F = (1,121) = 2.087$, $p = .128$) with environmental consciousness as a control variable. Each green attribute optionality condition had a mean score above the midpoint, the highest being non-optional (M = 5.94), followed by opt-in (M = 5.73) and opt-out (M = 5.71). Thus, we can say that, despite the role of green attribute optionality, respondents did not perceive a difference in the product's environmental characteristics. The findings are shown in Figure 14.

Figure 14 The effect of green attribute optionality on green evaluations
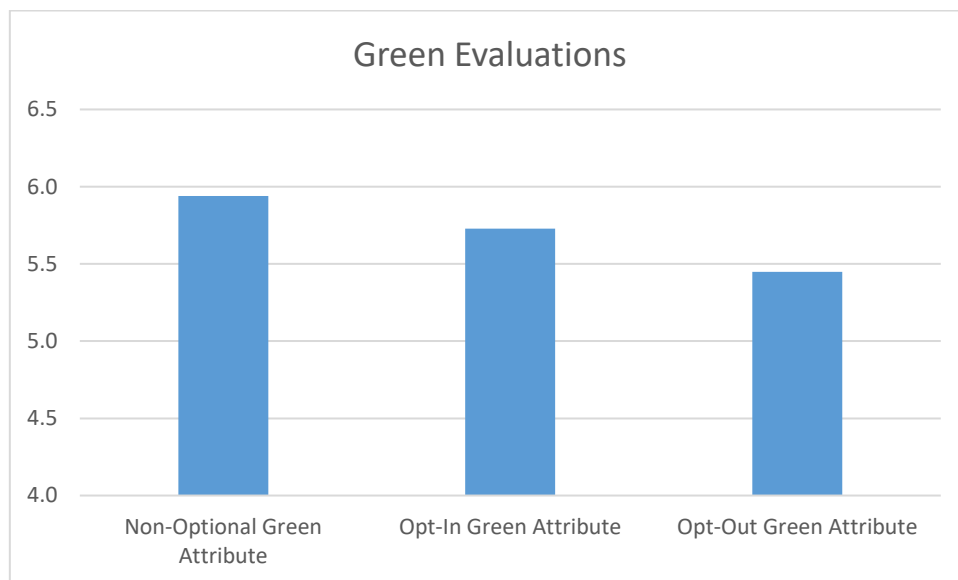
8.2.13 Discussion

Experiment 4 indicated that green attribute optionality offers a significant insight into how consumers evaluate green product performance. While maintaining green evaluations, respondents rated the performance ability of a product featuring an opt-in green attribute significantly higher than that of the non-optional condition. Interestingly, there was a significant difference between opt-in and opt-out, indicating that green attribute optionality is not a uniform concept, containing within it two very distinct green attribute approaches. On the one hand, the ability to active the green attribute, and thus have it inoperative by default reduced

green performance inferences being transferred to the base product. However, the beneficial aspect of optionality is negated when the green attribute is active by default via the opt-out condition.

Moreover, we showed that green attribute optionality does not significantly alter green evaluations. Specifically, the product was viewed as environmentally friendly regardless of whether the green attribute was optional or non-optional. Thus, while green attribute optionality is able to offer varying perceptions of product performance, it does not in fact, alter perceptions of greenness.

8.3 – Experiment 5: How an Individual's Mindset Impacts on Green Attribute Optionality Evaluation

"The advantage of the analytical approach is that it is widely applicable, and it can provide a considerable amount of quantitative information even with a relatively poor resolving power."

(Christian de Duve)

8.3.1 Section Overview

In this chapter, we present the design, analysis and the results of Experiment 5, which aims to extend the results of Experiment 4, as well as introduce a boundary condition. In line with the design of the previous study, this experiment examines the role of green attribute optionality, namely an opt-in and an opt-out approach, on performance evaluations and green evaluations. In this experiment, however, the non-optional condition is removed, as it did not significantly differ from that of the opt-out approach. In addition, we examine the moderating role of cognitive style.

As was discussed in Chapter 2, cognitive style contains within it two distinct mind-sets. The first is holistic, which is defined as a cognitive orientation towards the context, or the field as a whole. Alternatively, an analytical mindset allows an individual to detach the object from the field, focusing rather on separate components and placing them into categories (Nisbett et al. 2001). Past research has shown evidence that these differences in thinking styles can have an impact on consumer judgments and decisions (e.g. Monga and John 2010). Based on this, we posit that cognitive style will moderate the relationship between green attribute optionality and performance evaluations.

8.3.2 Design of the Experiment

This study was designed following a similar approach to that of Experiment 4 in relation to green attribute optionality. We again followed the press release format and provided respondents with both product information as well as the specific elements related to green attribute optionality. In addition, we used a fictitious brand name called the *"Rosebud Company"*.

The two press releases for opt-in and opt-out contained two sentences that remained constant across all conditions. These sentences contained information about the environmental product, specifically, what made it environmental. The first sentence stated that "*The Rosebud Company has announced a washing machine that is designed to be environmentally friendly"*. The second sentence gave details on how the machine was environmentally friendly by describing the EcoX feature ("*the EcoX feature that helps lower the machine's environmental impact by reducing water and electricity consumption*"). To manipulate green attribute optionality, a sentence was placed at the bottom of the press release. In the opt-in condition, this statement read *"The user can activate the EcoX feature by pressing a button on the machine"*. In the opt-out condition, the statement read that "*The user can deactivate the EcoX feature by pressing a button on the machine"*. The full manipulations can be found in Table 56.

Table 55 Press Releases in Experiment 5

Opt-in	Opt-out
Press Release from the Rosebud Company:	Press Release from the Rosebud Company:
The Rosebud Company has announced a washing machine that is designed to be environmentally friendly. This is due to the EcoX feature that helps lower the machine's environmental impact by reducing water and electricity consumption.	The Rosebud Company has announced a washing machine that is designed to be environmentally friendly. This is due to the EcoX feature that helps lower the machine's environmental impact by reducing water and electricity consumption.
The user can activate the EcoX feature by pressing a button on the machine	The user can deactivate the EcoX feature by pressing a button on the machine

As in Experiment 4, both the opt-in and opt-out conditions contained images of the washing machines' control panel. Adobe Photoshop CS6 for Windows was used to generate the visual stimuli. We used a generic image of a washing machine control panel and ensured that all brand information was removed. Next, we removed the text above a main switch on the left side of the panel and inserted the text "eco-mode activation" or "eco-mode deactivation". An example of the images can be seen in Table 57.

Table 56 Visual manipulation used in Experiment 5

Opt-in	Opt-out

Prior to the green attribute optionality manipulations, we included the two manipulations for cognitive style. A considerable amount of research in area of cognitive style have employed writing tasks. For example, Kühnen, Hannover, and Schubert (2001) asked respondents to think about the differences (versus the similarities) between cats and dogs. In doing so, differing mind-sets were activated among respondents.

Kühnen et al. (2001) have proposed that acquiring the independent self (e.g., traits) may require developing a context-independent (analytic) thinking style, whereas acquiring the interdependent self (e.g., relations) involves developing a context-dependent, or holistic style of thinking. Therefore, we manipulated cognitive style by having participants think and write about a particularly meaningful event that took place in their lives. In the holistic condition,

they were asked write "a paragraph describing a particularly meaningful event, occasion, or activity that you took part in with your family and/or friends", as compared to analytical condition that asked respondents to write about an event that "you took part in entirely by yourself". This task induced relational or item-specific processing. The full manipulations can be seen in Table 58.

Table 57 Cognitive Style manipulation used in Experiment 5

Analytical	Holistic
You are asked to think about and write a paragraph describing a particularly meaningful event, occasion, or activity that you took part in entirely by yourself and explain why doing so alone made the episode especially meaningful.	You are asked to think about and write a paragraph describing a particularly meaningful event, occasion, or activity that you took part in with your family and/or friends and explain why doing so with these other parties made the episode especially meaningful.

To ensure that this task manipulated styles of thinking, we conducted a pre-test. Respondents (N = 40) were exposed to the cognitive style manipulation and asked to complete several items from the holistic thinking scale that measures focus on the environment ("*The whole rather than its parts, should be considered in order to understand a phenomenon*", "*It is more important to pay attention to the whole than its parts*", "*The whole is greater than the sum of its parts*", "*It is more important to pay attention to the whole context rather than the details*" and "*It is not possible to understand the pieces without looking at the whole picture*"; Choi, et al. 2003). This item set proved to be reliable via the Cronbach's alpha test ($\alpha = .87$). As expected, holistically primed participants had a significantly ($F_{(1, 38)} = 4.887$, $p < .05$) higher

overall score (M = 5.52) than did analytically primed (M = 4.82). The results can be seen in Figure 15.

Figure 15 Results of the Cognitive Style Pre-Test
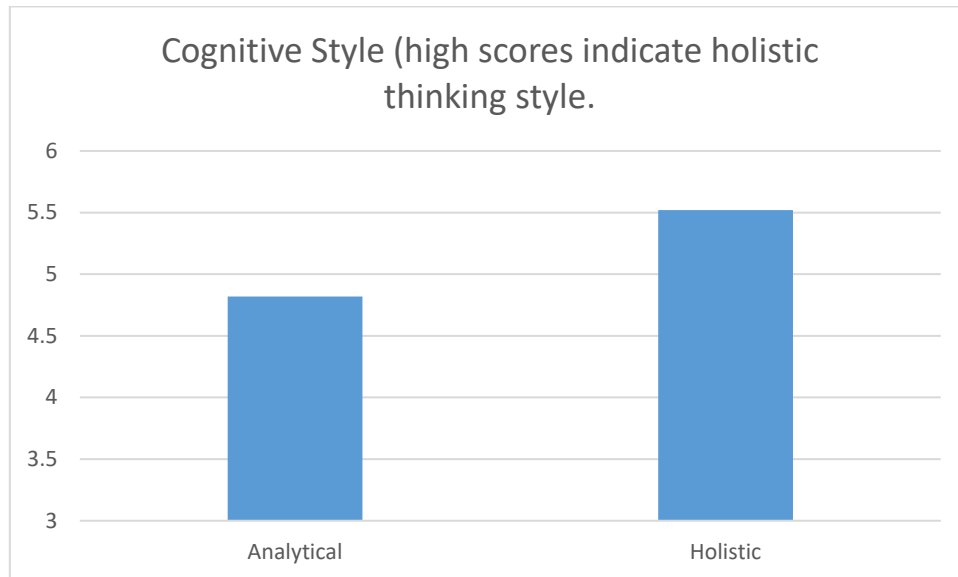
8.3.3 Dependent Variables

Unlike the past four experiments, we introduce a new measurement scale for both performance evaluations and green evaluations. Derived from the work of Newman, et al. (2014), we measured performance evaluations on a two-item seven-point Likert scale, anchored by 1 = *Strongly Disagree* to 7 = *Strongly Agree ("How would you rate the cleaning efficacy of this new washing machine" and "How would you rate the ability of this new washing machine to clean your clothing")*. We altered the performance evaluations as we feel it more accurately measures product specific performance. Green evaluations were also measured on a two item seven-point scale anchored by 1 = *Strongly Disagree* to 7 = *Strongly Agree.* Based on the work of Gershoff and Frels (2014), we asked respondents whether "*This washing machine deserves to be called environmentally friendly*" and "*A person who cares about the environment would be likely to buy this washing machine*".

As with Experiment 4, we included the control measure of environmental consciousness. To measure this variable, we presented a four-item seven-point Likert scale anchored by 1 = *strongly disagree* to 7 = *strongly agree* ("*Mankind is severely abusing the environment", "I am very concerned about the environment", "Major social changes are necessary to protect the natural environment" and "The so-called "ecological crisis" facing humankind has been greatly exaggerated*").

Next, two manipulation checks were created. These were designed to measure the extent to which respondents understood the optionality manipulations. Both items were measured via a dichotomous scale with 'Yes' and 'No' answers. The first item read "*In order to operate the machine, I needed to press a button to activate the EcoX technology*". The second stated "*EcoX was the default option of the washing machine*".

Finally, demographic variables were measured. Gender was assessed via a dichotomous scale with 'Male' and 'Female'. Table 59 provides an overview of the scales used in Experiment 5 and the full offline survey can be found in Appendix E.

Table 58 Summary of measures in Experiment 5

Measure	Item(s)	Type of Measure and Anchoring
Performance Evaluations	"How would you rate the cleaning efficacy of this new washing machine" "How would you rate the ability of this new washing machine to clean your clothing"	Likert type scale anchored: 1 = "strongly disagree" to 7 = "strongly agree"
Green Evaluations	"This washing machine deserves to be called environmentally friendly" "A person who cares about the environment would be likely to buy this washing machine"	Likert type scale anchored: 1 = "strongly disagree" to 7 = "strongly agree"
Environmental Consciousness	"Mankind is severely abusing the environment." "I am very concerned about the environment." "Major social changes are necessary to protect the natural environment." "The so-called "ecological crisis" facing humankind has been greatly exaggerated."	Likert type scale anchored: 1 = "strongly disagree" to 7 = "strongly agree"
Manipulation Check 1	"In order to operate the machine, I needed to press a button to activate the EcoX technology."	Dichotomous: 'Yes' and 'No'
Manipulation Check 2	"EcoX was the default option of the washing machine."	Dichotomous: 'Yes' and 'No'
Gender	"Please indicate your gender."	Dichotomous: 'Male' and 'Female'

8.3.4 Data Collection and Preliminary Screening

The procedure for the collection data mimicked the ones used in Experiment 4, as well as the others. The four experimental conditions used to manipulate both green attribute optionality and cognitive style were placed onto Qualtrics. We activated the randomization feature to ensure that respondents were only subjected to one of the two green attribute optionality conditions and one of the two cognitive style conditions. Following exposure to the manipulations, the items for performance evaluations, green evaluations and environmental

consciousness were presented. Following this, the two manipulation checks and the demographic variable was displayed.

Following completion of the Qualtrics upload, the survey link was created and placed on the platform Amazon Mechanical Turk (MTurk). Similar to past experiments in this research, respondents were only allowed to access the survey if they had previously completed 5,000 tasks with an approval rating of 98% and located in the United States. In total we recruited 187 usable responses. After data collection, the data was downloaded for use on SPSS 22 for Windows. There were no missing data in the dataset.

In total, 30 respondents were removed from the dataset due to failure of the manipulation checks. These responses were excluded from further analysis. Differences between the responses provided in the manipulation checks and the actual manipulation presented were uncovered via cross-tabulation. Moreover, we examined the paragraphs that were written in relation to the cognitive style manipulation. We concluded that each remaining respondent completed the task to a satisfactory level. After this process, we were left with 157 responses in the main dataset that would be used for examination.

8.3.5 Reliability analysis of the performance evaluations scale

Before generating a composite score for performance evaluations, we conducted a reliability analysis via a simple bivariate correlation test. The test indicated strong reliability between the two items ($r = .795$, $p < .001$). Based on this, we created a composite score to be used in the main analysis ($M = 5.32$, $SD = .89$).

8.3.6 Reliability analysis of the green evaluations scale

Next, we examined the reliability of the two items used to measure green evaluations via a bivariate correlation analysis. The test demonstrated strong reliability between the items ($r =$

.687, p < .001). Thus, we generated a composite score to be used in the main analysis (M = 5.82, SD = .89).

8.3.7. Reliability analysis of the environmental consciousness

Finally, we conducted a Cronbach's alpha test for the control variable of environmental consciousness. The test indicated good reliability between the four items (α = .88) and thus, a composite score was created (M = 5.53, SD = 1.25).

8.3.8 Descriptive statistics

The descriptive statistics for gender can be seen in Table 60. It was found that in Experiment 5, we had 79 males as compared to 78 females.

Table 59 Distribution of gender for Experiment 5

Gender	Frequency	Percent	Cumulative Percent
Male	79	50.3%	50.3%
Female	78	49.7%	100.0%
Total	157	100.0	

Next, we examined the descriptive statistics for the DV of performance evaluations. The results a mean score above the midpoint and no problems with the skewness and the kurtosis of the distribution. This information can be found in Table 61.

Table 60 Descriptive statistics for performance evaluations in Experiment 5

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
5.00	2.00	7.00	5.50	5.32	.89158	-.671	.194	.354	.385

In addition, we examined the descriptive statistics for green evaluations (see Table 62). As with performance evaluations, the mean score was slightly above the midpoint. Thus, the product was viewed as green. There were no problems in relation to the skewness and the kurtosis of the distribution.

Table 61 Descriptive statistics for green evaluations in Experiment 5

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
4.00	3.00	7.00	6.00	5.82	.8895	.557	.194	-131	.385

Finally, we examined the descriptive statistics for the control variable of environmental consciousness. The mean score was above the midpoint, indicating a higher than average level of environmental consciousness among respondents. In relation to the skewness and the kurtosis of the distribution, we found no problems. The full statistics are shown in Table 63.

Table 62 Descriptive statistics for environmental consciousness in Experiment 5

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
6.00	1.00	7.00	5.75	5.53	1.25	-1.110	.194	1.074	.385

8.3.9 Normality assumptions of the measured variables

Based on the descriptive statistics, we can conclude that the distribution for the dependent variables, as well as the control variable, met the normality assumptions. As this indicates that there is no special violation of normality, we can proceed with the analysis.

8.3.10 Analysis and Results

To analyse the collected data, we conducted an Analysis of Covariance (ANCOVA). We aim to show that the IVs of green attribute optionality and cognitive style impact on the DV of performance evaluations, taking into account the covariate of environmental consciousness.

8.3.11 Test for the fit of the covariates

Before the main analysis was conducted, we again examined the covariate of environmental consciousness to see whether it's a good fit for this experiment. A bivariate correlation test was conducted and indicated that environmental consciousness was not strongly correlated to performance evaluations (r = .085). This result demonstrates a good fit between the covariate and the DV (Tabachnik and Fidell, 2007). Table 64 presents the results of this test.

Table 63 Correlations between the DV and the Covariate in Experiment 5

		Performance Evaluations	Environmental Consciousness
Performance Evaluations	Pearson Correlation	1	.085
	Sig. (2-tailed)		.288
	N	157	157
Environmental Consciousness	Pearson Correlation	.085	1
	Sig. (2-tailed)	.288	
	N	157	157

Next, we examine the final assumption of homogeneity of the regressions slopes to understand the relationship between the covariate and the DV, taking into account differences across the experiment groups. The result demonstrated that the interaction between the IV of green attribute optionality and the covariate of environmental consciousness on performance evaluations was insignificant (F (1, 95) = .945, p = .502). Moreover, the interaction between the covariate and the IV of cognitive style on performance evaluations was also insignificant

$(F(1, 95) = .823, p = .744)$. Based on this, we feel that environmental consciousness is a suitable control variable.

8.3.12 Descriptive statistics and Levene homogeneity test for ANCOVA

The ANCOVA generated descriptive statistics showed an even balance of respondents between experimental conditions. The minimum level of respondents was 35 in the opt-out holistic condition, while the maximum was 44 in the opt-in holistic condition. The full results can be seen in Table 65.

Table 64 Descriptive statistics for the ANCOVA in Experiment 5

Green Attribute Optionality	Cognitive Style	Mean	STD. Deviation	N
Opt-In Green Attribute	Analytical	5.36	.89228	42
	Holistic	5.55	.79839	44
	Total	5.45	.84585	86
Opt-Out Green Attribute	Analytical	5.38	.75946	36
	Holistic	4.94	1.03449	35
	Total	5.16	.92495	71
Total	Analytical	5.37	.82837	78
	Holistic	5.28	.95322	79
	Total	5.32	.89158	157

The Levene Test for Equality of the Error Variances confirmed no significant differences across the four groups (F (3, 153) = 2.092, p = .104). The result can be seen in Table 66.

Table 65 Levene test for ANCOVA in Experiment 5

F	DF1	DF2	SIG.
2.092	3	153	.104

8.3.13 Main effects of the ANCOVA analysis

In order to examine the effect of green attribute optionality on performance evaluations, moderated by cognitive style, with environmental consciousness as a control variable, we performed a two-way ANCOVA. As predicted, we found a significant main effect, whereby performance evaluations decreased in the opt-out condition (M = 5.16), while in the opt-in condition, performance evaluations increased (M = 5.45; F (1, 152) = 4.248, p < .05). Therefore, we can again find support for H6 and the positive impact of an opt-in green attribute strategy on performance evaluations. The results are displayed in Figure 16. Moreover, there was no significant direct effect of cognitive style on performance evaluations (F (1, 152) = .703, p = .403).

Figure 16 Main effect of the IV Green Attribute Optionality on the DV of Performance Evaluations
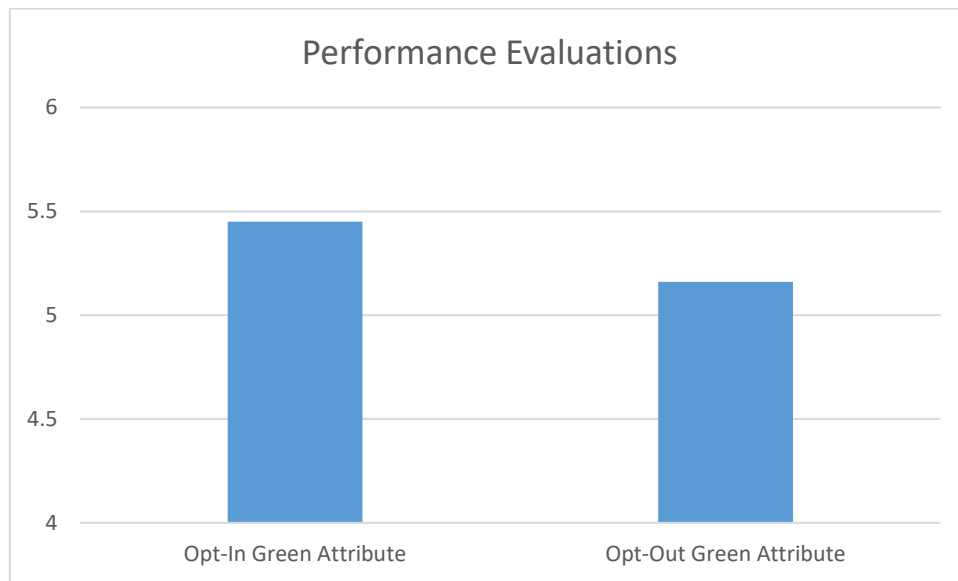
8.3.14 Interaction effects of the ANCOVA analysis

Next, the moderating variable of cognitive style was examined. A significant interaction was found (f = (1, 152) 4.694, p < .05), where the analytical condition negated the effect of green attribute optionality. Further analysis showed that in the analytical condition, the effect of opt-in (M = 5.36) and opt-out (M = 5.38) attribute optionality conditions on performance evaluations was non-significant (t = -.094, p = .925). In the holistic condition, the effect was significant (t = 2.923, p < .05), whereby the opt-in condition had a more positive effect on performance evaluations (M = 5.55) compared to the opt-out condition (M = 4.94). Therefore, we find support for H7 and the results are shown in Figure 17.

Figure 17 Interaction effect of the IVs Green Attribute Optionality and Cognitive Style on the DV of Performance Evaluations
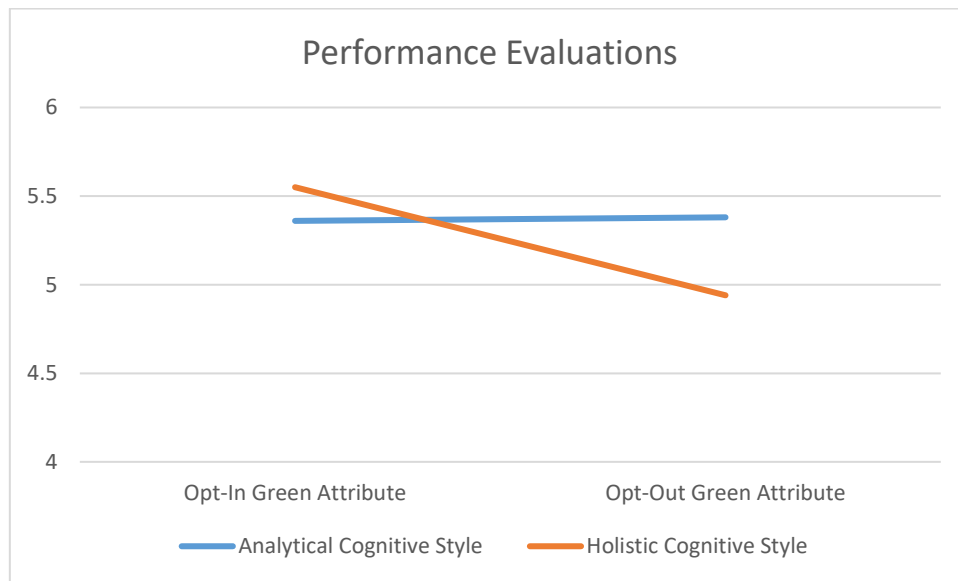
Next, we examine the DV of green evaluations in a two-way ANCOVA with environmental consciousness as a control. The results indicated both an insignificant direct effect ($M_{(opt-in)}$ = 5.74, $M_{(opt-out)}$ = 5.93; $F (1, 152)$ = 1.724, p = .191) between green attribute optionality and greenness evaluations, as well as a non-significant ($M_{(opt-in\_analytical)}$ = 5.75, $M_{(opt-out\_analytical)}$ = 6.06, $M_{(opt-in\_holistic)}$ = 5.74, $M_{(opt-out\_holistic)}$ = 5.79; $F (1, 152)$ F = .651, $p < .421$) interaction between green attribute optionality and cognitive style. The results are shown in Figure 18.

Figure 18 Interaction effect of the IVs Green Attribute Optionality and Cognitive Style on the DV of Green Evaluations
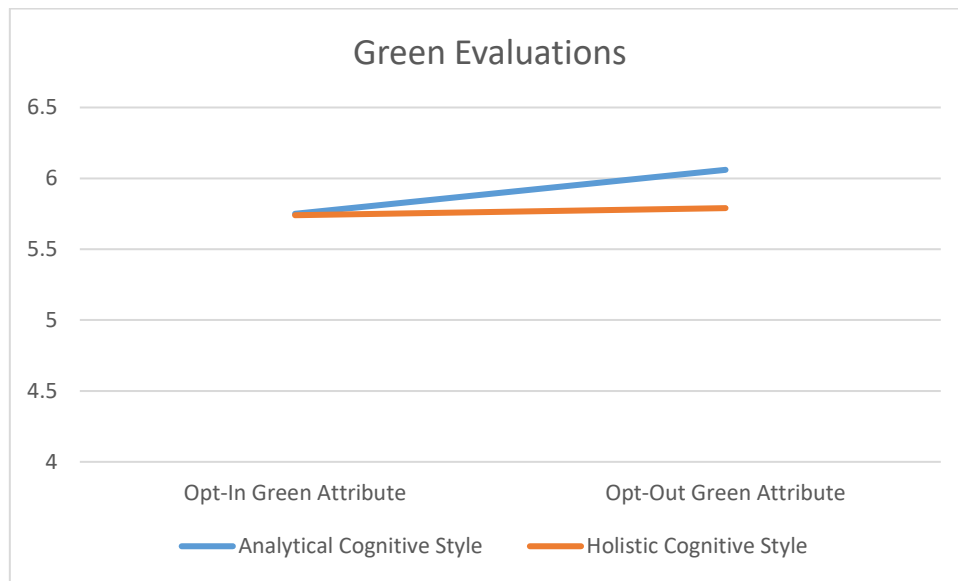
8.3.15 Discussion

The results of Experiment 5 present two interesting findings. First, we find additional support for the beneficial role of the green attribute optionality strategy opt-in. Compared to the opt-out condition, we find that when the green attribute is not active by default, performance evaluations enhance for the target green product. Moreover, we again find that this effect is not driven by perceived trade-offs. In other words, performance is enhanced, but not at the expense of perceived greenness. Thus, an opt-in strategy maintains the product's environmental standing, while enhancing its perceived ability to perform.

Second, we extend past work examining the role of cognitive style and its impact on consumer evaluations (e.g. Monga and John, 2010) by demonstrating the impact of an individual's thinking style on their performance evaluation of an environmental product. Through a priming manipulation, we show that respondents with an analytical mindset do not differ in their performance evaluation between both green attribute optionality strategies (opt-in vs. opt-out). As an analytical mindset involves a detachment from the whole and enhanced focus on the parts, this result confirmed our assumptions laid out in Chapter 8. In contrast, a holistic thinking

style produced similar results to that of Experiment 4. Thus, even when the green attribute is default, as shown in the opt-out condition, an analytical consumer is able to see past the default façade to understand that it may be deactivated and thus, not required for the functioning of the base product.

8.4 – Experiment 6: The Role of Green Product Typicality

A typical vice of American politics is the avoidance of saying anything real on real issues.

(Theodore Roosevelt)

8.4.1 Section Overview

This chapter introduces the mediating variable of green product typicality and demonstrates its potential damaging effects on green product performance evaluations. As stated in Chapter 2, categorization allows consumers to judge the extent to which a product is similar to other objects in a given category (Alba and Hutchinson 1987). The creation of additional categories may be aided by the notion of typicality. Typicality may be enhanced when firms employ a plausible category label or product signals that aid in categorization. In this experiment, we wanted to examine the role of typicality and whether it may be enhanced or reduced by green attribute optionality. Moreover, we aim to test whether cognitive style moderates this relationship.

We examine the proposed relationships in a 2 (green attribute optionality: opt-in and opt-out) X 2 (cognitive style: analytical vs. holistic) between subjects factorial experiment. The mediating effect of green product typicality on the relationship between the IVs and the DV of performance evaluations is also examined and supported in this study. In the following sections, the design, analysis and results of Experiment 6 are presented.

8.4.2 Design of the Experiment

In Experiment 6, we altered the manipulation of green attribute optionality by employing an advertisement for a fictitious kettle. Unlike the press release format, this manipulation was designed to mimic a real-world advertisement and featured a headline, a visual image and product attributes. A fictitious brand was created, called Rosebud, along with a product name, the T3A Kettle. At the top of the advertisement, this information was presented ("*The Rosebud T3A Kettle*"). Directly below the headline were five product attributes. Each attribute was held constant in all conditions. The first attribute indicated that the kettle was "*eco-friendly*". The remaining attributes were "*push to open lid*", "*360-degree base with cord storage*", "*concealed heating element*", and a "*removable, washable filter*". To manipulate green attribute optionality, an asterisk was placed next the top attribute of "*eco-friendly*". At the bottom of the advertisement, in the opt-in condition a statement read that the "*kettle features an eco-friendly mode, which can reduce electricity consumption*", and that the eco-friendly mode was "*activated by pressing a button on the appliance*". In the opt-out condition, a statement was presenting indicating that the "*kettle is eco-friendly by reducing electricity consumption*". "*The eco-friendly mode can be deactivated by pressing a button on the appliance*". In addition, two visuals were placed in the advertisement. On the left side of the page, a kettle was shown that remained constant in all conditions. On the right side, a control panel was shown. Within the control panel, using Adobe Photoshop CS6, we incorporated a button that read "*eco-mode on*" in the opt-in condition and "*eco-mode off*" in the opt-out condition. Table 67 presents both manipulations.

Table 66 Press Releases in Experiment 6

Opt-In	
Opt-Out	

As in Experiment 5, we included two manipulations of cognitive style prior to advertisement exposure. We manipulated cognitive style by having participants think and write about a particularly meaningful event that took place in their lives. In the holistic condition, they were asked to write "*a paragraph describing a particularly meaningful event, occasion, or activity that you took part in with your family and/or friends*", as compared to analytical condition that asked respondents to write about an event that "*you took part in entirely by yourself*". This task induced relational or item-specific processing. The full manipulations can be seen in Table 68.

Table 67 Cognitive Style manipulation used in Experiment 6

Analytical	Holistic
You are asked to think about and write a paragraph describing a particularly meaningful event, occasion, or activity that you took part in entirely by yourself and explain why doing so alone made the episode especially meaningful.	You are asked to think about and write a paragraph describing a particularly meaningful event, occasion, or activity that you took part in with your family and/or friends and explain why doing so with these other parties made the episode especially meaningful.

8.4.3 Dependent variables

As in Experiment 5, we measured performance evaluations based on the work of Newman, et al. (2015). A two-item seven-point Likert scale, anchored by 1 = *Strongly Disagree* to 7 = *Strongly Agree ("How would you rate the cleaning efficacy of this new washing machine" and "How would you rate the ability of this new washing machine to clean your clothing"*) was employed. Next, the mediating variable of green product typicality was measured based on an item battery employed by Campbell and Goodstein (2001) and Ma, et al. (2015). A four item bipolar scale was used ("*very typical/extremely atypical", "good fit/bad fit", "not at all unusual/very unusual" and "matches very well/matches not at all"*).

Environmental consciousness was included as a control variable. To measure this variable, we presented a four-item seven-point Likert scale anchored by 1 = *strongly disagree* to 7 = *strongly agree* ("*Mankind is severely abusing the environment", "I am very concerned about the environment", "Major social changes are necessary to protect the natural environment" and "The so-called "ecological crisis" facing humankind has been greatly exaggerated*").

Next, we presented two manipulation checks related to green attribute optionality. The first asked participants whether the "*Eco-Mode was the default option of the kettle*". This was measured on a dichotomous scale 'Yes' and 'No'. The second read *"If I did not press any button, this kettle will operate on..."*. This was also measured on a dichotomous scale with 'Regular' and 'Eco-Mode'.

Finally, demographic variables were measured including gender. Gender was assessed via a dichotomous scale with 'Male' and 'Female'. Table 69 provides an overview of the scales used in Experiment 6. The full offline survey can be found in Appendix F.

Table 68 Summary of measures in Experiment 6

Measure	Item(s)	Type of Measure and Anchoring
Performance Evaluations	"How would you rate the cleaning efficacy of this new washing machine" "How would you rate the ability of this new washing machine to clean your clothing"	Likert type scale anchored: 1 = "strongly disagree" to 7 = "strongly agree"
Green Product Typicality	"very typical - extremely atypical" "good fit - bad fit" "not at all unusual - very unusual" "matches very well - matches not at all"	Bipolar scale
Environmental Consciousness	"Mankind is severely abusing the environment." "I am very concerned about the environment." "Major social changes are necessary to protect the natural environment." "The so-called "ecological crisis" facing humankind has been greatly exaggerated."	Likert type scale anchored: 1 = "strongly disagree" to 7 = "strongly agree"
Manipulation Check 1	"Eco-Mode was the default option of the kettle."	Dichotomous: 'Yes' and 'No'
Manipulation Check 2	"If I did not press any button, this kettle will operate on..."	Dichotomous: 'Regular' and 'Eco-Mode'
Gender	"Please indicate your gender."	Dichotomous: 'Male' and 'Female'

8.4.4 Data Collection and Preliminary Screening

As in Experiment 4 and 5, the four experimental conditions used to manipulate both green attribute optionality and cognitive style were placed onto Qualtrics. The randomization feature was activated, so that respondents were only subjected to one of the two green attribute optionality conditions and one of the two cognitive style conditions. Next, the DVs, mediator, control variable, manipulation checks and the demographic variable were presented.

After survey design completion, Qualtrics generated a survey link that was placed on the platform Amazon Mechanical Turk (MTurk). Similar to past experiments in this research, respondents were only allowed to access the survey is they had previously completed 5,000

tasks with an approval rating of 98% and located in the United States. We collected a total of 181 responses after which the data was downloaded for use in SPSS 22 for Windows. No missing data was evident.

In total, 32 respondents were removed from the dataset due to manipulation check failures and they would no longer be included in the analysis. We did a cross-tabulation between the answers provided in the manipulation checks with the actual manipulation in which the respondents were exposed. Following their removal, we were left with 149 responses in the main dataset that would be used for further analysis.

8.4.5 Reliability analysis of the performance evaluations scale

To ensure the reliability of the two items used to measure performance evaluations, we conducted a reliability analysis via a simple bivariate correlation test. The test indicated strong reliability between the two items ($r = .886$, $p < .001$). Based on this, we created a composite score to be used in the main analysis ($M = 5.37$, $SD = 1.01$).

8.4.6 Reliability analysis of the green product typicality scale

As this was the first use of the typicality scale, a reliability analysis must be conducted. We employed the Cronbach's alpha test, which demonstrated strong reliability of the four items ($\alpha = 79$) and thus, a composite score was created ($M = 3.15$, $SD = 1.05$).

8.4.7 Reliability analysis of the environmental consciousness

Finally, the control variable of environmental consciousness was examined via the Cronbach's alpha test. The results indicated a good reliability ($\alpha = .96$). Thus, a composite score was created ($M = 5.56$, $SD = 1.35$).

8.4.8 Descriptive statistics

It was found in Experiment 6 that there were more male respondents compared to females (N = 86, 57.7%). The results for gender can be seen in Table 70.

Table 69 Distribution of gender for Experiment 6

Gender	Frequency	Percent	Cumulative Percent
Male	86	57.7%	57.3%
Female	63	42.3%	100.0%
Total	157	100.0	

Next, we examined the descriptive statistics for the DV of performance evaluations. The mean score was above the midpoint and we found no problems with the skewness and the kurtosis of the distribution. This information can be found in Table 71.

Table 70 Descriptive statistics for performance evaluations in Experiment 6

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
5.00	2.00	7.00	5.50	5.37	1.01075	-.218	.199	-.309	.395

In addition, we measured the descriptive statistics for the mediating variable of green product typicality. Given the optional attribute, we were not surprised to see a mean score below the midpoint. There were no problems in relation to the skewness and the kurtosis of the distribution. The full results can be seen in Table 72.

Table 71 Descriptive statistics for green product typicality in Experiment 6

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
5.00	1.00	6.00	3.00	3.15	1.05291	.184	.199	-.106	.395

Finally, we examined the descriptive statistics for the control variable of environmental consciousness. The mean score was above the midpoint, as in Experiment 5. In relation to the skewness and the kurtosis of the distribution, we found no problems, despite being close to the cut off of -2 and +2. The full statistics are shown in Table 73.

Table 72 Descriptive statistics for environmental consciousness in Experiment 6

Range	Minimum	Maximum	Median	Mean	STD. Deviation	Skewness		Kurtosis	
						Statistic	STD. Error	Statistic	STD. Error
6.00	1.00	7.00	6.00	5.56	1.35135	-1.314	.199	1.806	.395

8.4.9 Normality assumptions of the measured variables

Based on the statistics we presented above, we can conclude that the distribution for the dependent and mediating variables as well as the control variable, met the normality assumptions. Interestingly, environmental consciousness had high level of kurtosis and a low level of skewness, but it was within the desired range. Thus, we believe that there is no special violation of normality and can proceed with the analysis.

8.4.10 Analysis and Results

Data analysis was conducted via an Analysis of Covariance (ANCOVA), while the mediator was analysed via INDIRECT and Process model 7. In this experiment, we aim to show that the

IVs of green attribute optionality and cognitive style impact on the DV of performance evaluations and that this is mediated by green product typicality. Moreover, we include the covariate of environmental consciousness.

8.4.11 Test for the fit of the covariates

Before we conducted the main analysis, we wanted to ensure that the covariate was a proper fit for this experiment. A bivariate correlation analysis was conducted and showed that environmental consciousness was not strongly correlated to performance evaluations ($r = .354$). This result demonstrates a good fit between the covariate and the DV (Tabachnik and Fidell, 2007). Table 74 presents the results of this test.

Table 73 Correlations between the DV and the Covariate in Experiment 6

		Performance Evaluations	Environmental Consciousness
Performance Evaluations	Pearson Correlation	1	-.229
	Sig. (2-tailed)		.005
	N	150	150
Environmental Consciousness	Pearson Correlation	-.229	1
	Sig. (2-tailed)	.005	
	N	150	150

Next, we test the homogeneity of the regressions slopes. The results showed that the interaction between the IV of green attribute optionality and the covariate of environmental consciousness on performance evaluations was insignificant ($F (1, 91) = .919$, $p = .541$). In addition, the interaction between the covariate and the IV of cognitive style on performance evaluations was also insignificant ($F (1, 91) = .902$, $p = .554$). Based on these results, we continue our analysis with environmental consciousness as a control variable.

8.4.12 Descriptive statistics and Levene homogeneity test for ANCOVA

The descriptive statistics generated by the ANCOVA showed a decently even balance between the experimental conditions. The lowest number was 31 for the opt-in and the holistic condition and 49 for the opt-in and the analytical condition. The full results can be seen in Table 75.

Table 74 Descriptive statistics for the ANCOVA in Experiment 6

Green Attribute Optionality	Cognitive Style	Mean	STD. Deviation	N
Opt-In Green Attribute	Analytical	5.28	1.07142	48
	Holistic	5.94	.87314	31
	Total	5.54	1.04321	80
Opt-Out Green Attribute	Analytical	5.26	.95195	39
	Holistic	5.08	.94072	31
	Total	5.18	.94423	70
Total	Analytical	5.27	1.01387	87
	Holistic	5.51	.99792	62
	Total	5.37	1.01075	150

The Levene Test for Equality of the Error Variances confirmed no significant differences across the four groups (F $(3,146)$ = .531, p = .662; see Table 76).

Table 75 Levene test for ANCOVA in Experiment 6

F	DF1	DF2	SIG.
.531	3	146	.662

8.4.13 Main effects of the ANCOVA

In order to examine the main effect of green attribute optionality, we combined the two performance evaluation measured to form a composite that was used as the dependent variable. We also included environmental consciousness as a control variable. We found a significant direct effect ($F (1, 144) = 7.914$, $p < .05$) between green attribute optionality and performance evaluations with environmental consciousness as a covariate with a higher level of performance evaluations in the opt-in (M = 5.54) than the opt-out (M = 5.18) conditions. The results can be seen in Figure 20. Thus, we can confirm H6.

Figure 19 Main effects of the IV green attribute optionality on performance evaluations.
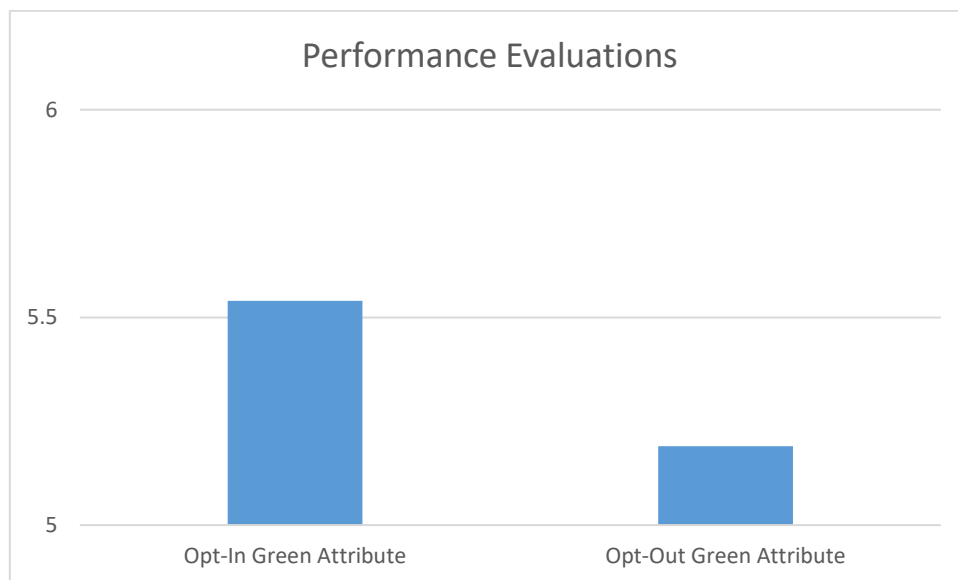
8.4.14 Interaction effects of the ANCOVA

A two-way ANCOVA revealed a significant interaction between green attribute optionality (opt-in vs. opt-out) and cognitive style (holistic vs. analytical) $(F (1, 144) = 4.196, p = <.05)$. As was observed in Study 2, performance evaluations remained constant $(t = .113, p = .910)$ across both green attribute optionality conditions $(M_{opt-in} = 5.28$ vs. $M_{opt-out} = 5.26)$ when respondents were primed with an analytical thinking style. However, those in the holistic condition had significantly $(t = 3.708, p < .05)$ lower performance evaluations in the opt-out $(M = 5.08)$ compared to the opt-in $(M = 5.94)$ condition. Thus, we can again confirm H7. Figure 19 displays the results.

Figure 20 Interaction effects of the IVs green attribute optionality and cognitive style on performance evaluations.
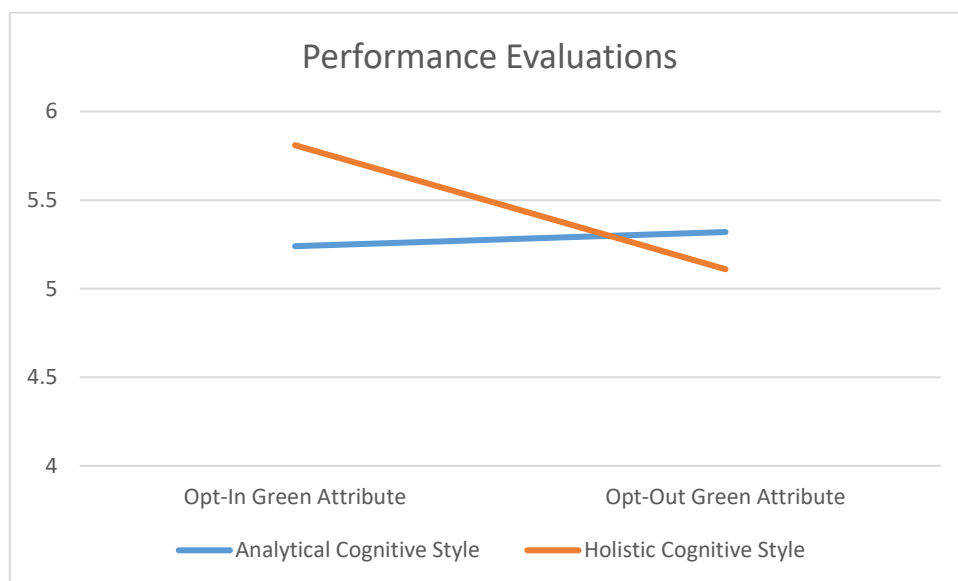
8.4.14 Mediation analysis

Next, we examined the mediating variable of green product typicality in the relationship between green attribute optionality and performance evaluations. The analysis was performed via the bootstrapping method employed by the INDIRECT add-on for SPSS (Preacher and Hayes, 2008). Green attribute optionality was included as the predictor, green product typicality was the mediator and performance evaluations was the outcome. The recommend

5,000 bootstrapping resamples was chosen along with a 95% BCCI. The results showed a significant main effect of green attribute optionality on performance evaluations (β = -.359 SE = .16, t = -2.194, p < .05). Moreover, the IV of green attribute optionality was significantly related on the mediator of green product typicality (β = .3420, SE = .17, t = 1.999, p < .05) and the path from the mediator to the DV was significant (β = -.1968, SE = .08, t = -2.537, p < .05). The mediation results indicated a mediation, as the direct effect became insignificant at a 95% confidence interval following the introduction of the mediator (β = -.2921, SE = .16, t = -1.792, p = .07. The BBCI values also confirm the mediation with an LLCI of -.1896 and an ULCI of -.0036. Figure 21 displays the mediation results.

Figure 21 Direct and mediated paths between Green Attribute Optionality and Performance Evaluations

Analytical Cognitive Style (LLCI = -.1597; ULCI = .1576)
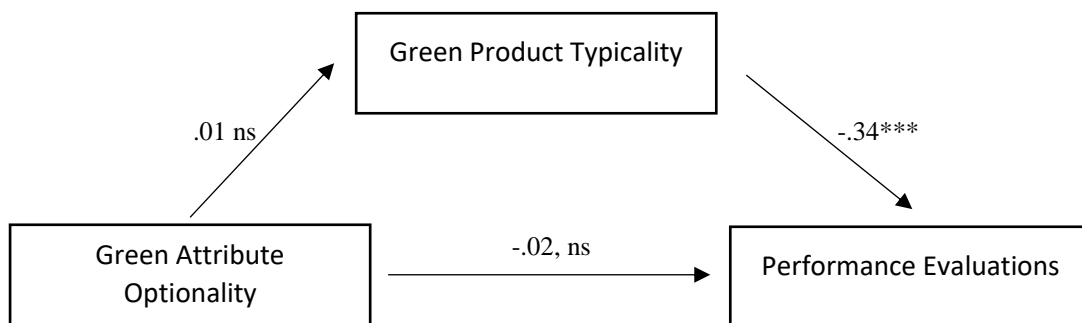
Holistic Cognitive Style (LLCI = -.0562; ULCI = .3542)
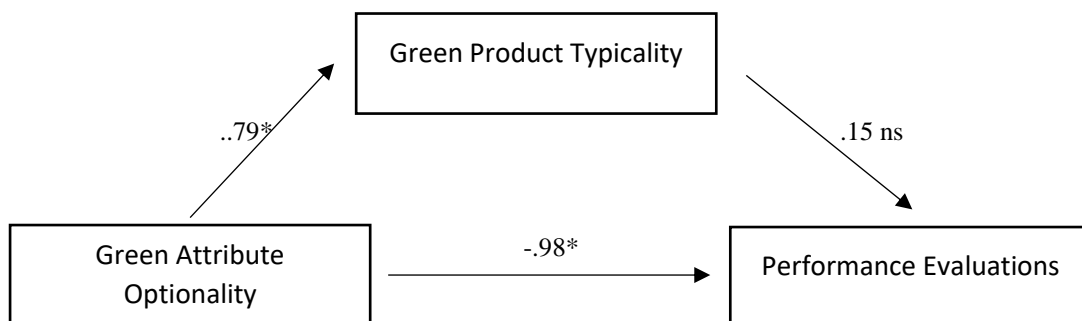
Note: *p<.05; **p<.01; ***p<.001

Next, we conducted a moderated mediation test to examine whether cognitive style can moderate the mediating relationship. In testing this, we employed Hayes' (2013) PROCESS macro from SPSS, similar to that of Experiment 1 and 2. We ran PROCESS model 7 with the two IVs of green attribute optionality and cognitive style, the mediator of green product typicality and the DV of performance evaluations. A multiple regression including the IV of green attribute optionality and the moderator of cognitive style and the interaction of the two IVs showed that all factors were significantly related to the mediating variable of green product typicality (r = .0605, p < .05). In addition, a multiple regression analysis including the IV of green attribute optionality and mediator of green product typicality on the DV of performance evaluations showed that green product typicality was significantly related to the DV (β = -.1968, t = -2.54, p < .05), while green product communication strategy was not significant at a 95% confidence level (β = -.2921, t = -1.79, p = .075). Based on the results presented, we can conclude that both the path from the IV to the mediator (*a* path), as well as the path from the mediator to the DV (*b* path) were significant. Thus, we ran a moderated mediation test was conducted with 5,000 bootstrap samples and a 95% BCCI.

In line with H8, the introduction of the mediating variable of green product typicality resulted in an insignificant direct relationship between green attribute optionality and performance evaluations (LLCI = -.6143; ULCI = .0301). For the moderating variable of cognitive style, there was a significant effect found in the holistic condition, (LLCI = -.3814; ULCI = -.0215), but not in the analytical condition (LLCI = -.0961; ULCI = .1013). The moderated mediation can be seen in Figure 22.

Figure 22 Moderated mediation model for Experiment 6
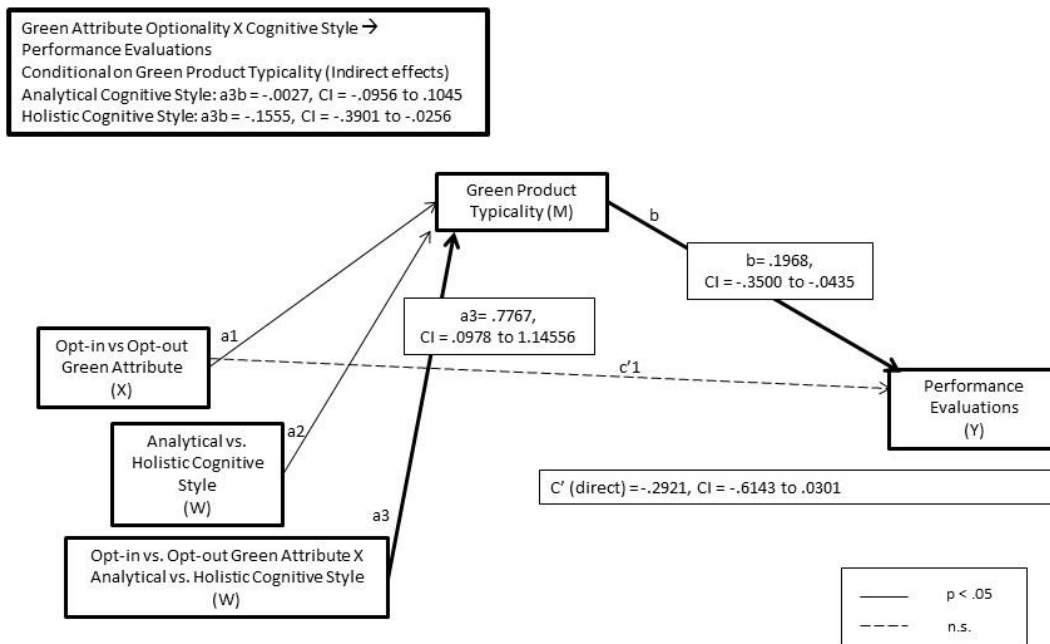
8.4.15 Discussion

In Experiment 6, we examined the mediating variable of green product typicality to explain the relationship between green attribute optionality and performance evaluations. Moreover, we again find support for the role of cognitive style as a moderating variable and additionally, demonstrate its impact on the effect on green attribute optionality and green product typicality. The results support the findings of Experiment 4 and 5, in that the opt-in strategy is ideal at overcoming the performance liability associated with green products. We also find additional backing for the role of cognitive style as a moderator in the relationship between green attribute optionality and performance evaluations, in that an analytical mindset is able to overcome the performance evaluation difference between the opt-in and the opt-out green attribute optionality strategies. Thus, when individuals are able to separate product attributes from the

whole, green attribute optionality strategy does not have an impact on performance evaluations. In addition, we show that the effect of green attribute optionality on performance evaluation is driven by green product typicality, in that the more typical the product is with similar green products, the worse it is perceived to perform. This could be related to the transfer of performance inferences from stored information in memory related to green products to the target product being evaluated. Interestingly, typicality does not play a role for analytical individuals, as they are able to see the product as a combination of attributes and thus, the inclusion of a green attribute enhances typicality, regardless of the optional green attribute.

8.5 Chapter Summary

In this chapter, we have presented three experimental studies that relate to the second part of this thesis (i.e. green attribute optionality). In each study, we have found support for the opt-in default policy, in that it enhances performance evaluations. In addition, we show that the effect of green attribute default policy on performance evaluations is mitigated when an individual has an analytical mindset. Finally, we show that this interaction is mediated by green product typicality, whereby the opt-out default policy enhances the product's typicality to other green products, which in turn decrease performance evaluations.

Chapter 9 – Discussion and Conclusions

"We're running the most dangerous experiment in history right now, which is to see how much carbon dioxide the atmosphere... can handle before there is an environmental catastrophe."

(Elon Musk)

9.1 Chapter Overview

In this chapter, we conclude the present research by discussing the findings of the experimental studies that were carried out. Moreover, we present both theoretical and managerial implications that were offered by the results. Unlike the discussion sections found at the end of each experimental chapter, this section is laid out via the hypotheses generated in Chapter 3 and 8. Following this, we present the limitations and future research avenues.

9.2 Discussion of the Hypotheses

In this research, we aimed to carry out a number of research objectives: First, we aimed to understand the role of green product communications in influencing performance evaluations for a green product. Specifically, the role of subtle green signals. Second, to introduce the theoretical concept of autonomous motivation as an explanatory mechanism in the relationship between green product communications and performance evaluations. Third, we wanted to extend past literature in green marketing by examining the role of performance criticality, social distance and green attribute optionality. Fourth, to further explore the concept of optional green product attributes and extend work in choice architecture by exploring green attribute optionality and its impact on performance evaluations. Fifth, we wanted to examine how perceptions of green attribute optionality could be impacted by cognitive style. Finally, to uncover a potential mediating mechanism to explain this relationship.

In order to test these objectives, we generated a series of hypotheses based on past literature that have been examined through a series of six experimental studies. While the majority of experimental explored separate hypotheses, there were instances of overlap (autonomous motivation: Experiment 1 and 2; cognitive style: Experiment 5 and 6). There were also differences in the manipulation style, with some exploring press releases with visual stimuli (Experiment 4 and 5), while others employed an advertisement format with product attributes and product images (Experiment 1, 2, 3 and 6). We also employed a priming procedure to manipulate cognitive style (Experiment 5 and 6).

9.2.1 Hypothesis 1: The Role of Green Understatement

In Experiment 1 and 2, we find initial confirmation for the role of subtle green signals in overcoming the green product performance liability. These findings support Hypothesis 1 by demonstrating that an individual's evaluation of a green product can be altered based on the emphasis placed upon its attributes. When the product's environmental attributes are made prominent via explicit green signals, this dominant information overrides other product characteristics that thus, performance inferences are generated for the target product based on prior green product knowledge. Given the performance liability associated with green products, we saw a decline in performance evaluations when explicit green signals were employed. Alternatively, subtle green signals is a strategy that downplays the product's green attributes, while not completely removing them. In doing this, the green attributes are communicated in a less focal area within the advertisement and their font size is reduced. This allows the firm to play-up non-environmental attributes, such as performance. When this occurs, we show that consumers rate the performance ability of the green product significantly higher. Thus, we show that the performance liability associated with green products is indeed due to consumers previously held conceptions that greenness is disassociated with performance. Thus, performance information acts as reassurance that the product will perform up to their standards.

In Experiment 2, we offer a different approach to green product communication strategy by demonstrating the vital role of language within a green product advertisement. Along with product attribute prominence, a firms' language can signal product characteristics. We show that when assertive language is used, performance evaluations decrease, as compared to non-assertive. Assertive tones often make important the issue being communicated, in this case heightening perceptions of environmentalism. This increasing perception may be transferred to the product, and thus, in a similar scenario to that of Experiment 1, performance evaluations decline. However, as we have shown, using non-assertive language reduces these perceptions, as the importance to which greenness is being communicated decreases and thus, performance evaluations increase. As a whole, the findings from both Experiment 1 and 2 allowed us to meet the first objective of this research by exploring the link between green product communication strategy on performance evaluations.

9.2.2 Hypothesis 2: The mediating role of autonomous motivation

In both Experiment 1 and 2, we test the mediating role of autonomous motivation in the relationship between green product communication strategy and performance evaluations in order to find support for Hypothesis 2.

The results from these studies show that consumer's self-determination plays an important role in their evaluation of a given product. In Experiment 1, we show that when firms present product attributes that align with an individual's own internal interests and desires, performance evaluations are enhanced. To measure autonomous motivation, we adopted the scale used by Ryan and Deci (2000) and Hagger, et al. (2006). Within this scale, we measure both autonomy and controlled motivation. Therefore, we find that when non-environmental attributes are made prominent, an individual's values and perceived enjoyment of the product enhance, as compared to explicit green signals that promote external pressure and guilt. A similar result was shown in Experiment 2, in that an assertive message increased an individuals'

perception of external pressure, anxiety, guilt and control, whereas non-assertive language reduced this effect, enhancing performance evaluations.

In addition, the moderating variables of performance criticality and social distance also impact upon the mediating variable of autonomous motivation. In Experiment 1, we found that when performance criticality was high, the relationship between green product communication strategy and performance evaluations was significant. As performance is an intrinsically valued product attribute, we expect that the congruity between it and the green product communication strategy would have a strong impact on one's sense of autonomy. Moreover, when purchasing for another individual, there is an enhanced pressure and sense of external influence. In addition, there may be incentivized rewards for engaging in the task. Thus, when social distance was far, in the case of purchasing for another individual, the firms' selected green product communication strategy had a significant impact on one's sense of autonomy, as autonomy may occur when a person views the experience as a personal choice (i.e. the non-assertive condition). However, when an assertive tone is taken, the individual may feel externally imposed pressure from both the advertisement, as well as their desire to select a product that will perform up the receiver's expectations. These results suggest that autonomy may not only be impacted directly by a firms' communication strategy, but also the purchase situation or the product being promoted.

9.2.3 Hypotheses 3 and 4: The role of performance criticality and social distance
In Hypothesis 3 and 4, we only explore the direct relationship between green product communication strategy and performance evaluations. In order to understand this phenomenon in more depth, we introduce the moderating hypotheses that would be tested in both Experiment 1 and 2.

Specifically, in Hypothesis 3, we aimed to examine the impact of performance criticality in Experiment 1, whereby we presented respondents with two products that belong to two distinct categories. The products selected were automobiles and the explanation of this selection can be found in Chapter 5. The results of Experiment 1 demonstrate that congruity is a vital component in influencing performance evaluations. In particular, congruity between the message (i.e. green product communication strategy) and the product category (i.e. performance criticality) increases product evaluations. Unlike past work from Bodur, et al. (2016), we take a between subjects' approach, whereby respondents are only presented with a single advertisement from one of the two product categories, reducing any potential bias associated with the within subject design.

Experiment 2 sought to examine the impact of social distance, based on construal level theory. In this study, we inform respondents before viewing the green product advertisement that they were purchasing the product for themselves (near) or for another individual (far). We show that when purchasing for another individual, the impact of the selected green product communication strategy was heightened. Previous literature in gift giving might offer an explanation for this finding, in that individuals do not purchase green products for others due to performance concerns (Green, Tinson and Peloza, 2014). In other words, consumers become more concerned about the product's ability to perform as expected when they are buying it for another. This finding helps confirm Hypothesis 4.

9.2.4 Hypothesis 5: The moderating role of green attribute optionality

In Experiment 3, we introduced the concept of green attribute optionality, to examine whether a green attribute that is optional may overcome the sustainability liability. Specifically, we wanted to examine the impact of optionality via two distinct strategies outlined by choice architecture literature. In Experiment 3, we study the opt-in green attribute strategy, whereby the attribute is not default but may be activated by the user. We show that this strategy is ideal

at overcoming the performance liability of green products compared to the non-optional green attribute. We argue that this is due to the notion that consumers are able to mentally decouple the optional attribute with the base product. Thus, negative performance inferences associated with greenness are not transferred to the core and performance risk for the entire product is greatly reduced. Put in another way, when the attribute that is gripped with performance risk is made optional, and thus, not required to operate the core product, this risk does not transfer and performance evaluations of the product do not suffer. Moreover, we demonstrate that this is not due to a perceived reduction in greenness.

9.2.5 Hypothesis 6: Green attribute optionality on performance evaluations

In Experiment 4, we introduce the second choice architecture strategy, known as opt-out. In this instance, the attribute is active by default, but may be deactivated by the user if they explicitly choose to do so. This is examined alongside the opt-in strategy and in Experiment 4, the non-optional condition from the prior study. Although the opt-out condition is a form of optionality, it presents the green attribute as the default. This minor alteration was found to have drastic impacts on performance evaluations, as negative performance inferences were transferred to the core product. In other words, the performance risk that is often associated with greenness was not localized to the attribute, as it was a default, and thus, already active at time of use. Although it could have been deactivated, this seemingly was not enough to negate the green attribute performance liability. This result found additional support in Experiment 5 and 6. In summary, these results confirm Hypotheses 6.

9.2.6 Hypothesis 7: The moderating role of cognitive style

In Experiment 5 and 6, we examine cognitive style as a moderating variable between the relationship of green attribute optionality and performance evaluations. Specifically, we aimed to examine whether an individual's style of thinking would impact on how they evaluated the

performance ability of a green product employing either an opt-in or an opt-out attribute strategy. The results indicated that when primed with an analytical mindset, respondents were able to separate the product's attribute from the whole, enhancing individual categorization and negating the impact of green attribute optionality. Thus, analytical thinkers perceive the product's performance to be similar in both optionality conditions. In contrast, holistic thinkers viewed the green product as an entity, and thus, when the green attribute was default, performance evaluations suffered compared to that of the opt-in condition.

Our findings are in line with past work in the area of cognitive style. For example, Ji, Peng and Nisbett (2000) argued that holistic thinkers focus more on relationships between objects, as compared to analytical thinkers. In addition, Masuda and Nisbett (2001) found that when respondents were exposed to scenes of animals and other animated objects, holistic thinkers were able to recall more information related to the background and the relationships between the objects. In line with this, we found when presented with a green product featuring multiple attributes, holistic thinkers focused more on the whole, rather than the individual attributes. In other words, the product is viewed as being a sum of its parts. Thus, when the green attribute was default, negative inferences regarding performance were transferred to the base product. However, by separating the attributes from the whole product, this transfer did not occur for analytical thinkers.

In sum, the results of these experiments support Hypothesis 7, meeting the fourth objective of this research.

9.2.7 Hypothesis 8: The role of green product typicality

The final objective of this research was to examine the role of green product typicality. In particular, we aimed to show that when a product is viewed as typical of other green products, negative performance inferences transfer from the category to the target product. Consumers

often form mental categories of products that they perceive to be similar in some degree (Gershoff and Frels, 2014). These categories are often developed based on stored information. Thus, we argue that, due to negative performance inferences held regarding the green product category, by being seen as similar to other green products, the product being evaluated will be inflicted with the sustainability liability. Moreover, typicality is enhanced via firm signals. In this instance, by making the green attribute the default via the opt-out strategy. Based on this, we can confirm Hypothesis 8, that typicality mediates the relationship between green attribute optionality and performance evaluations.

In addition, we found that cognitive style can impact on perceptions of typicality. In a similar vein to that of Hypothesis 7, we show that when primed with an analytical mindset, the product is viewed as typical in both optionality strategies. This is due to the mere presence of the green attribute; which analytical thinkers are able to separate from the core product. However, holistic thinkers found the product to be more typical in the opt-out, compared to the opt-in, optionality strategy.

Table 76 Summary of the Hypotheses Tested in the Experiments and Their Outcome

Hypotheses Tested	Relationship/Effect Tested	Tested in	Outcome
Hypothesis 1	Direct effect of green product communication strategy on performance evaluations.	**Experiment 1 and 2**	Supported
Hypothesis 2	Mediating role of autonomous motivation in the relationship between green product communication strategy on performance evaluations.	**Experiment 1 and 2**	Supported
Hypothesis 3	The moderating role of performance criticality on the relationship between green product communication strategy on performance evaluations.	**Experiment 1**	Supported
Hypothesis 4	The moderating role of social distance on the relationship between green product communication strategy on performance evaluations.	**Experiment 2**	Supported
Hypothesis 5	The moderating role of green attribute optionality on the relationship between green product communication strategy on performance evaluations.	**Experiment 3**	Supported
Hypothesis 6	The direct effect of green attribute optionality on performance evaluations.	**Experiment 4, 5 and 6**	Supported
Hypothesis 7	The moderating role of cognitive style on the relationship between green attribute optionality on performance evaluations.	**Experiment 5 and 6**	Supported
Hypothesis 8	Mediating role of green product typicality in the relationship between green attribute optionality on performance evaluations.	**Experiment 6**	Supported

Based on the results discussed, we can conclude that the objectives of this thesis were met. In the next section, we will present both theoretical and managerial implications.

9.3 Research Implications

In this section, we summarize the key implications for both theory and marketing practice based on the results uncovered in the six experimental studies. In the first half of this chapter, we present theoretical implications, while the second half introduces the potential managerial ramifications.

9.3.1 Theoretical Implications

The present research offers a selection of implications for theory in areas such as green marketing, choice architecture, cognitive style and autonomous motivation. Firstly, we examine the impact of green product communication strategy on performance evaluations. Unlike prior research (e.g. Gershoff and Frels, 2015; Newman et al., 2014) we explore the concept of green understatement and the notion that it may aid in alleviating the incongruity between green products and performance perceptions. Thus, we enhance the findings of Newman, et al. (2014), who demonstrated the disconnect between consumer performance perceptions and green products, by showing that subtle green signals may reduce consumer backlash in that the green attribute is communicated in more discreet manner. In addition, we build on work from Kronrod, et al. (2011) by showing that subtle green signals need not solely relate to product attributes, but may also connect with language. Specifically, our findings suggest that assertiveness acts as an explicit green signal that reduces performance evaluations.

Secondly, Experiment 1 and 2 offer insights into the effect of green product communication strategy on autonomous motivation. While the majority of literature in marketing has examined the downstream impact of autonomy on consumer behaviour (e.g. Hagger, et al. 2006; Dholakia, 2006), we not only support these findings that autonomy can in fact alter evaluations, but we also present findings that demonstrate that a firm's communication strategy can impact on an individual's sense of autonomy. This finding not only presents a new perspective in relation to green product communications, but also may call into question past literature that

has argued for the use of internal pressure when promoting environmental behaviours (Peloza, et al. 2013).

Thirdly, we present two moderating variables that impact on the relationship between green product communication strategy, performance evaluations and the mediating variable of autonomous motivation. The first was that of performance criticality (Experiment 1), whereby we demonstrated that performance evaluations enhance when there is congruity between the green product communication strategy and the product being marketed. The results indicate that a new product launched into an existing schema featuring a novel attribute may backfire for firms in the green context. Although it may lead towards differentiation, environmental attributes may be at odds with product performance. This extends past literature both in congruity in relation to advertising and product benefits (Chandon, et al., 2000), but also past literature on novel, unique and irrelevant attributes (e.g. Bertini, Ofek, and Ariely 2009; Carpenter, Glazer and Nakamoto, 1994). Additionally, we extend literature on missing information (e.g. Peracchio and Meyers-Levy 1994; Sawyer and Howard 1991; Stayman and Kardes 1992), by demonstrating that when performance related information is not present, consumers become sceptical, particularly when the product is valued for its performance ability. In this instance, consumers were shown to generate performance inferences based on the information given. Such information is at odds with product performance (Newman, et al. 2014). However, we also confirm the findings of past literature that has shown that performance information can overcome this perception (e.g. Luchs, et al. 2010).

In Experiment 2, we examine social distance, based on construal level theory. We extend prior literature (e.g. Kim, et al. 2008; White and Simpson, 2013) by showing that social distance (i.e. near vs. far) can alter the relationship between green product communication strategy and performance evaluations. The results indicate that when social distance was far, this abstract thinking led consumers to be more susceptible to the green product communication strategy.

Past literature has shown that abstraction can lead towards decontextualized representations (Trope, et al. 2007). Our findings are in line with this process, whereby consumers only focus on the surface attributes, which varied based on the communication strategy. However, when social distance was near, individuals focused on subordinate and secondary features. We also find that social distance can impact on one's sense of autonomy. Specifically, when social distance was near, consumers felt less pressured in the buying scenario and thus, had a higher level of autonomy, which in turn enhanced performance evaluations. However, when buying for another, the desire to meet expectations and negative performance perceptions reduced autonomy.

Fourth, we introduce the concept of green attribute optionality in Experiment 3 and found that a green attribute employing an opt-in strategy was able to overcome the green product performance liability. This finding builds upon past literature in green marketing, which has solely focused on core (central) environmental attributes. In this respect, the findings offer a new perspective, based on the concept of optionality. Extending this work in Experiment 4, we introduce the opt-out strategy and show that it does not enhance performance evaluations compared to a non-optional green attribute. Thus, although past literature has demonstrated the power of the opt-out approach (e.g. Johnson and Goldstein, 2003; Choi, et al. 2003), we show that, despite it being effective in policy domains (i.e. organ donation), it has negative consequences in terms of product performance evaluations. This finding is in line with research from Brown and Krishna (2004), who stated that consumers treat the default attribute of a product as though it contains relevant information regarding its value. Thus, in our context, a default attribute led consumers to transfer green performance inferences to the base product. Overall, while past literature has offered insights into marketing strategies that may alleviate performance risk (e.g. Luchs, et al. 2010), our research was one of the first to employ the innovation locus and choice architecture in this regard.

Fifth, we extend past work in cognitive style literature (e.g. Monga and John, 2007; 2008; 2010) and find evidence that it can significantly alter how consumers evaluate the performance of the advertised green product employing green attribute optionality. These findings suggest that the interaction effects found in this research could be an important aspect in understanding the complexities of how consumers evaluate green products. In particular, we show that some consumers (holistic thinkers) experience challenges when attempting to see individual product attributes, whereas others (analytical thinkers) do not. Thus, while an opt-out strategy may degrade performance evaluations, this can be overcome when individuals are induced with an analytical mindset. Although past green marketing literature has uncovered a number of important boundary conditions, including incongruity with internal standards and actual behaviour (Peloza, et al., 2013), environmental consciousness (Lin and Chang, 2012), type of benefit (Newman, et al. 2014) and attribute centrality (Gershoff and Frels, 2014), we are one of the first to employ cognitive style in a green product context.

Finally, we examine the mediating impact of green product typicality, building upon past work in product categorization (e.g. Smith and Osherson 1984; Smith et al. 1988; Tversky 1977). We find that an opt-out strategy, whereby the green attribute is default, it is viewed as more typical, and thus, performance evaluations reduced. This is due to the enhanced diagnosticity of the default attribute. This finding extends research in diagnosticity (e.g. Feldman and Lynch, 1988; Herr, et al. 1991) to show that perceptions of diagnosticity can be impacted by choice architecture. However, we found that when an analytical mindset was primed, similar typicality ratings were uncovered in all conditions. For analytical thinkers, optionality and the role of defaults seems less relevant, as they are better able uncover this information from the product's range of attributes, allowing them to categorize on the attribute level (Ng and Houston, 2006).

9.3.2 Managerial Implications

The findings of this research present numerous managerial implications for marketing practitioners. While it is understandable for firms to communicate a new green attribute, such a strategy may become a liability. The findings show that managers should downplay product greenness and do so in a manner that is non-assertive. In doing so, performance evaluations increase, along with autonomous motivation. Communication strategies designed to enhance internal and external pressure, whether it be guilt initiatives or financial incentives, decrease a consumer's sense of autonomy, which in turn, decreases their performance evaluations of the product. Thus, we suggest that firms avoid such tactics, rather utilizing communication strategies that align with the interest and values of target consumers.

Next, we show that firms would be best suited to tailor their advertising messages with the expected product benefits. For example, when developing a family car with green attributes, a focus on the product's environmental characteristics may not result in severe ramifications. In contrast, however, a performance oriented car is likely to be incongruent with this message, and thus, negative performance evaluations will be generated. In addition, while social distance may be challenging to examine for firms when developing a green product communication strategy, managers may explore situations in which their product may be purchased for the self or as a gift for other individuals. In doing so, messages generated by firms may be better received when paired with the evoked social distance construal.

In addition, our findings demonstrate the vital role of default policies in influencing consumer evaluation of green products. We find that contrary to past literature in choice architecture (Johnson and Goldstein, 2003; Choi, et al. 2003), an opt-in strategy is ideal at overcoming the sustainability liability. Firms should be aware that defaults act as an informational signal to consumers in which value is inferred. Given the negative performance inferences regarding green products, the default was seen to reduce performance evaluations for the entire product.

Moreover, compared to a non-optional green attribute, the opt-out strategy did not significantly differ in terms of performance evaluations.

Furthermore, the findings show that green attribute optionality is less relevant for analytical thinkers. Moreover, analytical thinkers are less likely to view the product as typical to other green products in both optionality conditions. For firms, we acknowledge that analytical thinkers may be difficult to target individually. However, firms may focus on various ethnic groups or geographical areas with a high concentration of analytical individuals. For example, Nisbett, et al. (2011) found that individuals in the Mountain West were more likely to carry an analytical viewpoint.

9.3.3 Limitations and directions for future research

The dependent variable in this research was that of performance evaluations, which has been shown to be critical to purchase intent (Newman, et al., 2014). However, future research may expand upon these findings with the use of objective data. Past literature has highlighted the gap that exists between attitude and behaviour (Moraes, Carrigan, and Szmigin, 2012; Vermeir and Verbeke, 2006) and thus, behavioural data may be useful for examining the real world impact of a green product communication strategy.

Second, past literature that has employed self-determination theory has advocated that autonomy not only enhances first time actions, but also repeat behaviour (Ryan and Deci, 2000). Thus, future research may utilize longitudinal data to examine the impact of autonomy on performance evaluations over time, and how long term green product communications may impact on autonomy.

Third, we found that an opt-in strategy was ideal for performance evaluations in the green product context compared to both the non-optional and the opt-out strategy. However, past literature has argued that an opt-out strategy may increase compliance. Thus, in some

situations, an opt-out approach, although damaging to performance evaluation, may in fact increase usage of the green attribute. Moreover, it could be argued that the opt-in scenario was more typical to that of other washing machines. In contrast, an opt-out environmental attribute is far less likely. Although we do not believe such perceptions influenced the results shown in Experiment 4, 5, and 6, future research could explore choice architecture in the domain of innovation and product marketing. Particularly, research could explore how optionality impacts on judgements of prototypicality with new innovations, extending the work of Meyers-Levy and Tybout (1989) and Ma, et al. (2015).

Fourth, to manipulate cognitive style, we employed a priming manipulation. However, past work has shown that styles of thinking may differ across Eastern and Western cultures (e.g. Masuda and Nisbett, 2001). Our research was conducted solely in the United States and thus, future research may explore the role of both green attribute optionality and green product communication strategy across cultures. Not only may they impact on cognitive style, but also on levels of environmental consciousness.

Additionally, there are some alternative explanations and surprising results that should be discussed and explored by future research. In Experiment 1, we found that performance evaluations were higher when explicit green signals were used in the high, rather than low, performance criticality condition. This result goes against our initial hypothesis. We posit that this result may have been due to the use of a vehicle image. Although we use cars that were not sold in the United States and that were displayed from the side, there is a clear distinction between the sports car and the family car. Thus, prior knowledge regarding each product may have influenced the extent to which the product was perceived to perform. In fact, research has shown that consumers often overvalue their prior impressions (Herr, et al. 1991). Moreover, research has shown that pictures are often used more than text in advertisements (Greenberg and Garfinkle 1963) and it has been well established that pictorial elements can influence a

variety of advertising outcomes (e.g., Finn 1988). For instance, it has been shown that a picture can be used by a firm to convey a specific belief (Miniard et al. 1991) and they are more easily recalled than text (Paivio, 1969; Lutz and Lutz, 1978). Therefore, we posit that the size and placement of the sports car image may have enhanced performance evaluations compared to the family car, even when explicit green information was displayed.

In Experiment 2, we generated our manipulations for green product communication strategy based on past research in marketing (e.g. Kronrod, et al. 2011), as well as psycholinguists (e.g. Brown and Levinson 1987). It could be possible, however, that our use of language may have impacted on the motivation of our respondents. Particularly, their internal or external drive. In fact, due to its impact on our mediating variable of autonomous motivation, it is logical to form such an assumption. In fact, when assertive terminology was employed, one's motivation was shown to be external, as the use of words such as "must" enhanced one's sense of external pressure. Additionally, we found that social distance did not have a significant impact on performance evaluations. While past literature has found that one's level of abstraction can impact on evaluation (e.g. Trope and Liberman, 2000), our advertisement featured one central attribute (e.g. recycled motherboard). This may have worked against the prime for social distance, as central attributes are often viewed as core features, evoking a high-level construal (Trope, et al. 2007). Future research should test the role of social distance and vary the manipulation of construals by focusing upon both primary and secondary features of green products. Moreover, the purchase of a green product as a gift may be perceived as virtuous, particularly in the subtle signals condition. Thus, this may have enhanced one's evaluation of the product. In contrast to this, research into green product gift giving has shown that consumers generally avoid purchasing green products for others in order to manage their impressions with the recipient (Green, et al. 2014). However, consumers purchase gifts for a variety reasons, including impression management or to develop awareness about

sustainability. Therefore, future research is needed to better understand why consumers purchase green products for others.

In Experiment 3, as proposed by a simple linear utility model, our findings may have related to the number of features on the product. Specifically, additional features may have enhanced performance evaluations. Interestingly, Mukherjee and Hoyer (2001) find that the addition of a novel attribute only enhances evaluations if the product is low-complexity, while evaluations can reduce if the product is deemed highly complex. Additionally, we also found that the non-optional environmental attribute condition had a higher level of performance evaluations compared to optional condition when subtle signals were employed, which works against the utility model and our initial hypothesis that optionality enhances performance evaluations. In the subtle signals condition, respondents were provided performance information aimed at overcoming the sustainability liability. Subtle signals also aim to reduce the prominence of environmental information. It may have been possible that an optional environmental attribute, without sufficient information provision, may have been viewed with scepticism, enhancing risk and reducing performance evaluations. Despite this result, we do not believe that it counters our proposal that optionality can overcome the green product performance liability, as we saw such effects when an explicit communication appeal was shown. As optionality is novel construct, additional research is required in this area.

Our results for analytical and holistic cognitive styles may be called into question, in that analytical thinkers could have had the lowest level of performance evaluations, as they focus on different product attributes, including the environmental attribute. However, our result aligns with our initial prediction, that holistic thinkers view a product as a whole and are more prone to using the default attribute to form inferences. In contrast, analytical thinkers are able to focus on details and specific attributes. For instance, Goh, et al. (2009) found that analytical processors tended to focus more time on evaluation and processed single items in greater detail.

In contrast, holistic individuals were shown to have more concentrated eye moments, preferring to focus on a focal feature (e.g. Masuda and Nisbett, 2001). Thus, we believe that our finding aligns with that of past literature. However, additional research is needed in the area of cognitive style and how it can impact on product evaluations.

Finally, we routinely find that green product communication strategy and green attribute default policy did not significantly impact on green evaluations. While this may seem surprising, it was not the intention of this research to alter one's perception of a product's environmentalism. Instead, in Part 1, we explored how environmental attributes should be communicated for a green product, altering one's motivation and how it could impact on performance evaluations. In doing so, we focused on one's level of intrinsic motivation in relation to green products, rather than one's perception of its greenness. Similarly, Part 2 aimed to explore the role of environmental attribute optionality, rather than the extent to which the product is viewed as green. In each advertisement, the product was described as being better for the environment. Thus, such a result does not go against our initial assumptions.

Chapter 10: References

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Chapter 11 Appendix

Appendix A: Experiment 1 Manipulations and Questionnaire

Thank you for participating in this study. The data collected from this study will be anonymous and held securely. No personal data is asked or retained. All the information contained in this survey will be used for academic purposes only. Cookies and personal data that may be stored by your web browser will not be used in this survey.

Please indicate the attributes that you believe this advertisement focuses upon.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
This advertisement highlighted the product's performance benefits.	○	○	○	○	○	○	○
This advertisement highlighted the product's environmental benefits.	○	○	○	○	○	○	○

You are about to view an advertisement for a new green product. After viewing this advertisement, you will be asked a serious of questions related to it.

Condition 1: Explicit Green Signals/Low Performance Criticality

Buy Green For Incredibly Low Carbon Emissions

Lower Your Carbon Emissions by 25%.
Reduce the Demand on Energy with Incredible Efficiency.
Low Environmental Impact from Production to Disposal.

- Premium-Level Quality and Driving Performance
- Save with Great Fuel Economy and Tax Credits

Condition 2: Explicit Green Signals/High Performance Criticality

Buy Green For Incredibly Low Carbon Emissions

Lower Your Carbon Emissions by 25%.

Reduce the Demand on Energy with Incredible Efficiency.

Low Environmental Impact from Production to Disposal.

- Premium-Level Quality and Driving Performance
- Save with Great Fuel Economy and Tax Credits

Condition 3: Subtle Green Signals/Low Performance Criticality

Buy Green For Incredible Quality and Performance

Top Notch Materials for Great Build Quality and Safety.

Advanced Powertrain Technology to Deliver 0-60 MPH in 7.5 Seconds.

Superb Ride Quality and Handling.

- Save with Great Fuel Economy and Tax Credits
- Help Improve the Environment with Low Emissions

Condition 4: Subtle Green Signals/High Performance Criticality

Buy Green For Incredible Quality and Performance

Top Notch Materials for Great Build Quality and Safety.

Advanced Powertrain Technology to Deliver 0-60 MPH in 4.5 Seconds.

Superb Ride Quality and Handling.

- Save with Great Fuel Economy and Tax Credits
- Help Improve the Environment with Low Emissions

Please indicate your effectiveness-related evaluation of the product shown in the advertisement.

Not Effective	○	○	○	○	○	○	○	Effective
Poor Performance	○	○	○	○	○	○	○	Good Performance
Not Attractive	○	○	○	○	○	○	○	Attractive
Low Quality	○	○	○	○	○	○	○	High Quality

Why would you consider purchasing the vehicle in the advertisement.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
Because others want me to and I expect to get some kind of reward or avoid punishment.	○	○	○	○	○	○	○
Because I want to avoid feeling of guilt and disapproval from others.	○	○	○	○	○	○	○
Because I value the benefits of this product and believe it to be personally important.	○	○	○	○	○	○	○
Because it is of inherently interest to me to consider this product.	○	○	○	○	○	○	○

Please indicate the degree to which you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
Mankind is severely abusing the environment.	○	○	○	○	○	○	○
I am very concerned about the environment.	○	○	○	○	○	○	○
Major social changes are necessary to protect the natural environment.	○	○	○	○	○	○	○
The so-called "ecological crisis" facing humankind has been greatly exaggerated.	○	○	○	○	○	○	○

Please indicate the attributes that you believe this advertisement focuses upon.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
This advertisement highlighted the product's performance benefits.	○	○	○	○	○	○	○
This advertisement highlighted the product's environmental benefits.	○	○	○	○	○	○	○

Please Indicate your Gender

○ Male

○ Female

Please Indicate your Education Level

○ High School

○ Associates Degree

○ Bachelors Degree

○ Post Graduate

Please Indicate In What Country You Currently Reside.

Appendix B: Experiment 2 Manipulations and Questionnaire

Thank you for participating in this study.

THIS STUDY INCLUDES VISUAL STIMULI. You will be expected to view the stimuli for a certain amount of time. We are aware of the added effort from the MTURK participants. Therefore, we offer you a compensation of $1 for a task that will only take around 8 minutes. We implemented control mechanisms to check the time spend on the visual slides and paid attention to it. Please be aware that a compensation will be declined, if you do not meet the requirements of the study. This follows Amazon Mechanical Turk policy, which states that "a Requester may reject your work if the HIT was not completed correctly or the instructions were not followed."

Please confirm that you agree with this consent form:

I agree. Please let me start the questionnaire.   I do not agree.

○   ○

Thank you for participating in this study. The data collected from this study will be anonymous and held securely. No personal data is asked or retained. All the information contained in this survey will be used for academic purposes only. Cookies and personal data that may be stored by your web browser will not be used in this survey.

Thank you for participating in our research.

In the following, we will be interested in your opinions on product attributes and advertising messages. Completing the study will take around 8 minutes of your time. Specifically, we are interested in whether you actually take the time to read the instructions. So, in order to demonstrate that you have read the instructions, please ignore the questions related to the Canada below and do not click on any of the answers. Afterwards, click on the arrows at the bottom of the screen to continue.

What is the capital of the Canada?

○ Toronto

○ Ottawa

○ Vancouver

Condition 1: Near Social Distance and Subtle Green Signals

In this scenario, please imagine that you are required to purchase a new laptop computer for your personal use.

In a few moments, you will evaluate a laptop computer and its advertising message. Please pay attention to the wording, as questions related to it will be presented in the subsequent sections.

New Laptop Computer with an Environmentally Friendly CPU Motherboard

Made from Recyclable Materials to Reduce Waste

You May Help the Environment by Considering this Work Laptop Computer with an Environmentally Friendly CPU Motherboard

You Have the Ability to Go Green.

Condition 2: Near Social Distance and Explicit Green Signals

In this scenario, please imagine that you are required to purchase a new laptop computer for your personal use.

In a few moments, you will evaluate a laptop computer and its advertising message. Please pay attention to the wording, as questions related to it will be presented in the subsequent sections.

New Laptop Computer with an Environmentally Friendly CPU Motherboard

Made from Recyclable Materials to Reduce Waste

You Must Help the Environment by Purchasing this Personal Laptop Computer with an Environmentally Friendly CPU Motherboard

You Have an Obligation to Go Green.

Condition 3: Far Social Distance and Subtle Green Signals

In this scenario, please imagine that you are required to purchase a new laptop computer as a gift for another individual.

In a few moments, you will evaluate a laptop computer and its advertising message. Please pay attention to the wording as questions related to it will be presented in the subsequent sections.

New Laptop Computer with an Environmentally Friendly CPU Motherboard

Made from Recyclable Materials to Reduce Waste

You May Help the Environment by Considering this Work Laptop Computer with an Environmentally Friendly CPU Motherboard

You Have the Ability to Go Green.

Condition 4: Far Social Distance and Explicit Green Signals

In this scenario, please imagine that you are required to purchase a new laptop computer as a gift for another individual.

In a few moments, you will evaluate a laptop computer and its advertising message. Please pay attention to the wording as questions related to it will be presented in the subsequent sections.

New Laptop Computer with an Environmentally Friendly CPU Motherboard

Made from Recyclable Materials to Reduce Waste

You Must Help the Environment by Purchasing this Personal Laptop Computer with an Environmentally Friendly CPU Motherboard

You Have an Obligation to Go Green.

Please indicate your effectiveness-related evaluation of the product shown in the advertisement.

Not Effective	○	○	○	○	○	○	○	Effective
Poor Performance	○	○	○	○	○	○	○	Good Performance
Not Attractive	○	○	○	○	○	○	○	Attractive
Low Quality	○	○	○	○	○	○	○	High Quality

Why would you consider purchasing the vehicle in the advertisement.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
Because others want me to and I expect to get some kind of reward or avoid punishment.	○	○	○	○	○	○	○
Because I want to avoid feeling of guilt and disapproval from others.	○	○	○	○	○	○	○
Because I value the benefits of this product and believe it to be personally important.	○	○	○	○	○	○	○
Because it is of inherently interest to me to consider this product.	○	○	○	○	○	○	○

Please indicate your level of familiarity with CPU Motherboards

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
I am familiar with CPU Motherboards.	○	○	○	○	○	○	○
I don't know much about CPU Motherboards.	○	○	○	○	○	○	○

Please indicate the degree to which you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
Mankind is severely abusing the environment.	○	○	○	○	○	○	○
I am very concerned about the environment.	○	○	○	○	○	○	○
Major social changes are necessary to protect the natural environment.	○	○	○	○	○	○	○
The so-called "ecological crisis" facing humankind has been greatly exaggerated.	○	○	○	○	○	○	○

Please Indicate your Gender

○ Male

○ Female

Please Indicate your Education Level

○ High School

○ Associates Degree

○ Bachelors Degree

○ Post Graduate

Please Indicate In What Country You Currently Reside.

Appendix C: Experiment 3 Manipulations and Questionnaire

Thank you for participating in this study.

THIS STUDY INCLUDES VISUAL STIMULI. You will be expected to view the stimuli for a certain amount of time. We are aware of the added effort from the MTURK participants. Therefore, we offer you a compensation of $0.75 for a task that will only take around 8 minutes.

We implemented control mechanisms to check the time spend on the visual slides and paid attention to it. *Please be aware that a compensation will be declined, if you do not meet the requirements of the study.* This follows Amazon Mechanical Turk policy, which states that "a Requester may reject your work if the HIT was not completed correctly or the instructions were not followed."

Please confirm that you agree with this consent form:

I agree. Please let me start the questionnaire.	I do not agree.
○	○

Thank you for participating in this study. The data collected from this study will be anonymous and held securely. No personal data is asked or retained. All the information contained in this survey will be used for academic purposes only. Cookies and personal data that may be stored by your web browser will not be used in this survey.

Thank you for participating in our research.

In the following, we will be interested in your opinions on advertising messages. Completing the study will take around 8 minutes of your time. Specifically, we are interested in whether you actually take the time to read the instructions. So, in order to demonstrate that you have read the instructions, please ignore the questions related to the United Kingdom below and do not click on any of the answers. Afterwards, click on the arrows at the bottom of the screen to continue.

What is the capital of the United Kingdom?

○ York

○ Manchester

○ London

Condition 1: Non-Optional and Subtle Green Signals

Powerful washing and gentle care at the same time

With the new drum that protects clothes and prevents damage

Eco-Friendly Washing Machine
Reduced environmental impact with lower water and electricity consumption

Condition 2: Optional and Subtle Green Signals

Powerful washing and gentle care at the same time

With the new drum that protects clothes and prevents damage

Eco- Friendly Washing Machine*
Reduced environmental impact with lower water and electricity consumption

* Only when the user-activated eco-friendly mode is switched on.

Condition 3: Non-Optional and Explicit Green Signals

Eco-Friendly Washing Machine

Reduced environmental impact with lower water and electricity consumption

Powerful washing and gentle care in the same time
With the new drum that protects clothes and prevents damage

Condition 2: Optional and Explicit Green Signals

Eco-Friendly Washing Machine*

Reduced environmental impact with lower water and electricity consumption

Powerful washing and gentle care in the same time
With the new drum that protects clothes and prevents damage

* Only when the user-activated eco-friendly mode is switched on.

Please indicate your effectiveness-related evaluation of the product shown in the advertisement.

Not Effective	○	○	○	○	○	○	○	Effective
Poor Performance	○	○	○	○	○	○	○	Good Performance
Not Attractive	○	○	○	○	○	○	○	Attractive
Low Quality	○	○	○	○	○	○	○	High Quality

Why would you consider purchasing the vehicle in the advertisement.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
Because others want me to and I expect to get some kind of reward or avoid punishment.	○	○	○	○	○	○	○
Because I want to avoid feeling of guilt and disapproval from others.	○	○	○	○	○	○	○
Because I value the benefits of this product and believe it to be personally important.	○	○	○	○	○	○	○
Because it is of inherently interest to me to consider this product.	○	○	○	○	○	○	○

Please indicate the degree to which you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
Mankind is severely abusing the environment.	○	○	○	○	○	○	○
I am very concerned about the environment.	○	○	○	○	○	○	○
Major social changes are necessary to protect the natural environment.	○	○	○	○	○	○	○
The so-called "ecological crisis" facing humankind has been greatly exaggerated.	○	○	○	○	○	○	○

How familiar are you with the features of washing machines?

Not at all Familiar | ○ ○ ○ ○ ○ ○ | Extremely Familiar

How much do you know about washing machines?

Know Very Little | ○ ○ ○ ○ ○ ○ | Know A Lot

The eco-friendly features of this product were...

Automatic
○

User Activated
○

What do you feel was emphasised in this advertisement?

Performance Features
○

Environmental Features
○

Please Indicate your Gender

○ Male

○ Female

Please Indicate your Education Level

○ High School

○ Associates Degree

○ Bachelors Degree

○ Post Graduate

Please Indicate In What Country You Currently Reside.

[   ]

Appendix D: Experiment 4 Manipulations and Questionnaire

Thank you for participating in this study. Please read the following instructions bellow:

Most modern theories of decision-making recognize the fact that decisions do not take place in a vacuum. Individual preferences and knowledge, along with situational variables can greatly impact the decision process. In order to facilitate our research on decision-making we are interested in knowing certain factors about you, the decision maker. Specifically, we are interested in whether you actually take the time to read the directions; if not, then some of our manipulations that rely on changes in the instructions will be ineffective. So, in order to demonstrate that you have read the instructions, please ignore the sports items below. Instead, simply continue reading after the options. Thank you very much.

Which of these activities do you engage in regularly?

- ☐ Football
- ☐ Basketball
- ☐ Baseball
- ☐ Running
- ☐ Swimming
- ☐ Tennis

Thank you for participating in this study.

THIS STUDY INCLUDES VISUAL AND TEXT BASED STIMULI. You will be expected to view and carefully read the stimuli for a certain amount of time. We are aware of the added effort from the MTURK participants. Therefore, we offer you a compensation of $0.80 for a task that will only take around 7-8 minutes.

We implemented control mechanisms to check the time spend on the visual slides and paid attention to it. _Please be aware that a compensation will be declined, if you do not meet the requirements of the study._ This follows Amazon Mechanical Turk policy, which states that "a Requester may reject your work if the HIT was not completed correctly or the instructions were not followed."

Please confirm that you agree with this consent form:

I agree. Please let me start the questionnaire.	I do not agree.
◯	◯

Thank you for participating in this study. The data collected from this study will be anonymous and held securely. No personal data is asked or retained. All the information contained in this survey will be used for academic purposes only. Cookies and personal data that may be stored by your web browser will not be used in this survey.

In the next section, you will be presented with information about a new product. Please carefully read the press release from the Rosebud Company before answering the subsequent survey questions.

Condition 1: Non-Optional Green Attribute

Press Release from the Rosebud Company:

The Rosebud Company has announced the launch of a **washing machine** that was **designed to be environmentally friendly** thanks to the new EcoX technology. The **integrated EcoX technology** helps reduce the machine's environmental impact by reducing water and electricity consumption.

Condition 2: Opt-In Green Attribute

Press Release from the Rosebud Company:

The Rosebud Company has announced the launch of a **washing machine** that was **designed to be environmentally friendly** thanks to the new EcoX technology. The **integrated EcoX technology** helps reduce the machine's environmental impact by reducing water and electricity consumption.

The user can activate the EcoX technology *by pressing a button on the machine. By doing this,* ***the EcoX technology will be turned on.***

Condition 3: Opt-Out Green Attribute

Press Release from the Rosebud Company:

The Rosebud Company has announced the launch of a **washing machine** that was **designed to be environmentally friendly** thanks to the new EcoX technology. The **integrated EcoX technology** helps reduce the machine's environmental impact by reducing water and electricity consumption.

The user can deactivate the EcoX technology **by pressing a button on the machine.** *By doing this,* **the EcoX technology will be turned off.**

Based on the information presented, please evaluate the product shown.

Not Effective	○	○	○	○	○	○	○	Effective
Poor Performance	○	○	○	○	○	○	○	Good Performance
Low Quality	○	○	○	○	○	○	○	High Quality

Based on the information presented, please indicate how environmentally friendly you perceive the washing machine to be.

Not Environmentally Friendly	○	○	○	○	○	○	○	Environmentally Friendly
Not Green	○	○	○	○	○	○	○	Green

In order to operate the machine, I needed to press a button to activate the EcoX technology.

Yes ○   No ○

EcoX was the default option of the washing machine.

Yes ○   No ○

If I did not press any button, this washing machine will operate on...

Regular Mode ○   EcoX ○

Please Indicate your Gender

○ Male

○ Female

Please Indicate your Education Level

○ High School

○ Associates Degree

○ Bachelors Degree

○ Post Graduate

Please Indicate In What Country You Currently Reside.

[   ]

Appendix D: Experiment 5 Manipulations and Questionnaire

<u>Thank you for participating in this study.</u>

THIS STUDY INCLUDES VISUAL AND TEXT BASED STIMULI. You will be expected to view and carefully read the stimuli for a certain amount of time. We are aware of the added effort from the MTURK participants. Therefore, we offer you a compensation of $0.80 for a task that will only take around 7-8 minutes.

We implemented control mechanisms to check the time spend on the visual slides and paid attention to it. *Please be aware that a compensation will be declined, if you do not meet the requirements of the study.* This follows Amazon Mechanical Turk policy, which states that "a Requester may reject your work if the HIT was not completed correctly or the instructions were not followed."

Please confirm that you agree with this consent form:

I agree. Please let me start the questionnaire.   I do not agree.
○   ○

Thank you for participating in our research.

In the following, we will be interested in your opinions on advertising messages. Completing the study will take around 8 minutes of your time. Specifically, we are interested in whether you actually take the time to read the instructions. So, in order to demonstrate that you have read the instructions, please ignore the questions related to the United Kingdom below and do not click on any of the answers. Afterwards, click on the arrows at the bottom of the screen to continue.

What is the capital of the United Kingdom?

○ York

○ Manchester

○ London

Thank you for participating in this study. The data collected from this study will be anonymous and held securely. No personal data is asked or retained. All the information contained in this survey will be used for academic purposes only. Cookies and personal data that may be stored by your web browser will not be used in this survey.

Condition 1: Analytical and Opt-In

You are asked to think about and write a paragraph describing a particularly meaningful event, occasion, or activity that you took part in entirely by yourself and explain why doing so alone made the episode especially meaningful

Press Release from the Rosebud Company:

The Rosebud Company has announced a **washing machine that is designed to be environmentally friendly**. This is due to the EcoX feature that helps lower the machine's environmental impact by reducing water and electricity consumption.

*The user can activate the EcoX feature **by pressing a button on the machine**. By doing this, **the EcoX feature will be turned on.***

Condition 2: Analytical and Opt-Out

You are asked to think about and write a paragraph describing a particularly meaningful event, occasion, or activity that you took part in entirely by yourself and explain why doing so alone made the episode especially meaningful

Press Release from the Rosebud Company:

The Rosebud Company has announced a **washing machine that is designed to be environmentally friendly**. This is due to the EcoX feature that helps lower the machine's environmental impact by reducing water and electricity consumption.

*The user can deactivate the EcoX feature **by pressing a button on the machine**. By doing this, **the EcoX feature will be turned off.***

Condition 3: Holistic and Opt-In

You are asked to think about and write a paragraph describing a particularly meaningful event, occasion, or activity that you took part in with your family and/or friends and explain why doing so with these other parties made the episode especially meaningful.

Press Release from the Rosebud Company:

The Rosebud Company has announced a **washing machine that is designed to be environmentally friendly**. This is due to the EcoX feature that helps lower the machine's environmental impact by reducing water and electricity consumption.

*The user can activate the EcoX feature **by pressing a button on the machine**. By doing this, **the EcoX feature will be turned on.***

Condition 4: Holistic and Opt-Out

You are asked to think about and write a paragraph describing a particularly meaningful event, occasion, or activity that you took part in with your family and/or friends and explain why doing so with these other parties made the episode especially meaningful.

Press Release from the Rosebud Company:

The Rosebud Company has announced a **washing machine that is designed to be environmentally friendly**. This is due to the EcoX feature that helps lower the machine's environmental impact by reducing water and electricity consumption.

*The user can deactivate the EcoX feature **by pressing a button on the machine**. By doing this, **the EcoX feature will be turned off.***

Based on the information presented, please assess the effectiveness of the product shown.

	Low	2	3	Medium	5	6	High
How would you rate the cleaning efficacy of this new washing machine?	○	○	○	○	○	○	○
How would you rate the ability of this new washing machine to clean your clothing?	○	○	○	○	○	○	○

Based on the information presented, please indicate your level of agreement with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
This washing machine deserves to be called environmentally friendly.	○	○	○	○	○	○	○
A person who cares about the environment would be likely to buy this washing machine.	○	○	○	○	○	○	○

Please indicate the extent to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The whole rather than its parts, should be considered in order to understand a phenomenon.	○	○	○	○	○	○	○
It is more important to pay attention to the whole than its parts.	○	○	○	○	○	○	○
The whole is greater than the sum of its parts.	○	○	○	○	○	○	○
It is more important to pay attention to the whole context rather than the details.	○	○	○	○	○	○	○
It is not possible to understand the pieces without looking at the whole picture.	○	○	○	○	○	○	○

Please indicate the degree to which you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
Mankind is severely abusing the environment.	○	○	○	○	○	○	○
I am very concerned about the environment.	○	○	○	○	○	○	○
Major social changes are necessary to protect the natural environment.	○	○	○	○	○	○	○
The so-called "ecological crisis" facing humankind has been greatly exaggerated.	○	○	○	○	○	○	○

In order to operate the machine, I needed to press a button to activate the EcoX technology.

Yes	No
○	○

EcoX was the default option of the washing machine.

Yes	No
○	○

Please Indicate your Gender

○ Male

○ Female

Please Indicate In What Country You Currently Reside.

[   ]

Appendix E: Experiment 6 Manipulations and Questionnaire

Thank you for participating in this study.

THIS STUDY INCLUDES VISUAL AND TEXT BASED STIMULI. You will be expected to view and carefully read the stimuli for a certain amount of time. We are aware of the added effort from the MTURK participants. Therefore, we offer you a compensation of $0.80 for a task that will only take around 7-8 minutes.

We implemented control mechanisms to check the time spend on the visual slides and paid attention to it. *Please be aware that a compensation will be declined, if you do not meet the requirements of the study.* This follows Amazon Mechanical Turk policy, which states that "a Requester may reject your work if the HIT was not completed correctly or the instructions were not followed."

Please confirm that you agree with this consent form:

I agree. Please let me start the questionnaire.   I do not agree.
○   ○

Thank you for participating in our research.

In the following, we will be interested in your opinions on advertising messages. Completing the study will take around 8 minutes of your time. Specifically, we are interested in whether you actually take the time to read the instructions. So, in order to demonstrate that you have read the instructions, please ignore the questions related to Germany below and do not click on any of the answers. Afterwards, click on the arrows at the bottom of the screen to continue.

What is the capital of the Germany?

○ Stuttgart

○ Berlin

○ Frankfurt

Thank you for participating in this study. The data collected from this study will be anonymous and held securely. No personal data is asked or retained. All the information contained in this survey will be used for academic purposes only. Cookies and personal data that may be stored by your web browser will not be used in this survey.

In the following section you will be asked to perform a writing task. Following this, you will view a press release from a company regarding a product.

Condition 1: Analytical and Opt-In

You are asked to think about and write a paragraph describing a particularly meaningful event, occasion, or activity that you took part in entirely by yourself and explain why doing so alone made the episode especially meaningful

The Rosebud T3A Kettle

- Eco-Friendly*
- Push to Open Lid
- 360° base with cord storage
- Concealed heating element
- Removable, washable filter

*The kettle features an eco-friendly mode, which can reduce electricity consumption. The eco-friendly mode can be **activated** by pressing a button on the appliance.

Condition 2: Analytical and Opt-Out

You are asked to think about and write a paragraph describing a particularly meaningful event, occasion, or activity that you took part in entirely by yourself and explain why doing so alone made the episode especially meaningful

The Rosebud T3A Kettle

- Eco-Friendly*
- Push to Open Lid
- 360° base with cord storage
- Concealed heating element
- Removable, washable filter

*The kettle is eco-friendly by reducing electricity consumption. The eco-friendly feature can be *deactivated* by pressing a button on the appliance.

Condition 3: Holistic and Opt-In

You are asked to think about and write a paragraph describing a particularly meaningful event, occasion, or activity that you took part in with your family and/or friends and explain why doing so with these other parties made the episode especially meaningful.

The Rosebud T3A Kettle

- Eco-Friendly*
- Push to Open Lid
- 360° base with cord storage
- Concealed heating element
- Removable, washable filter

*The kettle features an eco-friendly mode, which can reduce electricity consumption. The eco-friendly mode can be *activated* by pressing a button on the appliance.

Condition 4: Holistic and Opt-Out

You are asked to think about and write a paragraph describing a particularly meaningful event, occasion, or activity that you took part in with your family and/or friends and explain why doing so with these other parties made the episode especially meaningful.

The Rosebud T3A Kettle

- Eco-Friendly*
- Push to Open Lid
- 360° base with cord storage
- Concealed heating element
- Removable, washable filter

*The kettle is eco-friendly by reducing electricity consumption. The eco-friendly feature can be *deactivated* by pressing a button on the appliance.

Based on the information presented, please assess the effectiveness of the product shown.

	Low	2	3	Medium	5	6	High
How would you rate the efficacy of this kettle.	○	○	○	○	○	○	○
How would you rate the performance ability of this kettle.	○	○	○	○	○	○	○

Please indicate the degree to which you feel the kettle presented is typical of other products in the green product category.

Very Typical	○	○	○	○	○	○	○	Extremely Atypical
Good Fit	○	○	○	○	○	○	○	Bad Fit
Not at all Unusual	○	○	○	○	○	○	○	Very Unusual
Matches Very Well	○	○	○	○	○	○	○	Matches Not at All

Please indicate the degree to which you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
Mankind is severely abusing the environment.	○	○	○	○	○	○	○
I am very concerned about the environment.	○	○	○	○	○	○	○
Major social changes are necessary to protect the natural environment.	○	○	○	○	○	○	○
The so-called "ecological crisis" facing humankind has been greatly exaggerated.	○	○	○	○	○	○	○

Eco-Mode was the default option of the kettle.

Yes	No
○	○

If I did not press any button, this kettle will operate on...

Regular Mode	Eco-Mode
○	○

Please Indicate your Gender

○ Male

○ Female

Please Indicate In What Country You Currently Reside.