

**Understanding Normative Influence on Green Consumption Behavior: the  
Moderating Role of Self-construal and Self-regulatory Resources**

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## ABSTRACT

### **Understanding Normative Influence on Green Consumption Behavior: the Moderating Role of Self-construal and Self-regulatory Resources**

**Shijing Chen**

The purpose of this paper is to address how and when social influences shape green consumption behaviors. The results of research in social influences on consumer's green consumption behaviors have been mixed. This paper focuses on descriptive normative influences and proposes two moderating factors: self-construal and self-regulatory resources. Past literature has identified these factors as moderators of susceptibility to social influences in different domains. It is expected that people with interdependent (independent) self-construal would be more (less) susceptible to social influence, and self-regulatory resources depletion would render people more susceptible to social influences. Interestingly, the impact of social influences on behavior can be reversed when these two factors are considered together. Contrary to past literature, the results show that independent people are *not* susceptible to normative influence once they are depleted, yet, interdependent people become *more* susceptible to normative influence once they are depleted.

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## INTRODUCTION

Although consumers may not be aware of the influence of others' choices on their own decisions (Nolan et al. 2008), others do influence our behaviors and decisions (Salvy et al. 2007). For instance, individuals mimic others' gestures (Chartrand and Bargh 1999), food choices (Tanner et al. 2008) and even food consumption levels (Johnston 2002). The impact of social influences on our behaviors may be at a more conscious level. Recent work focusing on consumer's green consumption behaviors suggests that behaviors are shaped by social influences. For example, individuals use less heating fuel and recycle more if they are informed of neighbors' relative performance (De Leon and Fuqua 1995; Schultz 1999). Consumers also re-use towels more during the hotel stays when they are informed that majority of the people similar to them did so (Goldstein, Griskevicius, and Cialdini 2007).

Recently, the prominence of green or responsible consumption increased in consumer's daily life, due to heightened awareness of environmental concerns and energy crisis (Schultz, Khazian, and Zaleski 2008). The purpose of this paper is to address how and when social influences shape green consumption behaviors.

There are alternative streams of research that investigate green consumption, which refers to a range of activities, from purchasing fairly traded tea bags to buying organic meat (Gilg, Barr, and Ford 2005). In this paper, green consumption is defined as *consumer behaviors and purchase decisions* which are related to environmental and resource-related problems and are motivated not only by a desire to satisfy individual



needs but also by a concern for the welfare of society in general (Antil and Bennett 1979; Antil 1984).

Does susceptibility to normative social influences vary as a function of one's cognitive resources? Recent empirical research suggests that self-regulatory resources can have an impact on one's susceptibility to social influences. Janssen et al. (2008) found that individuals with lower levels of self-regulatory resources complied more to requests of an authority organization. Interestingly, a series of shopping decisions can be exhausting and depleting one's self-regulatory resources. For example, Vohs et al. (2008) found that making purchase decisions during a shopping trip at a mall depleted self-regulatory resources. In this paper, the author investigates whether individuals with lower levels of self-regulatory resources are more susceptible to normative influences regarding green consumption behaviors.

Susceptibility to normative influences can also vary as a function of individual level factors. One important individual factor that can determine susceptibility to social influences is self-construal. Violation of social norms, such as not recycling when the majority of the residents of a neighborhood are, is a type of social risk (Keltner and Buswell 1997; Mandel 2003). Mandel (2003) found that individuals whose interdependent selves were activated were less social-risk-seeking than were those whose independent selves were activated. This finding suggests that individuals with interdependent self-construal would be less likely to violate social norms regarding green consumption behaviors and be more susceptible to normatively construed messages.

From a decision process perspective, the self-construal and norm compliance relationship is further supported by decision mode resulting from self-construal. Past research suggests that people with different self-construals have different modes of cognition (Markus and Kitayama 1991; Nisbett et al. 2001), which influences the range and focus of attention and whether they would be able to process the norms. Individuals with interdependent self-construals are more likely to engage in context-inclusive processing whereas those with independent self-construal are more likely to exclude contextual information in their processing (Krishna, Zhou, and Zhang 2008).

The purpose of this research is to show that individual's self-construal and availability of self-regulatory resources can determine the effectiveness of social influences on individual choice, namely green consumption choice. The domain of social influences on green consumption is important for both marketers and public welfare. Public agencies and marketers use social influences in shaping consumer behaviors, such as reducing home energy consumption, heating fuel use and litter (Dixon et al. 1992); increasing curbside recycling (e.g., De Leon and Fuqua 1995; Schultz 1999), gas mileage (Dixon et al. 1992) and recycling of towels (Goldstein et al. 2007, 2008). A hotel was reported to successfully encourage the recycling of towels by using social norm approach (Goldstein et al. 2007, 2008). Understanding the limitations of social influences would help private and public sectors to improve the effectiveness of their social influence approaches by targeting the correct people and under suitable situations.

In this paper, the focus will be on descriptive normative influences on individual choice and two crucial moderating factors: self-construal and self-regulatory resources.

Past literature has identified these factors as moderators of susceptibility to social influences in different domains, such as self-regulatory resources in donation (Janssen et al. 2008) and self-construal in social risk seeking (Mandel 2003). The self-construal relates to what kind of people would be more susceptible to social influences, whereas the self-regulatory resources relate to situational factors that would render people more susceptible to social influences. Interestingly, the impact of social influences on behavior can be reversed when these two factors are considered together. Contrary to past literature, the results here show that independent people are *not* susceptible to normative influence once they are depleted, yet, interdependent people become *more* susceptible to normative influence once they are depleted.

The paper is organized as follows: In the next section, past research on normative influences is reviewed. The studies that failed to produce substantial changes in behavior using normative influences are revisited. Next, hypotheses about potential moderators influencing norm compliance are presented and tested. Finally, the conclusions and implications for marketers are discussed.

## **THEORETICAL BACKGROUND**

### **Social Influence**

Social influence has long been recognized as an important force shaping an individual's consumption behaviors (Mangleburg, Doney, and Bristol 2004). These influences may occur before purchase (e.g., through word-of-mouth communication and

patterns of information-seeking), during purchase (e.g., when others are present in purchase settings), and after purchase (e.g., when others are present in consumption contexts) (Mangleburg et al. 2004). Two primary types of social influence have been identified in the literature: informational and normative social influence. Reference groups may exert influences by providing information in ambiguous situations (i.e., informational influence), as well as by setting normative standards of conduct and/or by enhancing an individual's self-image (i.e., normative influence) (Mangleburg et al. 2004). In this paper focus is on normative social influence.

### Normative Influence

Normative influence is “an influence to comply with the positive expectations of another” (Deutsch and Gerard 1955, p. 629). People under this kind of influence seek social approval from others by behaving what others think they should do (Cialdini and Goldstein 2004). Beliefs about what other people do, and approve of doing are referred to social norms (Schultz, Tabanico, and Rendon 2008), which include descriptive and injunctive norms (Cialdini, Kallgren, and Reno 1991). Descriptive norms (OR group feedback) refer to what is commonly done in a given situation (Schultz 1999), and they motivate human action by informing individuals of what is likely to be effective or adaptive behavior in that situation. For example, in a hotel washroom, an information card saying “Join your Fellow Guests in Helping to Save the Environment. 75% of guests reuse their towels.” (Goldstein et al. 2007, 2008) creates a descriptive norm by informing guests of what others commonly do in that hotel. Injunctive norms, on the other hand, refer to what is commonly approved or disapproved within the culture. They are usually

abstract/conceptual and remain the same across situations. For example, a person should turn the lights off every time he or she leaves a room (Goldstein and Cialdini 2008).

Descriptive norms are more relevant to this paper due to methodological and practical reasons: First, injunctive norms are difficult to foster within a short period of time because they are commonly developed within the culture, whereas descriptive norms are more situation-specific (Reno, Cialdini, and Kallgren 1993) and thus easier to modify. As a result, descriptive norms are more likely to be targets in marketing campaigns to induce green consumption behaviors. Second, descriptive norms are less likely to transfer across situations than injunctive norms (Goldstein and Cialdini 2008, p. 276). Therefore, manipulating descriptive norms can largely rule out the possible effect of other descriptive norms carried from situations other than the lab.

Group feedback could also be referred to as descriptive normative messages. The term group feedback is used mainly in literature concerning environmental behavior. Schultz (1999) is the first to relate group feedback with descriptive normative messages. He stated that the use of feedback is one of the most practical approaches to activate norms. In addition, feedback interventions are defined as actions taken by (an) external agent(s) to provide information regarding some aspect(s) of one's task performance (Kluger and DeNisi 1996, p. 255). In specific, individual feedback refers to feedback on performance of individual while group feedback refers to feedback on performance of an entire group of people (De Leon and Fuqua 1995).

## Success with Normative Influence

Despite the wide adoption of social norm marketing campaigns in the area of pro-environmental behaviors, evidence for the success of these programs has been surprisingly mixed. A number of researchers have successfully used group feedback as a way to encourage pro-environmental behaviors in many different arenas, including reducing electricity consumption (Seligman and Darley 1977), increasing gas mileage, decreasing heating fuel use (Scheultz 1999), reducing litter (Dixon et al. 1992), and increasing recycling (e.g., De Leon and Fuqua 1995; Schultz 1999).

For example, De Leon and Fuqua (1995) conducted a study with residents of an apartment complex affiliated with a university. The complex housed students and their families. They divided the volunteer households into four groups and then gave each household a paper recycling bin labeled with its group number. Intervention started from the 6<sup>th</sup> week. The recycled materials were collected and weighed weekly for 11 weeks and the percentage change from the first 6 weeks to the last 5 weeks was considered as a dependent variable. Households in the feedback-only group received group feedback: the initial feedback letter was taped to the apartment door, which contained a graph that illustrated the total weight of recycled paper collected by that group during each of the 6 previous weeks and informed households that a similar graph would be published in the campus newspaper weekly for the next 5 weeks. Households in the control group received no intervention. The result indicated that, the feedback-only group recycled 25.47% more paper while control group showed no substantial change.

In other field studies, researchers successfully used mass media to reach a larger population. Rothstein (1980) used television news reports to reduce gasoline consumption in a large community in West Texas. Every weekday evening during the summer, the nightly news reported a graph with the number of gallons of gasoline consumed the previous day. While the graph was on the screen for 30 seconds, the reporter gave a conservation tip, offered commendation and tried to encourage competition between the two cities. The amount of gasoline consumed was reported by gasoline station managers who took the information from automatic pump counters. Research assistants tabulated this data from a random sample (N=18) of all 190 gasoline stations in the area. Baseline data was taken for two weeks before the intervention. Results indicated that a mass audience could reduce gasoline consumption to 31.5% of baseline when it received appropriate feedback.

Similarly, Schnelle et al. (1980) showed that local newspaper could reduce littering through daily reports prompting and graphical feedback in yards along streets of a small city (population 30,000). A multiple baseline design was used. Daily measures of ground litter were taken in three areas: two residential and commercial areas and the other one near a city school. An initial article calling for an anti-litter campaign and daily information concerning the amount of litter present was published in the local newspaper. The result indicated that the amount of litter decreased by around 35%.

Descriptive normative messages are shown to work effectively in the context of environmental conservation in hotels (Goldstein et al. 2007, 2008). To enlist guests' participation, hotels typically place an information card in their washrooms to encourage

the guests to reuse their towels. Information cards with traditional appeals (e.g., “Help the Hotel Save Energy”) drew a participation rate of less than 16%. Goldstein et al. (2007, 2008) found that applying the descriptive norm in the information card (e.g., “Join your Fellow Guests in Helping to Save the Environment. Almost 75% of guests who are asked to participate in our new resource savings program do help by using their towels more than once.”) elicited 44.1% participation rate. Furthermore, normative appeals describing group behavior that occurred in the setting that most closely matched individuals’ immediate situational circumstances (e.g., “...75% of guests *in this room* reuse their towels”) elicited even higher (49.3%) participation rate.

#### Failures with Normative Influence

In contrast with the literature discussed above, there are studies in the same field that had inconsistent results. De Young et al. (1995) investigated the promotion of recycling in multi-family dwellings by utilizing specific and general group feedback techniques: biweekly postcards providing specific feedback to each dwelling unit with quantity and contamination of the recycled materials, and newsletters giving general information on recycling and the amount recycled by the city as a whole. The control group received no intervention. The amount of materials recycled was measured and there was no significant effect of feedback in general. However, specifically, the feedback intervention was effective in contamination of recycled materials for middle sized complexes. Thus the size of the complex was one of the factors that have contributed to the overall ineffectiveness of feedback intervention. In addition, the authors suspected the original high rates of recycling in that neighborhood to be another



contributing factor. They thought that if participants have already been recycling at a high rate, there may be little room for any increase to result from the intervention. But this explanation was not empirically tested.

Similarly, Katzev, Cooper, and Fisher (1980-1981) explored the feedback effect in electricity use by sampling 44 residents in Portland, Oregon. Households were either given daily contingent feedback (kWh, cost and compared to other households), three day contingent feedback plus decal (kWh, cost, compared to others, and commendation for reduced consumption), or three day non-contingent feedback plus decal (kWh, cost, and commendation regardless of whether households had actually decreased consumption or not). Each of these feedback conditions had very little impact on electrical energy consumption relative to control group, neither during the two week intervention phase nor during the two week follow-up periods later, possibly due to a small number of respondents in each experimental group.

In some cases, interventions based on social norms generated undesirable behaviors. Such cases were usually observed in behaviors related to substance use. For example, Clapp et al. (2003) reported results from a quasi-experiment with two college residence halls. The intervention used various types of media to convey messages indicating that most students have only a few drinks: "Seventy-five percent of [school name] students drink 0, 1, 2, 3 or 4 drinks when they party." The results showed that the messages were effective at changing normative beliefs, but had no effects on drinking behavior. In fact, the results indicated a trend toward an increase in the number of drinking days in the past month.

## HYPOTHESIS

### Self-construal

The concept of self is central to an individual's perceptions, evaluations and behaviors. Self-construal is a constellation of thoughts, feelings, and actions concerning one's relationship to others, and the self as distinct from others (Singelis 1994). Based on Markus and Kitayama (1991), an independent self-construal is associated with concerns about establishing distinctiveness from others and being successfully self-reliant, whereas an interdependent self-construal is associated with concerns about maintaining connectedness and harmony with others. The constellation of elements composing an independent self-construal includes an emphasis on (a) internal abilities, thoughts and feelings, (b) being unique and expressing the self, (c) realizing internal attributes and promoting one's own goals, and (d) being direct in communication. On the other hand, an interdependent self-construal emphasizes (a) external, public features such as statuses, roles, and relationship, (b) belonging and fitting in, (c) occupying one's proper place and engaging in appropriate action, and (d) being indirect in communication and "reading others' minds".

Self-construal is considered as a distinction between members of Western and Eastern cultures (Markus and Kitayama 1991). Interdependent self-construal is more dominant in Eastern cultures (e.g., China), where people believe in the connectedness of human beings and view the self as part of a larger social group. Independent self-construal is more dominant in Western cultures (e.g., United States), where people believe in the inherent separateness of distinct persons and view the self as an

autonomous (Markus and Kitayama 1991). Some researchers used the continuum of collectivism and individualism to refer to interdependent and independent self-construals (Jain, Desai, and Mao 2007; Singelis 1994).

Self-construal is expected to affect norm compliance. The individuals with interdependent self-construal have the goal of maintaining good relationships with others. They are likely to focus on obtaining social approval via their self-presentations (Lalwani and Shavitt 2009). Lalwani and Shavitt (2009) showed (in studies 2, 7 and 8) a significant positive relationship between interdependent self-construal and compliance to social norm. This relationship held when injunctive norms were used. They found that people with independent self-construal tend to present themselves as uniquely competent and skillful while people with interdependent self-construal tend to present themselves as normatively appropriate and socially sensitive. For example, in study 7, a scenario based prime was used to activate participants' independent or interdependent self-construal. Then, participants were asked 20 multiple choice questions about etiquette. The result demonstrated that when an interdependent (vs. independent) prime was salient, participants were more likely to perform better on the questions about etiquette and appropriate social behaviors (for instance, correctly responding that one should leave one's napkin on the seat of one's chair when leaving the table or that when shaking hands, persons of either gender can extend their hand).

A similar conclusion can be drawn from a social risk perspective. Mandel (2003) found that individuals whose interdependent selves were activated were less social-risk-seeking than were those whose independent selves were activated. A social risk is one in

which a negative outcome would result in embarrassment or disapproval among one's family or peers, whereas a positive outcome would result in approval or esteem among one's family or peers. Interdependent people are less social-risk-seeking because they care more about the relationship with others and self perceived by others (Lalwani and Shavitt 2009). Violations of social norms while others are watching can cause embarrassment or disapproval from others (Keltner and Buswell 1997). Thus it is expected that interdependent individuals will be less likely to violate social norms.

From a decision process perspective, the self-construal and norm compliance relationship is further supported by decision mode resulting from self-construal. Self-construals can lead to different modes of cognition: holistic versus analytic. Holistic thought involves “an orientation to the context or field as a whole” whereas analytic thought involves “detachment of the object from its context” (Nisbett et al. 2001, 293). Nisbett et al. (2001) found East Asians to be holistic, attending to the entire context and assigning causality to it, whereas Westerners are more analytic, paying attention primarily to the object and using rules, including formal logic, to understand its behavior. According to Markus and Kitayama (1991), non-Western individuals hold an interdependent image of self (the interdependent self-construal), whereas individuals from Western cultures hold independent view of the self (the independent self-construal). Therefore, interdependent people tend to attend to both the foreground objects and the context and engage in context-inclusive processing, whereas independent people tend to pay attention primarily to foreground objects and exclude contextual information in their processing (Krishna et al. 2008; Nisbett and Masuda 2003; Nisbett and Miyamoto 2005).

For example, Masuda and Nisbett (2001) presented animated scenes of fish and other underwater life to independent and interdependent participants and later asked them to report what they had seen. Although independent and interdependent were equally likely to refer to the focal fish, interdependent participants made 70% more statements about background features (“There was a lake or pond” or “The bottom was rocky”), and twice as many statements about relationships between objects (“The big fish swam past the gray seaweed”) than independent ones.

Given that descriptive norms are situation-specific (Reno et al. 1993) and thus are usually in context, it is expected that interdependent people, compared to independent people, are more likely to attend to descriptive norms and assign causality between the norms and objects, thus be more easily affected by the norms. According to Jain et al. (2007), interdependent people view the self in the context of the collective, that is, they use social norms and duties to shape their social behavior, tend to engage in more communal relationships, consider situational or contextual information (descriptive norms in this research) in processing stimulus information, and emphasize satisfaction of collective goals. Independent people define the self as autonomous and independent. Thus, their behaviors are guided by their personal attitudes, their priority is on satisfying individual goals rather than collective goals, and they are less motivated to consider stimulus context (descriptive norms in this research).

## Self-construal and Self-regulatory resources

The impact of self-construals on norm compliance might interact with situational factors. Self-construal is closely connected with cultural theories (Markus and Kitayama 1991). Cultural theories may be rendered more or less accessible and applicable by situational characteristics (Hong and Mallorie 2004).

The effect of self-construals on norm compliance is expected to be related to individual's cognitive resources. One of the ways in which self-construals affect norm compliance is through decision mode and its impact on the ability to attend to context. However, lack of cognitive resources can also reduce one's ability to attend to and process the context.

It should be noted that cognitive resources are part of self-regulatory resources (Vohs and Faber 2007). Self-regulation is defined as the self exerting control to override a prepotent response, with the assumption that replacing one response with another is done to attain goals and conform to standards (Vohs et al. 2008, p. 884). Self-regulatory resources can be described as the "mental energy or strength" needed for self-regulation (Baumeister, Muraven and Tice 2000). Thus they could be depleted by self-regulation processes, such as controlled processing, active choices and overriding responses. The self-regulatory resource model posits that self-regulation involves broader, more global, resources that oversee a wealth of different self-control acts. In the experiments of Schmeichel, Vohs, and Baumeister (2003), participants showed poorer performance on a

cognitive test after depletion of self-regulatory resources, suggesting that depletion of self-regulatory resources also depleted cognitive resources.

Independent individuals

*High self-regulatory resource condition*

It is possible that with enough self-regulatory resources, independent individuals could attend to context besides objects and engage in context-inclusive processing, behaving similarly as interdependent ones. Theoretically, independent people focus on objects more and the context less, and therefore are expected to be less susceptible to normative influence than interdependent people. However, with sufficient self-regulatory resources, independent people may also attend to descriptive norms (Vohs et al. 2008), which are made salient in the context, and engage in context-inclusive processing. Therefore, when self-regulatory resources are sufficiently high, independent self-construal individuals may attend to the context and the objects, and therefore take note of the norm and further process the norm.

*Low self-regulatory resource condition*

With limited cognitive resources, independent people are expected to attend to the objects more than the context. The reasoning for this expectation is that analytic cognition mode will lead to less focus on the context and more on the objects. They need “more” cognitive resources to attend to the context. Therefore, in order to attend to and process the context, independent people might need more cognitive resources than

interdependent people. That is to say, after cognitive resources are depleted, independent people might fail to notice the context and fail to process the descriptive norms.

**H1:** Independent individuals will be *less* likely to choose options congruent with the norm when they are depleted versus not depleted.

Interdependent individuals

*High self-regulatory resource condition*

In general, interdependent individuals attend to descriptive norms and assign causality between the norms and objects, thus likely to be affected by the norms. With enough self-regulatory resources, they would definitely be able to attend to and process the norms. In other words, when self-regulatory resources are high, interdependent self-construal individuals would be susceptible to normative influence.

*Low self-regulatory resource condition*

Nisbett et al. (2001) found that under all circumstances, East Asians (interdependent individuals) are capable of attending to both the object and the context, and to a wider range of objects in the context, than Americans (independent individuals). Given that interdependent individuals typically use holistic cognition mode and attend to the context, they need less cognitive resources than independent people to attend to and process the context. Therefore, with limited cognitive resources, interdependent people



will be able to notice the context and have enough resources to engage in context-inclusive processing.

Furthermore, the author posits that interdependent people would become more susceptible to normative influences once they are depleted than when they are not depleted. Self-regulatory resources are limited (Janssen et al. 2008). One act of volition will have a detrimental impact on subsequent volition, which draws from the same resources. As a consequence, the self is less able to function effectively which may result in further reliance on habit, routine, and automatic processes (Baumeister et al. 2000; Vohs, Baumeister, and Ciarocco 2005). After depletion, consumers would “follow the path of least resistance.” For instance, Janssen et al. (2008) indicated that consumers who were depleted earlier by responding to one or more initial small requests would probably become “vulnerable” to the substantial request presented in the end. A depletion of self-regulatory resources also renders people less inclined to make active responses and more prone to favor a passive response option (Baumeister et al. 1998). A lab study by Janssen et al. (2008) demonstrated that a lower level of self-regulatory resources increases the extent of compliance with a request of an authority organization. Similarly, it is expected that after depletion, interdependent people would comply with the majority, which is the social norm, to a greater degree. On the other hand, this would not be the case for independent people because they are less likely to attend to the norm after depletion of self-regulatory resources.

**H2:** Interdependent individuals will be *more* likely to choose options congruent with the norm when they are depleted versus not depleted.

## **NORM MANIPULATION PRETEST**

In order to test the effectiveness of our norm manipulation, a pretest prior to the main study was conducted. The two normative conditions manipulated were green and thrifty norms. In green norm condition, participants were led to believe that the majority in the current and previous sessions made environmentally friendly choices. In thrifty norm condition, participants were led to believe that the majority preferred immediate monetary benefits to environmental concerns.

In order to make sure that the normative influence was effective, besides making norm salient, the reference group had to be meaningful (Bearden, Nettemeyer, and Teel 1989; Kelman 1961; Terry, Hogg, and White 1999) and similar (Burnkrant and Cousineau 1975; Moschis 1976) to the participants. Thus the reference group chosen in this research was other participants in the same study, who were also students, attended the same course as the participants and might even be friends with the participant.

### **Procedure**

Participants were asked to finish a filler task first, then they would choose a compensated gift for their participation in the filler task. Norm manipulation was conducted during and after the period of choosing gift. Next, they would finish the second questionnaire/task, which served as manipulation check questions (see Appendix B).

In specific, the participants were informed that they would be participating in two unrelated tasks, referred to as “Language Ability Test” and “Product Evaluation Study”,

and that between these two tasks they would be asked to choose a gift as their compensation for participating in the first task, which they would receive at the end of the study (see Appendix B). The first task (the first questionnaire), the language ability test, was a scrambled sentence test. It required all the participants to form a sentence using only 4 out of the 5 words. There were 20 sentences to form in total. This task served as a filler task so that norm manipulation could be introduced naturally before the second task, which was the manipulation check questions.

After the majority finished the first task, the experimenter presented the gift choices through projection on the screen. There were two choices, Option A and Option B, each having an equal value of \$4.95 (in Appendix A). Option A was “LaCoupe Orgnx EMbody Shampoo”, an environmentally friendly shampoo, priced \$4.95. Option B was “LaCoupe Amplify Shampoo”, a similar shampoo as in Option A, with the same function but not with the “green” feature, priced at \$4.70. Moreover, those who chose Option B would be reimbursed for the price difference (i.e., they would receive \$0.25 cash in addition to the less expensive shampoo). Therefore, by choosing Option A or B, participants chose being environmentally friendly or thrifty. This manipulation reflects realistic market conditions, as environmental products are priced higher in general than their “non-green” counterparts (Conard 2005).

Participants were presented with counts of each option below the projection screen (as in Appendix A) and they were told that these counts reflected choices of participants from previous sessions and served as a record for the experimenters to keep track of the gift inventories for the experiment. For participants in green norm condition,

the counts were Option A: 92 vs. Option B: 8. On the other hand, for those in thrifty norm condition, the counts were Option A: 8 vs. Option B: 92. In addition, the experimenter mentioned that this was a real choice for their compensation and highlighted the majority choice by saying that the majority in the previous sessions chose A—the greener product (green norm) or B—the frugal product (thrifty norm). Next, participants indicated their gift choice for the experiment at the end of the first questionnaire. The experimenter collected all the questionnaires, pretended to count the number of people who chose each product and loudly communicated to the other experimenter that: “Out of this and last sessions, 9 people chose product A, only 1 person chose product B” (green norm) or “Out of this and last sessions, 9 people chose product B, only 1 person chose product A” (thrifty norm). The other experimenter then adjusted the counts on the board accordingly. (Counts in green norm condition became Option A: 101 vs. Option B: 9; counts in thrifty norm condition became Option A: 9 vs. Option B: 101). By then, the norm manipulation was completed.

Next, the participants were informed that they would start the second task (the second questionnaire), the “Product Evaluation Study”, which included evaluation on two gift pairs and demographic questions. The evaluation of gift pairs served as the manipulation check questions. In specific, participants were told to evaluate the gift pairs, which were similar to the real gift choice that the participants just made, on a 10-point scale (1=Gift A is more attractive, 10=Gift B is more attractive). At the end of the study, participants received the gifts that they chose.

## Results

A total of 33 undergraduate participants completed the survey (63.6% female). They received course credits for their participation. Overall, the results showed that the norm manipulation was successful.

As for real gift choice, majority (83.3%) participants under green norm influence chose Option A (the environmentally friendly shampoo). On the contrary, majority (53.3%) participants under thrifty norm influence chose Option B (the less expensive shampoo). A logistic regression analysis was run on the real gift choice data and the effect of norm condition was significant ( $Cox \& Snell R^2 = 0.142$ ,  $Nagelkerke R^2 = 0.198$ ,  $p < .05$ ). The coefficient for norm condition was 1.743, suggesting that participants in green norm condition preferred the environmental option more than the less expensive option (in figure 1).

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Insert figure 1 about here

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As for imaginary gift choices, a gift index for each individual was created by averaging one's ratings for the two gift choices ( $r = 0.753$ ). Then the gift index was regressed on the norm condition. The ANOVA result indicated that the normative effect was significant ( $M_{green-norm} = 3.98$ ,  $M_{thrifty-norm} = 6.60$ ,  $F(1, 31) = 7.60$ ,  $p < .05$ ). Participants in the green norm condition evaluated the environmentally friendly product more favorably than those in green norm condition.

The analyses at the multivariate level with the two gift choices provided similar results. Participants' gift evaluation was affected by the norm ( $F(1, 31) = 3.68, p < .05$ ). Specifically, compared to individuals in thrifty norm condition, those in green norm condition evaluated environmental cotton swabs more favorably ( $M_{green-norm} = 3.94, M_{thrifty-norm} = 6.67, F(1, 31) = 5.83, p < .05$ ). Similarly, individuals in green norm condition found the environmental face towel more attractive than those in thrifty norm condition did ( $M_{green-norm} = 4.00, M_{thrifty-norm} = 6.53, F(1, 31) = 5.82, p < .05$ ) (in table 1). There were no significant gender differences.

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Insert table 1 about here

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## STUDY

Given that the norm manipulation was successful, this paper proceeded to test the hypotheses by adopting the same norm manipulation method as in pretest.

### Procedure

The design for this study was 2 (self-regulatory resources: high vs. low)  $\times$  2 (norm: green vs. thrifty)  $\times$  2 (self-construal: independent vs. interdependent). The two norm manipulations were identical to those in the pretest. Self-construal was measured by a 24-item scale developed by Singelis (1994), with 12 measuring the interdependent self-construal and 12 measuring the independent self-construal (see Appendix D for scale items).

Self-regulatory resource manipulation was adopted from Baumeister, et al. (1998, p. 1260), disguised as part of the “Language Ability Test”. Each participant was given a type-written sheet of paper with an excerpt from a biology journal written in a highly technical style. Participants in the high self-regulatory resource condition were told to cross out all the letter “e”s. In the low self-regulatory resource condition, participants were asked to cross out “e”s only if it was not adjacent to another vowel or one letter away from another vowel.

To sum up, besides finishing the exact same tasks as in pretest, participants were required to finish a crossing “e”s task in the beginning and extra questions about self-construal in the end (as in Appendix C). That is to say, participants were asked to finish a “Language Ability Test” first, which consisted of two parts, a crossing “e”s task and the filler task as in pretest. Then they would choose a compensated gift for their participation in the “Language Ability Test”. Norm manipulation was conducted during and after the period of choosing gift. Next, they would finish the second questionnaire/task, which served as manipulation check questions and included questions about self-construal.

In specific, the participants were informed that they would participate in two unrelated tasks, “Language Ability Test” and “Product Evaluation Study”, and that between these two tasks they would be asked to choose a gift as their compensation for their participation. Participants were asked to first complete the self-regulatory resource manipulation disguised as the first part of “Language Ability Test”, then complete the scrambled sentence test as in pretest. Next, the experimenter presented the gift choices to

participants, and collected all the first questionnaires after participants finished making their choices. The experimenter then announced the fake percentage of current and previous product choices to the other experimenter, who then corrected the counts on board accordingly. By then, the norm manipulation was completed. Next, participants finished the second task (the second questionnaire) “Product Evaluation Study”, which included evaluation on two gift pairs, self-construals scale and demographic questions. At the end of the study, participants received the gifts that they chose and left.

## Results

### *Manipulation check*

Following the crossing “e”s task, participants were told to rate the difficulty of the task on a 7-point (1=Not at all difficult/effortful to 7=Very difficult/effortful) scale for three questions: “How difficult was it for you to cross out the ‘e’s?””, “How difficult was it for you to follow the instructions?”, and “How effortful did you find crossing out the ‘e’s?””

As expected, a MANOVA revealed that participants in low self-regulatory resource condition rated the task more difficult than those in high self-regulatory resource condition ( $F(1, 184) = 8.11, p < .01$ ). Specifically, participants in low self-regulatory resource condition considered the task more difficult and effortful to cross out the “e”s than those in high resource condition (difficulty:  $M_{low-self.R.R} = 2.92, M_{high-self.R.R} = 2.15, F(1, 184) = 17.80, p < .01$ ; effortfulness:  $M_{low-self.R.R} = 4.18, M_{high-self.R.R} = 3.56, F(1, 184) = 6.90, p < .01$ ). Similarly, those in low resource condition considered following the



instructions as more difficult than those those in high resource condition ( $M_{low-self.R.R} = 1.84$ ,  $M_{high-self.R.R} = 1.27$ ,  $F(1, 184) = 17.71$ ,  $p < .01$ ).

Furthermore, participants' mood was assessed by five questions on a 7-point scale (from Very unpleasant to Very pleasant, from Depressed to Cheerful, from Annoyed to Content, from Unhappy to Happy, and from In a bad mood to In a good mood) ( $r = 0.884$ ). The result indicated that participants' mood was not affected by depletion task ( $F(1, 183) = 1.04$ ,  $p > .10$ ).

### *Dependent variables*

A total of 184 participants completed the survey (52.2% female). Overall, the results supported the hypotheses. The analyses at the multivariate level with the two gift choices indicated significant three-way interaction ( $F(3, 178) = 4.02$ ,  $p < .05$ ) among self-regulatory resource, norm and self-construal. There was also a significant main effect of gender across conditions: females (52.2%) found the environmental alternative more attractive. However, the significance and pattern of proposed interaction effect did not change when gender was excluded from the analysis. The analysis presented below excluded main effect of gender.

At the univariate level, the three-way interaction for both gift choices had similar directional pattern (in figure 2 and 3), but the interaction was significant only for cotton swabs ( $F(3, 178) = 7.92$ ,  $p < .01$ ) but not for face towels ( $F(3, 178) = 2.15$ ,  $p > .10$ ) (in table 2).

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Insert table 2 about here

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Independent individuals were more likely to choose options congruent with the norm than options that were non-congruent with the norm when they were not depleted. In high self-regulatory resource condition, compared to independent individuals in thrifty norm condition, those in green norm condition evaluated environmental cotton swabs more favorably ( $M_{green-norm} = 3.37$ ,  $M_{thrifty-norm} = 5.85$ ,  $t(df = 41) = -2.451$ ,  $p < .05$ , lower scores reflect preference for environmental option). Directionally, individuals in green norm condition found the environmental face towel more attractive than those in thrifty norm condition did, however, this difference was not significant ( $M_{green-norm} = 4.74$ ,  $M_{thrifty-norm} = 5.57$ ,  $t(df = 38) = -.776$ ,  $p > .10$ ). These results were presented in figure 2A and figure 3A.

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Insert figure 2 about here

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Insert figure 3 about here

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Independent individuals were less likely to choose options congruent with the norm (than options non-congruent with the norm) when they were depleted. With low self-regulatory resources, independent individuals in two norm conditions evaluated the two cotton swab options similarly ( $M_{green-norm} = 4.40$ ,  $M_{thrifty-norm} = 3.69$ ,  $t(df = 44) = .735$ ,

$p = .466$ ) (in figure 2A). Same had been found in the evaluation on face towel pair ( $M_{green-norm} = 4.65, M_{thrifty-norm} = 5.04, t(df = 44) = -.378, p = .707$ ) (in figure 3A).

Therefore, *independent individuals were less likely to choose options congruent with the norm when they were depleted versus not depleted (H1).*

It was predicted that the interdependent individuals in high self-regulatory resource condition (H2) would be susceptible to normative influence. Even though those in green norm condition considered environmental cotton swabs as more attractive than those in thrifty norm condition ( $M_{green-norm} = 3.11, M_{thrifty-norm} = 3.92, t(df = 51) = -1.160, p > .10$ ) (in figure 2B), the difference was not significant. For face towel pair, the difference was marginally significant ( $M_{green-norm} = 3.86, M_{thrifty-norm} = 5.04, t(df = 51) = -1.389, p < .10$ , one-tailed) (in figure 3B).

The evaluations by interdependent individuals in low self-regulatory resource condition were consistent with H2. They were more likely to choose options congruent with the norm than options non-congruent with the norm when they were depleted. In low self-regulatory resource condition, as opposed to interdependent individuals in thrifty norm condition, those in green norm condition evaluated environmental cotton swabs much more favorably ( $M_{green-norm} = 2.71, M_{thrifty-norm} = 4.95, t(df = 43) = -2.902, p < .05$ ) (in figure 2B). Same had been found in the evaluation on face towel pair ( $M_{green-norm} = 2.79, M_{thrifty-norm} = 6.24, t(df = 43) = -4.822, p < .05$ ) (in figure 3B). Therefore, *interdependent individuals were more likely to choose options congruent with the norm when they are depleted versus not depleted (H2).*

## GENERAL DISCUSSION

Overall, the results provide empirical support for the hypotheses (H1 and H2): independent people were *not* susceptible to normative influence once they were depleted; on the contrary, interdependent people became *more* susceptible to normative influence once they were depleted. Also, independent people were susceptible to normative influence if they were not depleted (H1), but it is significant with only one of the two evaluation tasks.

The findings are important for several reasons. First, this research is perhaps the first to focus on normative influence on green *purchase* behaviors, which are directly related to sales and marketing. Previous research on normative influence focused on public sectors such as environmental conservation behaviors (e.g., electricity consumption, curbside recycling) and substance use behaviors (e.g., alcohol drinking).

Second, the findings about the moderating effects in green purchase behavior are consistent with those in other behaviors, further supporting those previous studies. The predictions about the moderating effects of self-regulatory resources and self-construal were based on literature in other fields such as donation behavior (Janssen et al. 2008) and social risk seeking behavior (Mandel 2003).

Third, complementing the current literature, this research directly addresses the effects of two moderating factors in norm compliance in green consumption behavior. Mixed results have been found in the field but most of those failed studies were not able to pin point the reason. For some failed examples (De Young et al. 1995; Katzev et

al.1980-1981) reviewed in this paper, it could be due to the inappropriate timing when distributing feedback information.

Finally, and more importantly, this research finds a three-way interaction between self-regulatory resources, normative influence and self-construal. Understanding the interaction of these variables provides a clearer picture and helps better explain findings in other studies. For instance, McFerran et al. (2010) investigated the role of self-regulatory resources in social contrast and reported that low levels of self-regulatory resources impaired contrast effect. The findings in this study suggest the impact of self-regulatory resources is more complicated: Depletion of self-regulatory resources impairs norm compliance only for independent people, but not for interdependent people. In contrast, self-regulatory resource depletion increases norm compliance for interdependent people. Future research should investigate whether the three-way interaction observed in this study would extend to other settings and effects, such as social contrast and mimicry.

As for managerial implication, this research provided marketers a new approach, social norm approach, to encourage consumers to buy green products. Traditional approaches informing consumers of company's pro-environmental aspects or arousing consumer's environmental concern are not very effective (Goldstein et al. 2007, 2008). As a result, even though the number of advertisements featuring traditional approaches is on the rise (Banerjee, Gulas, and Iyer 1995), the number of consumers buying green products regularly is limited. According to Mintel estimation, only around 13 per cent of adults in the UK regularly purchase some organic foods (Davies, Titterton, and Cochrane 1995). Therefore, an alternative approach is urgently needed for companies.

Social norm approach has been applied a lot in controlling substance use (Clapp et al. 2003) and encouraging conservation (Rothstein 1980). This research indicated empirically that social norm approach could also be applied to consumer's green purchase behaviors.

Importantly, this research indicated that social norm approach is effective regardless of product price. This is essential because environmentally friendly products are usually priced higher than their non-green counterparts (Conard 2005). According to the U.K. Department for Environment, Food, and Rural Affairs (2007), the cost is the biggest barrier for potential green consumers. In a large scale survey (n= 3,600), close to half of the U.K. consumers wanted a two-year return on the premium price they paid for a green product. On the contrary, in this research, consumers preferred the environmental option even though it was more expensive than its non-green counterpart, as long as they were under green norm influence. Many brands or products are positioned on the dimension that this paper investigated. Therefore, marketers could use social norm approach to promote green products, without cutting product price.

While utilizing social norm approach is useful, marketers should pay attention to situational factors like the level of self-regulatory resources and individual factors like self-construals as well as their interaction effects. As for self-construals, this research indicated that people with interdependent self-construal are more susceptible to normative influences. Therefore, in order to secure the effectiveness of social norm approach, marketers should be sure that their target customers are mainly composed of interdependent individuals. If not, they had better use some other approaches, or use

social norm approach only when independent individuals have available self-regulatory resources. Future field studies can identify whether norm interventions are more effective in Eastern cultures (e.g., China), compared to Western cultures (e.g., United States), which are more independent and less susceptible to normative influences. Such studies would also be very timely, as the fastest growing economies are China and India, who are more likely to be comprised of interdependent individuals (Markus and Kitayama 1991).

The result with interdependent individuals' susceptibility to norm under high self-regulatory resource condition was marginally significant. This may be due to "reactance theory" (Brehm 1966): too much group pressure would impair norm compliance. Any attempt to force compliance in a buying situation would tend to restrict the consumer's choices and consequently freedom. With individual freedom being threatened, one would try to establish his freedom by avoiding compliance (Venkatesan 1966). With "more than enough" self-regulatory resources, interdependent people might become more aware of the norm than in low self-regulatory resource condition (Nisbett et al. 2001). They might even become over sensitive with the norm or group pressure, felt that their freedom was restricted, and thus reacted according to the reactance theory. Still, research is needed to test this suspicion and perhaps further explore the justification for this insignificant finding.

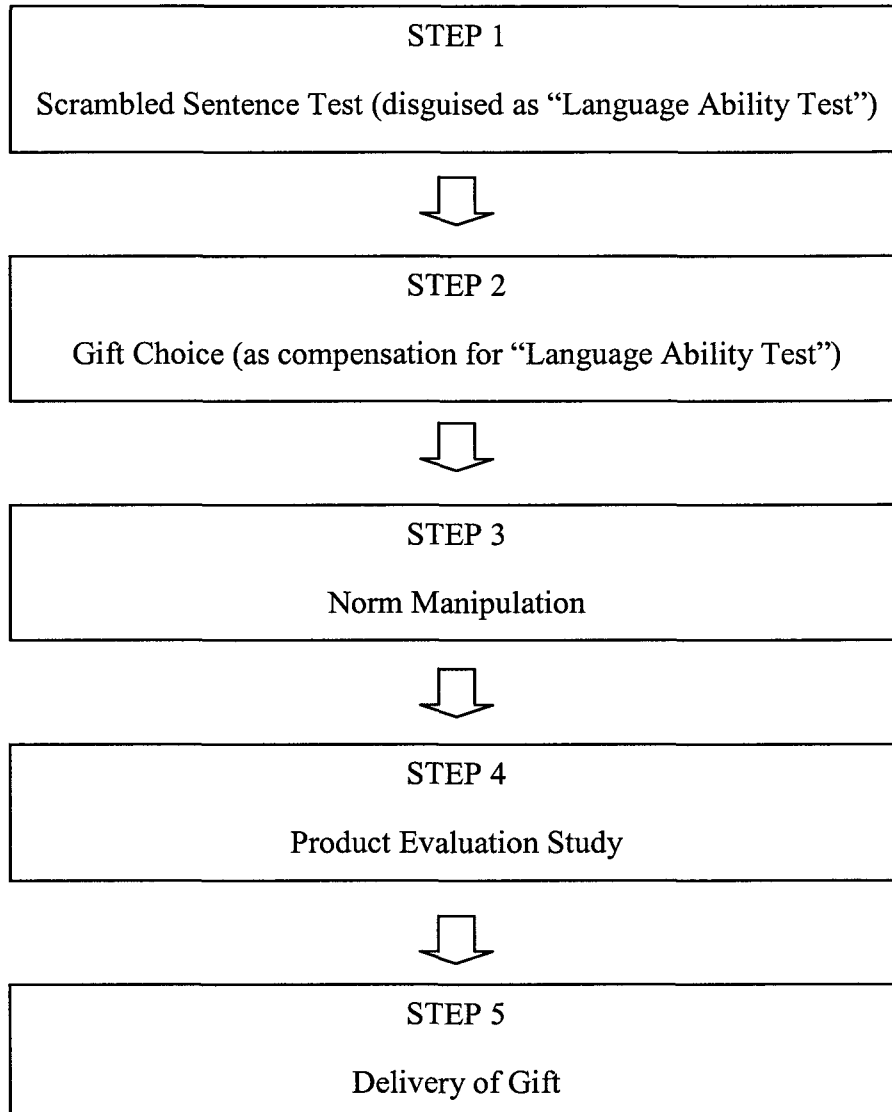
Across conditions, it is interesting to find that females evaluated the environmental alternative more favorably than males did. Such gender effect was not the focus for this research, however, there may be significant differences in environmental concerns between genders. Future studies can also investigate gender differences.

The topic of green consumption and normative influences on green consumption is quite rich. There are other relevant research questions not investigated in this study or past research. For example, future research could study whether norm compliance would also be moderated by current consumption level in green consumption behavior as in conservation behaviors: Schultz (1999) found that feedback interventions produced either desirable or undesirable results, depending on residents' initial consumption levels. In specific, results indicated that residents initially low in recycling increased substantially following the normative feedback interventions. In contrast, residents initially high in recycling showed only a small increase in the amount of material recycled, and actually decreased in frequency of participation which suggests that normative influences may have detrimental effect on green consumption when the individuals are more environmental in their consumption behaviors than the relevant reference group.



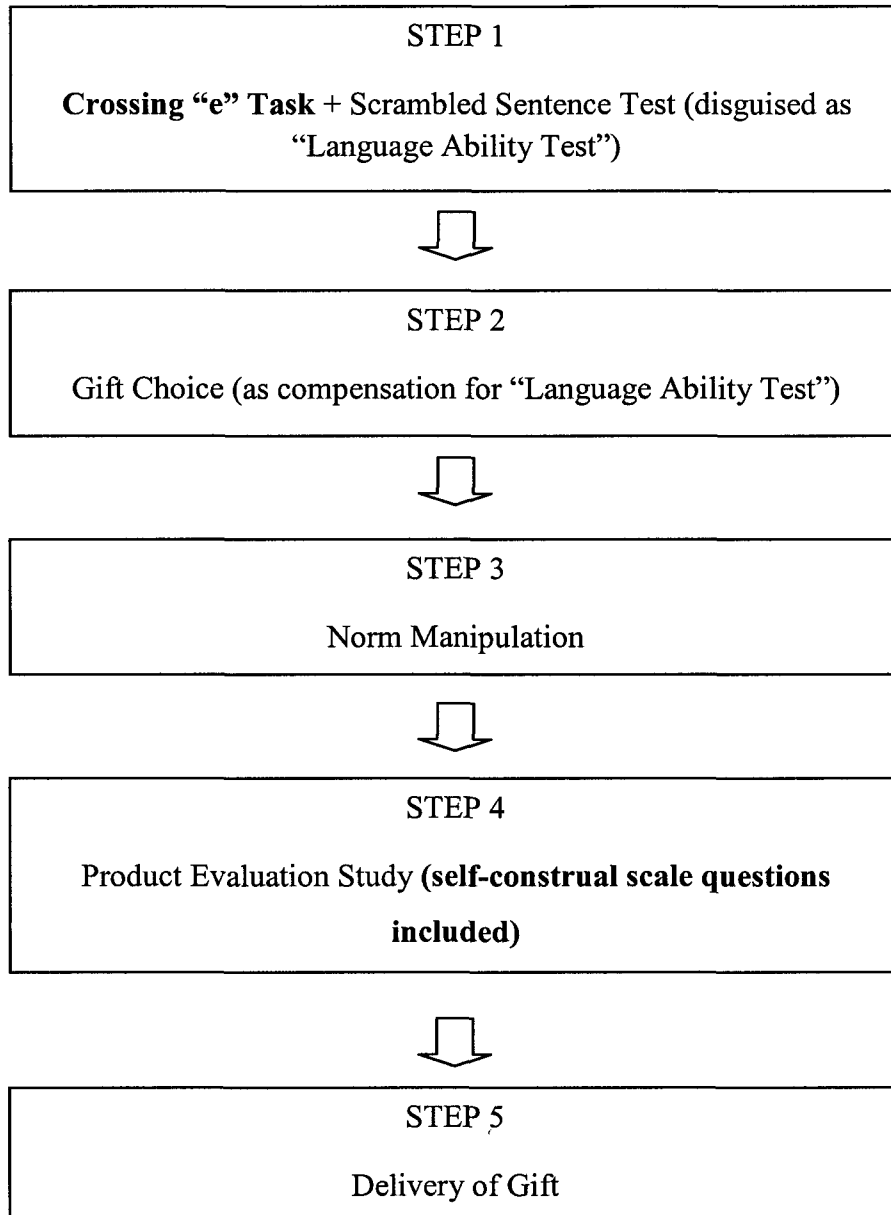


**Appendix B**  
**Pretest Procedure Summary**



**Appendix C**  
**Study Procedure Summary**

(The differences from pretest were highlighted in bold)



## Appendix D

### Items of Self-construals

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#### Interdependent items

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1. I have respect for the authority figures with whom I interact.
  2. It is important for me to maintain harmony within my group.
  3. My happiness depends on the happiness of those around me.
  4. I respect people who are modest about themselves.
  5. I will sacrifice my self-interest for the benefit of the group I am in.  
I often have the feeling that my relationships with others are more important than my own
  6. accomplishments.
  7. I should take into consideration my parents' advice when making education/career plans.
  8. It is important to me to respect decisions made by the group.
  9. I will stay in a group if they need me, even when I'm not happy with the group.
  10. If my brother or sister fails, I feel responsible.
  11. Even when I strongly disagree with group members, I avoid argument.
  12. I would offer my seat in a bus to my professor.
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#### Independent items

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13. I'd rather say "No" directly, than risk being misunderstood.
  14. Being able to take care of myself is a primary concern for me.
  15. Having a lively imagination is important to me.
  16. I am comfortable with being singled out for praise or rewards.
  17. Speaking up during a class is not a problem for me.
  18. I am the same person at home that I am at school.
  19. My personal identity independent of others is very important to me.
  20. I value being in good health above everything.
  21. I act the same way no matter who I am with.  
I feel comfortable using someone's first name soon after I meet them, even when they are much
  22. older than I am.
  23. I enjoy being unique and different from others in many respects.
  24. I prefer to be direct and forthright when dealing with people I've just met.
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Source: Singelis, Theodore M. (1994), "The Measurement of Independent and Interdependent Self-  
Construals" *Personality and Social Psychology Bulletin*, 20 (5), 580-591.

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## TABLES

### Table 1

Pretest Results—Imaginary Gift Choice Attractiveness<sup>a</sup>

	N	Gift index <sup>b</sup>	Cotton swabs <sup>b</sup>	Face towel <sup>b</sup>
Green norm	18	3.97(2.95)	3.94 (3.30)	4.00 (3.14)
Thrifty norm	15	6.60 (2.42)	6.67 (3.13)	6.53 (2.83)
<i>F</i> (1, 31) <sup>c</sup>		3.68	5.83	5.82
<i>P</i> <sup>c</sup>		.037	.022	.022

<sup>a</sup> Product attractiveness was measured on a 1-10 scale. A smaller number reflected a higher preference for the environmental option.

<sup>b</sup> Both cell means and standard deviations (in parentheses) were reported for the dependent variables.

<sup>c</sup> *F* and *sig.* values were extracted from MANOVA result.

**Table 2**  
Study Results—Imaginary Gift Choice Attractiveness<sup>a</sup>

	N	Gift index <sup>b</sup>	Cotton swabs <sup>b</sup>	Face towel <sup>b</sup>
For independent individuals:				
In high self-regulatory resource condition:				
Green norm	19	4.05 (2.37)	3.37 (2.75)	4.74 (3.09)
Thrifty norm	21	5.63 (3.18)	5.85 (3.68)	5.57 (3.71)
In low self-regulatory resource condition:				
Green norm	20	4.53(3.17)	4.40 (3.28)	4.56 (3.41)
Thrifty norm	26	4.37 (2.83)	3.69 (3.17)	5.04 (3.52)
For interdependent individuals:				
In high self-regulatory resource condition:				
Green norm	28	3.49 (1.95)	3.11 (2.32)	3.86 (2.85)
Thrifty norm	25	4.48 (2.30)	3.92 (2.74)	5.04 (3.10)
In low self-regulatory resource condition:				
Green norm	24	2.75(1.87)	2.71 (2.27)	2.79 (2.23)
Thrifty norm	21	5.60 (2.26)	4.95 (2.91)	6.24 (2.53)
Self-construal × self-regulatory resources × norm interaction:				
		<i>F</i> (3, 178) <sup>c</sup>		
			4.02	7.92
				2.15
		<i>P</i> <sup>c</sup>		
			.020	.005
				.144

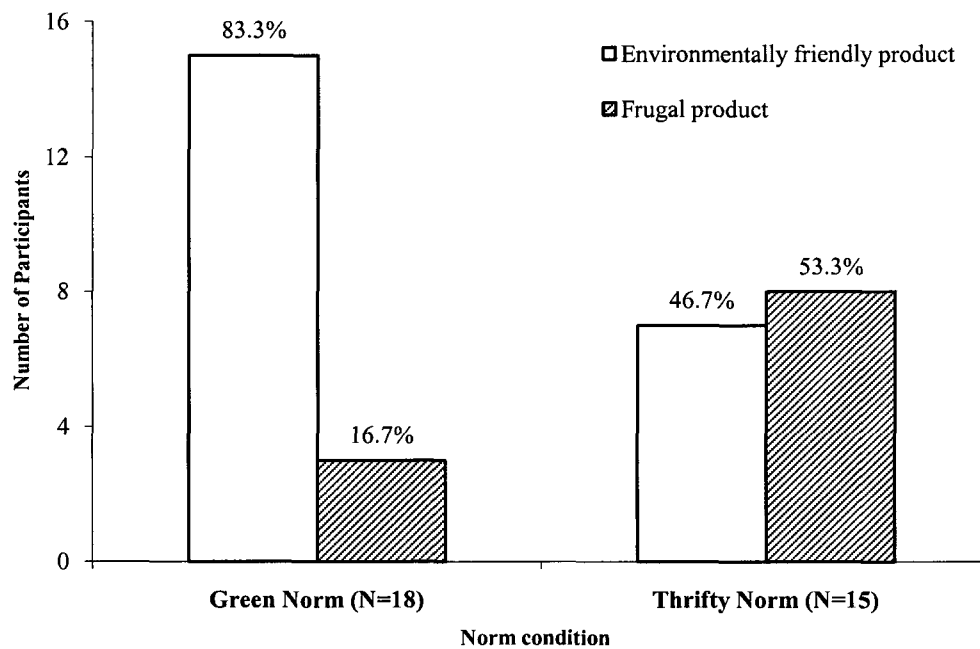
<sup>a</sup> Product attractiveness was measured on a 1-10 scale. A smaller number reflected a higher preference for the environmental option.

<sup>b</sup> Both cell means and standard deviations (in parentheses) were reported for the dependent variables.

<sup>c</sup> *F* and *sig.* values were extracted from MANOVA result.

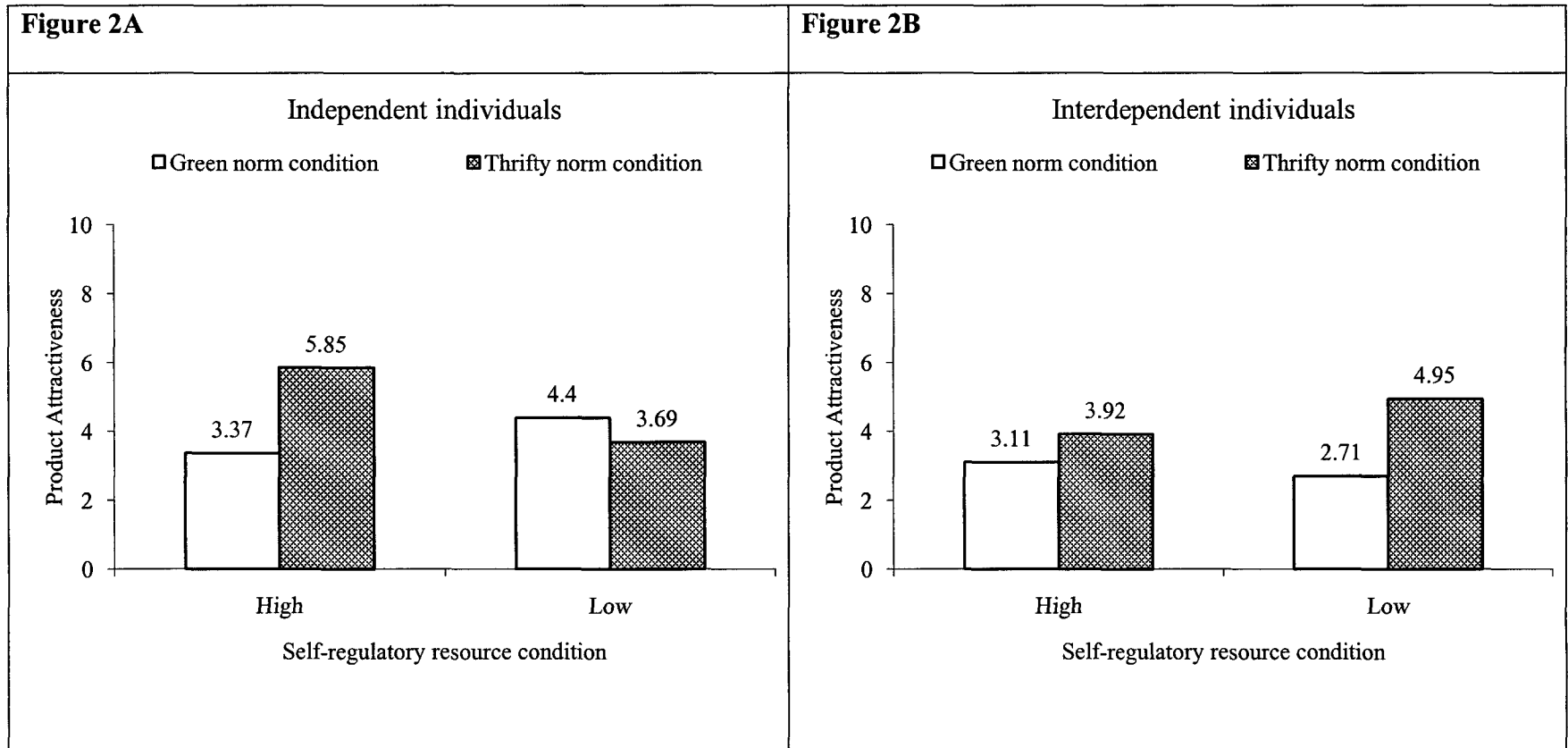
## FIGURES

**Figure 1**  
Pretest Results—Real Gift Choice



*Note.*  $\chi^2=4.95$ ,  $df=1$ ,  $p<.05$

**Figure 2**  
Study Results—Cotton Swab Pair Attractiveness



**Figure 3**  
Study Results—Face Towel Pair Attractiveness

