

**IDENTITY AND PRODUCT DESIGN**

by

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The final copy of this thesis has been examined by the signatories, and we  
Find that both the content and the form meet acceptable presentation standards  
Of scholarly work in the above mentioned discipline.

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Identity and Product Design

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While researchers have documented the premium consumers place on these products, little research has examined the meaning that these products hold for consumers. In essay 1, I identify the factors that influence both the meaning that consumers build into their customized products and the composition of that meaning (i.e., public versus private). Using two studies that engage participants in real customization tasks, I find that consumers' identity motives interact with factors under the firm's control (e.g., design freedom) to influence product meaning, product evaluations, and satisfaction with customized products. In two additional studies, I ask other consumer to evaluate the designs. These measures are then used to assess the degree to which those customized products contain public and private meaning. By pairing these studies, I examine the relationship between the meaning that a product holds for the individual who created it and the meaning that it communicates to others. Together, four studies demonstrate that consumers' identity-based motivations influence both the amount and the type of meaning that consumers build into their products.

While much of the existing consumer behavior literature on signaling focuses on how consumers signal their identity to others (e.g., Berger and Heath 2007), the second essay of my dissertation examines how consumers may also use products to signal information to themselves (i.e., self-signal). Prior research (e.g., Townsend and Sood 2010) examines how choosing aesthetically pleasing products influences self-evaluations, but to my knowledge, no research has looked at how simply using attractive products influences self-evaluations and evaluations of resulting creations (i.e., cookies made with attractive vs. unattractive cooking utensils). In two studies, I find that even in seemingly mundane product categories (i.e., measuring spoons and writing paper), simply using aesthetically pleasing products may signal positive information about a consumer to himself. This effect is strongest when domain uncertainty is low and when the task is completed in private.

*To my boys...*

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## *CHAPTER 1*

### **Essay 1**

#### **Identity Representation in Customization**

A hockey fan designs custom shoes in his team's colors to wear to all 41 home games. A medical researcher sends his DNA to a company that creates a portrait of his genome sequence for his living room wall (Bounds 2010; Palmer 2008). These are just two examples of consumers' growing ability to create customized products across a wide range of product categories. Prior research has shown that consumers are willing to pay a premium for these products, in part, because the products better match their preferences and because they played an active role in the product's design (Franke, Keinz, and Steger 2009; Franke, Schreier, and Kaiser 2010). What has been overlooked in the literature on customization, however, is the meaning that these products hold for consumers.

A product's meaning is comprised of both its public (shared) and private (personal) meanings (Richins 1994). Public meaning is the meaning that outside observers ascribe to a product, and this type of meaning is generally higher when the product contains elements or symbols that the observers commonly agree upon. Conversely, private meaning is derived from "the owner's personal history in relation to the object" which observers are unable to discern (Blumer 1969; Hirschman 1986; Richins 1994, p. 505-506). Customization affords consumers the opportunity to create meaningful products that vary in their composition of public and private meaning. For the hockey fan, the meaning of his shoes is largely public in nature because other hockey fans can easily understand and agree upon the meaning of the color scheme and logo. For the medical researcher, however, the meaning of his digital portrait is largely private in nature because it represents both his own genetic make-up as well as his personal career history (Bounds 2010; Richins 1994).

The goal of my research is to identify the factors that influence both the meaning that consumers build into their customized products and the composition of that meaning (i.e., the extent to which it is public and private). I also examine the relationship between the product's meaning and the consumer's evaluation of and satisfaction with it. Leveraging the recent research on identity-based motivation, I use two studies to demonstrate that consumers' identity motives interact with factors under the firm's control to influence product meaning, product evaluations, and satisfaction with customized products. Both studies engage participants in real customization tasks using two different product categories. Two additional studies are then used to assess the degree to which those customized products contain public and private meaning.

My contributions are three-fold. First, this research is the first to examine the relationship between identity-based motives and the meaning consumers create through customization. Second, this work identifies factors under the firm's control that can enhance or inhibit a consumer's ability to create that meaning. Third, this research examines whether the meaning built into the product is understood by independent observers. The extent to which these observers understand the product's meaning determines the degree to which the customized product is imbued with public or private meaning. The distinction is important for both substantive and theoretical reasons. To my knowledge, mine is the first research to examine the relationship between the meaning that a product holds for the individual who created it and the meaning that it communicates to others.

### *IDENTITY MOTIVES AND MEANING*

Identity, what comes to mind when we think of ourselves, includes two major components: a personal identity related to the independent self (i.e., individual traits,

characteristics or goals) and a social identity related to the interdependent self (i.e., traits, characteristics and goals that are linked to group membership or personal relationships) (Kirmani 2009; Oyserman 2009). Identity-based motivation drives consumers to “engage in identity-congruent action” (Oyserman 2009, p. 250), and prior research has demonstrated the influence of this motivation on a number of consumer-related judgments and choices (e.g., Berger and Heath 2007; Escalas and Bettman 2005; Reed 2004; White and Dahl 2007). Little is known, however, about the relationship between identity-based motivation and the creation of product meaning (Shavitt, Torelli, and Wong 2009). Thus, the current work will separate identity motives (personal and social) and examine their differential influence on both the meaning that consumers create in their products and the composition (public versus private) of that meaning. As consumers own objects because of the value they provide and that value resides in their meaning, the current work will also examine product evaluations to better understand the relationship between product meaning and value (e.g., Richins 1994).

My focus is in contrast to recent work on identity signaling, a phenomenon which relies exclusively on the shared, public meaning of mass-produced products (Berger and Heath 2007; Berger and Ward 2010; Han, Nunes, and Dreze 2010). According to the identity signaling literature, consumers motivated by a personal identity goal will choose products which signal their uniqueness (Berger and Heath 2007) while those motivated by a social identity goal will choose products which signal their affiliation (Escalas and Bettman 2005). Regardless of their identity motivation, however, consumers’ product choices are driven by the belief that the appropriate others will correctly infer the product’s meaning (Berger and Heath 2007).

Consumers’ identity-based motivations may operate differently when the choices consumers are making are related to the design of the product rather than to their choice of it. In

this customization context, consumers can create a product that, on its own, reflects their independent and/or interdependent self. Unlike their mass-produced counterparts, these customized products can be imbued with both private and public meaning from the outset. Thus, the products alone may be able to satisfy consumers' identity-based goals. A receptive audience may no longer be necessary for a product to be meaningful. In the following sections, I describe how the two types of identity-based motivations underlie the creation of meaning in a customization setting.

### *Personal Identity Motivation and Meaning*

Personal identity motivations prompt people to act in ways congruent with those traits and values that define them as unique individuals (Oyserman 2009). When selecting from an array of mass-produced products, these goals can be accomplished either by selecting products in symbolic categories that the majority do not own or by avoiding products once they have been adopted by the mainstream (Berger and Heath 2007; Tian, Bearden and Hunter 2001). With customization, however, these personal identity goals can be accomplished by creating a product that signifies aspects of the consumers' personal accomplishments and/or their unique traits. Specifically, consumers driven by a personal identity motivation can incorporate symbols and images into the product's design that reflect their individuality, regardless of whether their designs can be easily interpreted by others. When the customization process allows consumers to include such symbols and images in their products' designs, the meaning that these products hold for consumers will likely contain a higher degree of private (as compared to public) meaning.

### *Social Identity Motivation and Meaning*

Social identity motivations encourage people to act in ways congruent with their beliefs about group membership and about their relationships with significant others (Brewer and Gardner 1996; Oyserman 2009). Research has shown that when this motivation is active, consumers choose products that indicate either their membership (or non-membership) in certain groups or their connections with important people (Berger and Heath 2007; Berger and Ward 2010; Escalas and Bettman 2005; Han, Nunes, and Dreze 2010; White and Dahl 2007). In a customization context, I expect a similar influence on consumers' design choices. Specifically, consumers who are motivated by a social identity goal will rely heavily on design elements that are relatively easy for others to interpret. For example, these consumers may incorporate images of relationships with others and/or symbols indicating which social classes or groups they belong or aspire to. Thus, the meaning that these products hold for consumers will likely contain a high degree of public (as compared to private) meaning.

### *THE CUSTOMIZATION PROCESS AND PRODUCT MEANING*

How can customization firms enhance consumers' ability to create meaning in their products? Firms offering customization opportunities face a number of decisions that determine the quality of consumers' design experiences and their satisfaction with customized products (Dellaert and Stremers 2005; Randall, Taylor, and Ulrich 2007; Valenzuela, Dhar, and Zettelmeyer 2009). Chief among these decisions is the design of the toolkit that consumers use in the customization process. Toolkits vary in their simplicity and the degrees of freedom they afford the consumer (Franke, Schreier, and Kaiser 2010; von Hippel and Katz 2002): simple toolkits allow consumers to choose among pre-set options such as colors, sizes, and accessories

while more complex toolkits allow consumers to upload their own images. These more complex toolkits afford a greater level of creativity by providing “users with true design freedom – as opposed to the mere opportunity to choose from lists of options that is currently offered by mass customizers” (von Hippel 2001, p. 248).<sup>1</sup>

A key question remains about whether this additional freedom enables consumers to build more meaning into their products. The answer to this question has important bottom-line implications if this extra freedom comes at a cost to companies (Franke and Piller 2004; Franke and Schreier 2008; von Hippel 2001). Importantly, I propose that the answer depends on which identity-based goals are most salient at the time of design.

I expect that design freedom will lead to greater product meaning, but only for consumers motivated by a personal identity goal. For these consumers, higher freedom allows them to create designs that more closely embody their own unique personalities and experiences. Consumers motivated by a social identity goal, however, are more likely to create designs that represent their group membership (or non-membership) and/or their important relationships. To do so effectively requires a higher reliance on design elements that have a shared meaning. Thus, providing these consumers with greater design freedom may do little to increase the meaning of their customized products. More formally,

H1a: For consumers motivated by a personal identity goal, the customized product will have greater meaning when design freedom is high (vs. low).

H1b: This effect will be attenuated for consumers motivated by a social identity goal.

Unless higher levels of meaning are associated with higher product evaluations and product satisfaction, the substantive implications of this prediction are limited. Thus, in the

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<sup>1</sup> To examine the effects of design freedom and identity on product evaluations and satisfaction, a pilot study was conducted. This entire study is included in appendix A.

following study, I test hypothesis 1 and examine the relationship between product meaning and both consumers' evaluations of and satisfaction with their customized products.

## *STUDY 1A*

### *Stimuli and Procedure*

In this study, participants designed customized travel mugs. This product category was chosen because of its affordability and relevance to participants. Zazzle.com, an industry leader in customized products, agreed to provide the mugs at cost (\$15 per mug) and to oversee the shipment of the orders. This allowed me to distribute the products and collect measures at the time of delivery 6 weeks later (see appendix B for design examples).

Participants were 87 undergraduates from a large North American university who participated in this study for both course credit and receipt of the mug they designed. Two participants did not complete the full study and were subsequently removed from the analyses. This study was administered using on-line survey software, with participants completing the study when and where they chose (within a 48 hour window). The survey provided an overview of the study, the manipulations, directions for the design process, and all relevant measures. Six weeks following the study, the completed mugs were distributed and satisfaction measures were collected.

### *Experimental Design*

Two factors were manipulated between-participants: (1) Identity Motivation Primed (personal vs. social) and (2) Design Freedom (low vs. high).

### *Independent Factors*

*Motivation primed.* Prior to designing their mugs, all participants were exposed to one of two identity motivation primes: personal or social. Participants read the following paragraph:

“Many designers (e.g. Michael Graves, Philippe Starck) have attributed their success to having a really good understanding of who their customers are. Since you’ll be acting as a designer of your own product, take some time to think about who you are and what defines you.”

The personal identity condition followed with: “Specifically, think about the experiences, accomplishments and personality traits that make you a unique individual. In the space below, please list at least four important things that distinguish you from everyone else.” Following that list, they were told: “In the space below, please describe why you chose each of these as things that set you apart.”

The social identity condition followed with: “Specifically, think about the relationships, interpersonal connections, and group memberships that are important to you. In the space below, please list at least four special times that you've shared with the important people in your life.” Following that list, they were told: “In the space below, please describe why you chose each of these as important times that you've shared with people in your life.”

*Design freedom.* Participants in the “high design freedom” condition were given the chance to either upload their own images or to select and manipulate any of the 80 images stored in the library. Participants in the “low design freedom” condition were told to use only the 80 images provided in the library when customizing their mug, and were unaware of the option to upload their own images. Even with this limitation, participants could create a genuinely unique mug through the other design decisions such as image size and the inclusion of text. Two items were used to assess the effectiveness of this manipulation. Participants indicated how much they agreed that 1) there were plenty of options to pick from and 2) they felt frustrated by the library of images and wish there had been more options. The latter item was reverse-scored and the two were averaged to create a manipulation check.

### *Dependent Measures at the Time of Customization*

*Product meaning.* Four measures were adapted from Richins (1994) to capture the level of meaning that the mug held for the individual participant. The items were selected such that either one's social or personal identities could contribute to the product's meaning. Participants indicated their agreement with the following statements (all on 9-point scales): "This mug reminds me of important events in my life"; "The design I put on this mug really means something to me"; "The thing represented on this mug is of high importance to me."; and "The image on this mug reminds me of something I am proud of." The items were averaged for an overall measure of product meaning ( $M = 4.7$ ; Range: 1.0 to 8.0;  $\alpha = .82$ ).

*Evaluations of the customized mug.* On 7-point scales, participants also evaluated their mugs on four measures. Specifically, participants were asked to "please rate the mug you just designed on the following scales": Attractive, Stylish (Not at all/Very). Then they were asked to rate their agreement with the following statements (Strongly Disagree/Strongly Agree): "I expect that I will be satisfied with the finished product when it arrives" and "My travel mug is well designed." All items loaded on a single factor and were averaged to create an overall evaluation measure ( $M = 5.4$ ; Range: 1.0 to 7.0;  $\alpha = .81$ ).

*Covariates.* The age of the participant ( $M = 19.65$ ; Range: 18.0 – 22.0) and whether or not they had uploaded their own pictures were included as covariates<sup>2</sup>.

### *Dependent Measure at Delivery*

*Satisfaction.* Following the design task, 90 percent of participants ( $n=78$ ) of the 85 participants requested that I order their mugs. Six weeks later, a series of email reminders was

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<sup>2</sup> To better understand the effects of the upload covariate, I mean-centered image upload by condition the results did not effectively change.

sent to the participants to let them know that the mugs had arrived and to schedule a pick up time. Fifty participants actually picked them up and provided satisfaction ratings. There was no influence of the manipulations on pick-up behavior. Participants completed the following measures (on 9-point scales): “Compared to what you thought you were getting, how well did the final product meet your expectations?” (It was Below My Expectations/It Exceeded My Expectations), “My mug is well designed” (Strongly Disagree/Strongly Agree), “I will enjoy using it” (Strongly Disagree/Strongly Agree), and “I am likely to use this mug often” (Strongly Disagree/Strongly Agree), “Now that you’ve seen your mug, how likely are you to actually use it?” (Not Very Likely/Very Likely). The items were averaged for an overall measure of satisfaction ( $M = 7.5$ ; Range: 3.2 to 9.0;  $\alpha = .87$ ).

## *Results*

*Preliminary analysis.* A two-way ANOVA was used to assess the effectiveness of the design freedom manipulation. The results revealed only a main effect of the design freedom manipulation ( $F(1, 84) = 4.6, p < .05$ :  $M_{\text{High Design Freedom}} = 5.4$  vs.  $M_{\text{Low Design Freedom}} = 4.1$ ).

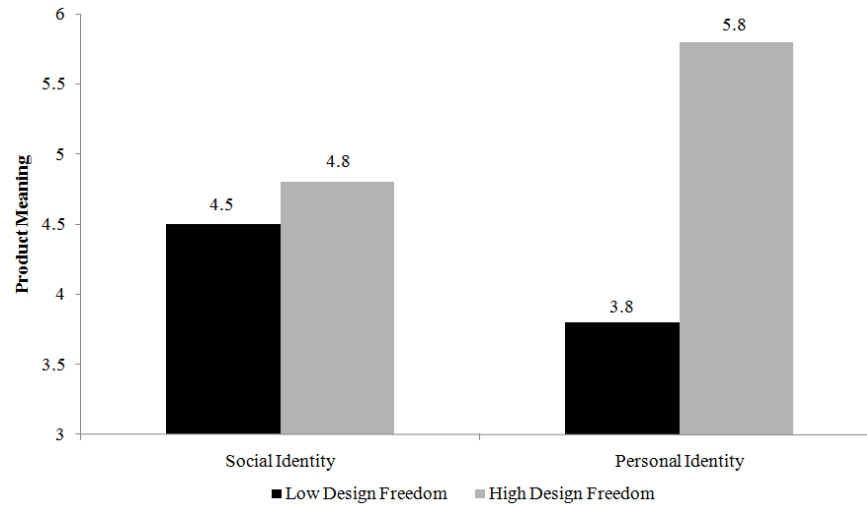
*Product meaning.* A two-way ANCOVA revealed only a significant interaction between the two independent factors ( $F(1,84) = 4.1, p < .05$ ). Consistent with hypothesis 1a, participants with a personal identity motivation reported greater levels of meaning associated with their mug when they had high versus low design freedom ( $M_{\text{Personal, High Design Freedom}} = 5.8$  vs.  $M_{\text{Personal, Low Design Freedom}} = 3.8$ ;  $F(1, 84) = 5.3, p < .01$ ). For those with a social identity motivation, however, design freedom had little influence on the meaning they ascribed to their mug, consistent with hypothesis 1b ( $M_{\text{Social, High Design Freedom}} = 4.8$  vs.  $M_{\text{Social, Low Design Freedom}} = 4.5$ ;  $F(1, 84) = .10, n/s$ ; see figure 1a).

*Evaluations of the customized mug.* A two-way ANCOVA revealed both a main effect of design freedom ( $F(1,84) = 4.6, p < .05$ ) and an interaction ( $F(1,84) = 4.4, p < .05$ ). Overall, participants reported higher evaluations of their mugs when allowed high versus low design freedom ( $M_{\text{High Design Freedom}} = 5.6$  vs.  $M_{\text{Low Design Freedom}} = 5.1$ ). This effect was more pronounced, however, for those primed with personal identity motivations ( $M_{\text{Personal, High Design Freedom}} = 5.7$  vs.  $M_{\text{Personal, Low Design Freedom}} = 4.7$ ;  $F(1, 84) = 8.4, p < .01$ ) than with social identity motivations ( $M_{\text{Social, High Design Freedom}} = 5.5$  vs.  $M_{\text{Social, Low Design Freedom}} = 5.5$ ;  $F(1, 84) = .1, n/s$ ; see figure 1b). As this pattern was similar to that observed for product meaning, regression was used to test for mediation. When meaning was added to the model predicting evaluations, it was significant ( $F(1, 84) = 4.68, p < .05$ ), and the previously significant interaction dropped below significance ( $F(1, 84) = 1.61, p > .20$ ; Sobel = 2.03,  $p < .05$ ). These findings suggest that the meaning participants ascribed to the mug explained the pattern of evaluations observed.

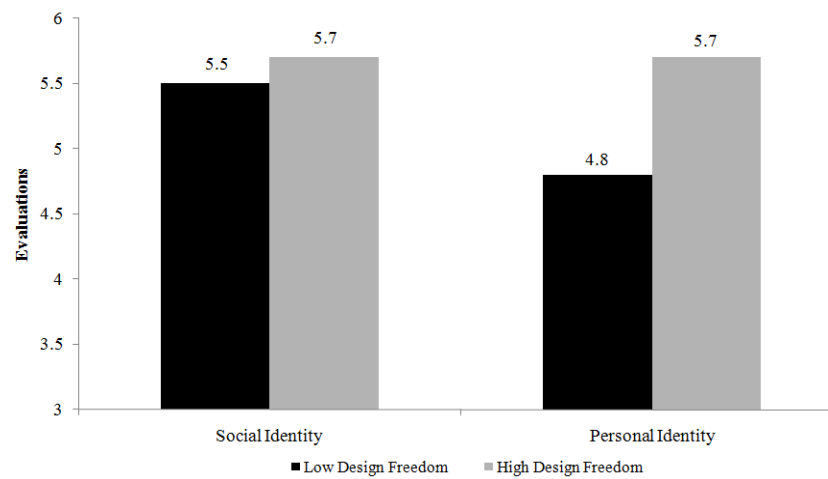
*Satisfaction.* A two-way ANCOVA was used to test for the effects of the independent factors six weeks later at delivery. The analysis revealed a significant interaction between the two manipulated factors on satisfaction at pickup ( $F(1, 49) = 4.13, p < .05$ ). Similar to the results observed for evaluations, design freedom had little impact on participants motivated by their social identity ( $M_{\text{Social, High Design Freedom}} = 7.0$  vs.  $M_{\text{Social, Low Design Freedom}} = 7.6$ ;  $F(1, 49) = .85, n/s$ ). Participants motivated by their personal identity, however, were significantly more satisfied when given high rather than low design freedom ( $M_{\text{Personal, High Design Freedom}} = 8.1$  vs.  $M_{\text{Personal, Low Design Freedom}} = 7.1$ ;  $F(1, 49) = 5.56, p < .05$ ; see figure 1c).

**FIGURE 1:**  
**THE EFFECT OF DESIGN FREEDOM AND IDENTITY MOTIVATION ON PRODUCT MEANING, EVALUATIONS, AND SATISFACTION (STUDY 1A)**

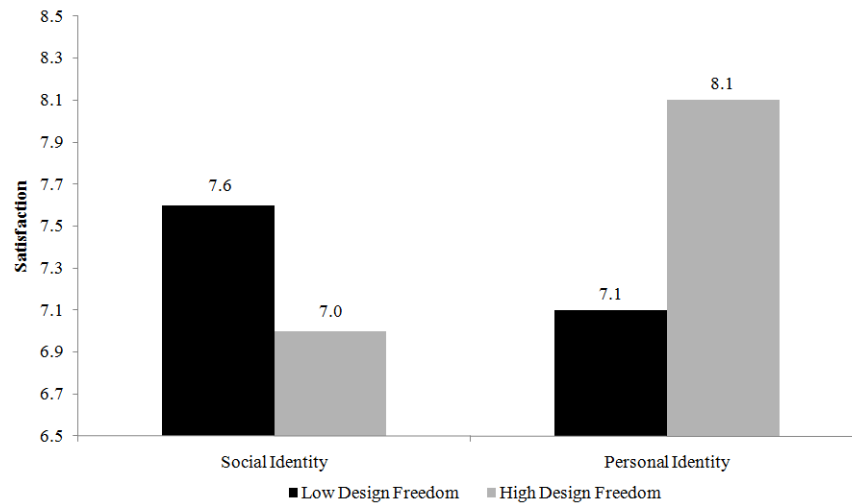
*A) Product Meaning (time of customization)*



*B) Evaluations (time of customization)*



*C) Satisfaction (6 weeks later at pick-up)*



*Discussion*

Study 1a demonstrates that higher levels of design freedom translate into higher product meaning and evaluations when participants are motivated by their personal, but not their social identities. The joint influence of the identity-based motivation and design freedom was sustained over time: six weeks later at pickup, I observed higher levels of satisfaction from those given greater design freedom, but only when a personal identity was made salient at the time of design.

These findings demonstrate that increasing the number of customization options may not always yield improved consumer reactions. While others have come to the same conclusion, prior research has focused on the increasing complexity of the customization task (e.g., Huffman and Kahn 1998; Valenzuela, Dhar, and Zettelmeyer 2009), not on the task's compatibility with consumers' underlying motivations. These findings do not suggest that greater design freedom made the customization task too complex by overloading consumers with too much choice. Rather, when a personal identity goal was active it was those who were denied the additional freedom who reported the lowest product meaning, evaluations, and satisfaction. Why were these participants the most negative in their responses to the customization opportunity?

To address this question and to gain more insight into how consumers' identity-based motivations influence their customization decisions, I examine the extent to which the designs produced under the different conditions contain public and private meaning. In the next study, I will provide other consumers with pictures of the mugs created by participants in study 1a and ask them to rate them on their meaning. These outside assessments can provide additional evidence to support the proposed mechanism underlying hypothesis 1.

### *PUBLIC MEANING*

Study 1a demonstrates that consumers can create meaning through product customization regardless of whether they are motivated by a personal or social identity motive. A key question that remains unanswered, however, is whether or not that meaning can be interpreted by others. The majority of work on identity and product meaning tends to focus on whether or not the signaler believes a message will be received (e.g., Berger and Heath 2007). To my knowledge, no research connecting identity and product meaning has closed the loop by asking other consumers whether or not they understand the message.

If the explanation for the results in study 1a is correct, participants motivated by a social identity goal are more likely than those motivated by a personal identity goal to rely on design elements (e.g., symbols and objects) which have commonly agreed upon meanings. As such, I would expect that observers should be able to more readily interpret the meanings behind these designs than they would designs created by someone trying to fulfill a personal identity goal. Thus, the products produced by participants with a social identity goal should be higher in public meaning than those created by participants with a personal identity goal active. Recall, however, participants motivated by a personal identity goal were less likely to fulfill their goal when

restricted to the library of images. These participants may have been forced to choose commonly understood elements even if they would have preferred otherwise. Taken together, I predict the following:

- H2a: Designs produced by participants motivated by a personal identity goal will be lower in public meaning when design freedom was high (vs. low).
- H2b: This effect will be attenuated when the designs were produced by participants motivated by a social identity goal.

### *STUDY 1B*

Ninety participants completed this study online. While participants were not exposed to any manipulations in this study, the analyses will examine how the manipulations to which the original designers were exposed influenced these participants' abilities to understand the meaning behind each design. Each participant rated the public meaning associated with 14-15 of the original 85 designs. The designs were randomized such that each rater received designs that had been created across the four conditions in study 1a. First, participants saw the entire group of 14-15 designs. To encourage them to carefully examine the designs, they were asked to evaluate the group on several measures (i.e., overall attractiveness). Next, participants saw and rated each design.

#### *Dependent Measures*

*Public meaning.* A new index was created to capture the ability of other consumers to understand the meaning behind the consumer-created design. Participants indicated their agreement with three measures which were averaged to create the composite index (on 7-point scales): "It is easy to understand the meaning behind this design."; "I have no idea what this

design means.” (reverse-coded); and “If this mug were shown to a large group of people, most of them would interpret its meaning in the same way.”

To assess the reliability of the measures, I first calculated coefficient alpha for each judge. This captured how closely the three measures hang together for each individual judge. Ten judges were removed because of their low reliabilities (alphas < .65), two were removed because their ratings showed no variance (e.g., they put “7’s” for all responses), and three did not complete the evaluations. With these removals, alpha estimates for the individual judges were quite high (Mean  $\alpha$  = .88, Range: .65 to .99). I then examined the level of agreement across judges by calculating the intra-class correlation coefficient (ICC). Because not all judges viewed all of the designs, I calculated an ICC for each of the 6 groupings of designs, and all were acceptable (range: .78 to .95). An overall index of public meaning was computed by averaging across the three items and across the judges that rated each design ( $M = 4.78$ ; Range: 2.22 to 6.61;  $\alpha = .96$ ).

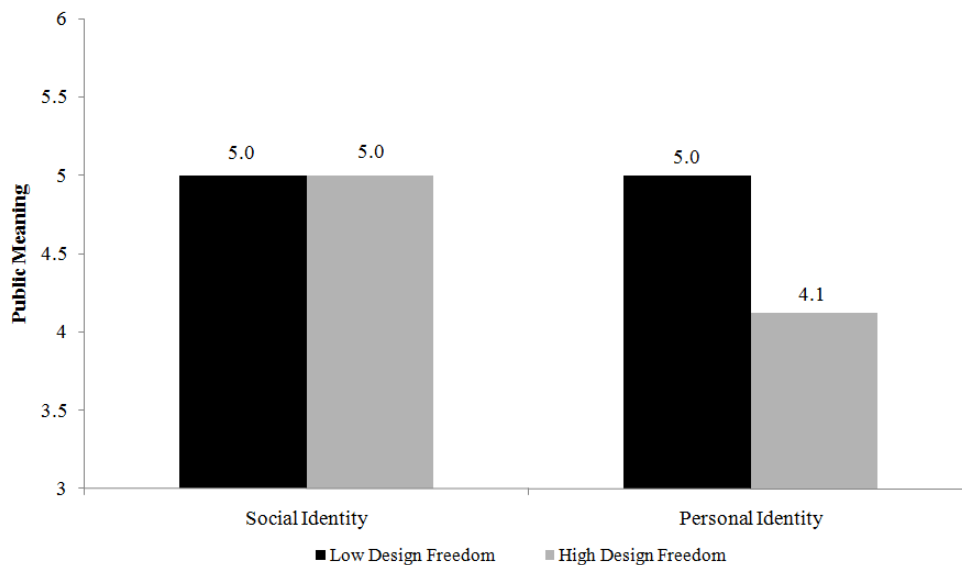
*Attractiveness.* Participants also rated each design’s attractiveness on three items: “This design is attractive.”; “I like this design a lot.”; and “This design is one of the best in the set.” These items were averaged to create an overall index of attractiveness ( $M = 4.06$ ; Range: 2.04 to 5.80;  $\alpha = .98$ ). Attractiveness was not significantly influenced by the manipulations in study 1a (all  $F$ ’s < .5).

## *Results*

A two-way ANCOVA was used to assess the influence of design freedom, identity motive, and their interaction on public meaning. The mug’s attractiveness and whether or not it contained an uploaded image were used as covariates. The results revealed a main effect of

identity motivation ( $F(1,84) = 3.71, p = .05$ ) and an interaction between the two factors ( $F(1,84) = 3.79, p < .05$ ). Not surprisingly, participants who had been motivated by a social identity motive (as compared to a personal identity motive) created mugs with meanings that were easier to understand ( $M_{\text{Social}} = 5.00$  vs.  $M_{\text{Personal}} = 4.59$ ). This main effect was qualified by the interaction predicted by hypothesis 2. Design freedom significantly reduced the public meaning associated with the mugs produced by those motivated by a personal identity goal ( $M_{\text{Personal, Low Design Freedom}} = 4.98$  vs.  $M_{\text{Personal, High Design Freedom}} = 4.12$ ;  $F(1,84) = 6.31, p = .01$ ). For those motivated by a social identity goal, design freedom had little influence on the public meaning associated with the mugs ( $M_{\text{Social, Low Design Freedom}} = 4.98$  vs.  $M_{\text{Social, High Design Freedom}} = 5.01$ , ( $F(1,84) = 0.07, n/s$ ; see figure 2).

**FIGURE 2**  
**THE EFFECT OF DESIGN FREEDOM AND IDENTITY MOTIVATION ON PUBLIC MEANING (STUDY 1B)**



## *Discussion*

This study provides further support for our claim that a social identity motivation focuses consumers on design elements that share a common meaning. Even when given the opportunity to upload their own images, consumers with a social identity motivation still chose design elements that had higher public meaning than those with a personal identity motivation active. While both groups uploaded images with equal frequency, the nature of the images' meaning was different. The pairing of studies 1a and 1b provides insight into relationship between different identity motives (personal and social) and different types of meaning (public and private) consumers build into their customized products. Specifically, study 1a found that participants with a personal identity goal used the higher design freedom to create greater meaning in their products than those given less freedom. Importantly, study 1b provides the insight that the additional meaning they created was private rather than public in nature. Restricting the freedom of consumers motivated by a personal identity goal may impede their ability to create a customized product imbued with private meaning.

To better isolate the role of a personal identity motivation in customization settings, my next study holds design freedom constant and employs both a new manipulation of personal identity motivation and a chronic measure of its activation. The goal of the study is to understand whether consumers motivated by either a temporary or a chronic personal identity goal can produce customized products that are more meaningful, more highly evaluated, and contain less public meaning than those produced by consumers for whom this motivation is not active. As Berger and Heath (2007) indicate, individuals have a need for autonomy influenced both by the individual's relatively stable need for uniqueness (Snyder and Fromkin 1977; Tian, Bearden, and Hunter 2001) and by situational factors leading the person to feel undifferentiated (p. 121). This

drive to differentiate oneself from others is consistent with both stable and temporarily accessible personal identity motivations.

*Need for uniqueness.* Consumers are driven to acquire and display their possessions in order to differentiate themselves from others. Tian, Bearden, and Hunter (2001) suggest that individuals vary in their drive for this differentiation. Consumers' need for uniqueness (NFU) is defined as "an individual's pursuit of differentness related to others that is achieved through the acquisition, utilization, and disposition of consumer goods for the purpose of developing and enhancing one's personal and social identity" (p. 50). We propose that the influence of NFU will extend past the realm of mass-produced consumer goods to also influence the way in which consumers create meaning in customized products. Because consumers with a high NFU value distinctive products, they may be more motivated to embed meaning, particularly private meaning, in their customized products than those with a low desire for uniqueness.

*Situational factors.* Situational influences can heighten (or lessen) the influence of chronic NFU. When consumers are led to feel less differentiated, their chronic need for uniqueness will likely exert a strong effect, with those high in chronic need valuing or asserting their uniqueness to a much greater degree than those with a less pressing chronic need. Evidence of such an effect could manifest itself in the meaning consumers build into their customized products. When situations lead consumers to feel differentiated (e.g., by making salient their personal identity), however, the influence of their chronic need is likely to be less powerful.

More formally,

H3a: Consumers' chronic need for uniqueness will be positively related to the meaning ascribed to their customized product.

H3b: This effect will be attenuated when consumers' personal identity is made salient.

I test this hypothesis in the following study. I also test whether meaning is positively related to product evaluations as it was in study 1a.

## *STUDY 2A*

### *Stimuli and Procedure*

Custom t-shirts were chosen as the stimuli for this study because they are relevant to the undergraduate population and like the products used in the first two studies, can be customized on purely aesthetic dimensions. Like the prior study, online survey software was used to administer this experiment, allowing participants to complete it at a time and location of their choosing (within a 48 hour window). All participants were directed to open the design website ([www.youdesignit.com](http://www.youdesignit.com)) in a separate window and to design a t-shirt using the company's toolkit. I chose this company, in part, because the website's toolkit is simple to use, does not require participants to register in order to save a design, and has an extensive library of images available on the site. Further, the website does not allow consumers to upload their own image, thus insuring that design freedom was held constant across all participants.

Sixty-seven undergraduates from a large North American university participated in this study for course credit. Participants received an email with a link to the on-line survey, and upon opening it, were given an overview of the study which contained the manipulation. Participants were directed to open the youdesignit.com website, and once their designs were complete, they emailed their designs to a research assistant and completed the remaining measures in the survey.

### *Experimental Design*

In this study, personal identity motivation was manipulated between participants (salient vs. not salient) while need for uniqueness was measured.

### *Independent Factors*

*Personal identity motivation.* Prior to the design task, participants read an overview of the study. When personal identity motivation was salient, the description read (emphasis added):

We are working with a customization company that is particularly interested in understanding how individuals like you design their T-shirts. The company wants to learn about the things that influence the design experience that each unique individual has while on their website. Because the company will soon have the ability to program the website to fit each individual's specific needs, they want to understand how you personally feel at different stages of the design process.

When personal identity motivation was not made salient, the description read:

We are working with a customization company that is particularly interested in understanding how college-age students design T-shirts. The company wants to learn about the things that influence the design experience for the college students across the country who use their website. Because the company will soon have the ability to program the website to fit the specific needs of college students in the US, they want to understand how members of this large group of consumers feel at different stages of the design process.

*Need for uniqueness.* Following the customization task and its relevant dependent measures, all participants completed the NFU scale. To shorten the battery of questions, I used only the creative choice counter-conformity subcomponent of the scale which contained 11 measures (Tian, Bearden, and Hunter 2001). According to Tian, Bearden, and Hunter (2001), “creative choice counter-conformity reflects that the consumer seeks social differentness from most others but that this consumer makes selections that are likely to be considered good choices by these others” (p. 52). Examples of these measures include: “I have sometimes purchased

unusual products or brands as a way to create a more distinctive personal image” and “I often look for one-of-a-kind products or brands so that I create a style that is all my own.” Responses were averaged to create a measure of need for uniqueness ( $M = 3.27$ ; Range: 1.6 to 5.0;  $\alpha = .91$ ).

An ANOVA was used to insure that need for uniqueness was unaffected by the identity salience manipulation. Importantly, it was not ( $M_{\text{Personal Identity Salient}} = 3.21$  vs.  $M_{\text{Personal Identity Not Salient}} = 3.32$ ;  $F(1, 66) = .40$ , n/s).

### *Dependent Measures*

Participants’ age was the only covariate used in this study, as all participants were confined to the library of images during their design.

*Product meaning.* The four items used to form the product meaning index from study 1a were adapted for the t-shirt context ( $M = 4.5$ ; Range: 1.0 to 7.0;  $\alpha = .93$ ).

*Evaluations of the customized t-shirts.* The same four items used in the first study were used to measure participants’ evaluations of the shirts ( $M = 4.9$ ; Range: 1.3 to 7.0;  $\alpha = .83$ ).

### *Results*

*Product meaning.* Following Irwin and McClelland (2003), need for uniqueness was treated as a continuous measure, and regression was used to test the independent and interactive effects of the independent variables. Consistent with hypothesis 3a, the regression revealed a positive main effect of participants’ NFU on product meaning ( $\beta = .12$ ,  $t = 2.65$ ,  $p < .01$ ) as well as a main effect of personal identity motivation ( $\beta = 4.45$ ,  $t = 2.12$ ,  $p < .05$ ). The main effects were qualified by an interaction ( $\beta = -.11$ ,  $t = -1.98$ ,  $p < .05$ ; see figure 3a). To better interpret the interaction, I used a spotlight analysis (Fitzsimons 2008; see figure 3a) which demonstrated

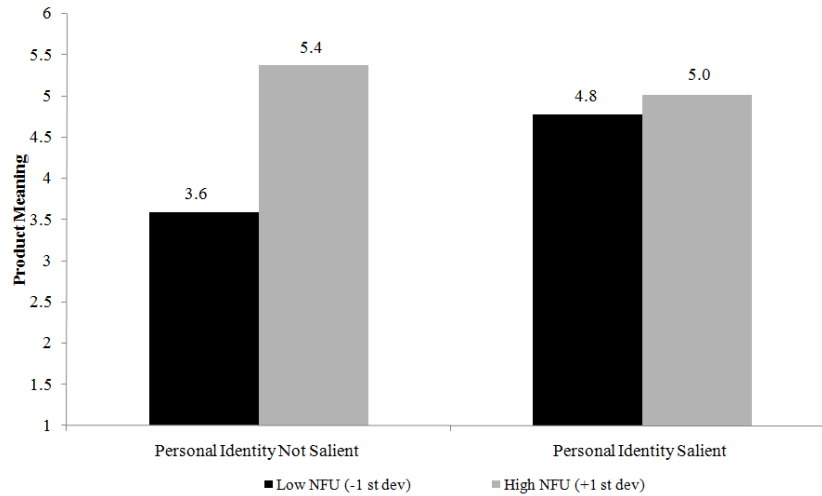
support for the pattern predicted by hypothesis 3b. The slope of NFU was significant and positive when personal identity motivation was not made salient ( $\beta = .12, t = 2.59, p = .01$ ). When the motivation was made salient, however, the slope of NFU was not significantly different than zero ( $\beta = .02, t = .49, n/s$ ).

*Evaluations of the customized t-shirts.* Participants' NFU also had a positive effect on product evaluations ( $\beta = .43, t = 2.99, p < .01$ ), and a main effect of motivation salience emerged as well ( $\beta = 15.9, t = 2.42, p = .01$ ). The main effect of NFU on product evaluations supports prior results demonstrated by Franke and Schreier (2008). The main effects were qualified by an interaction ( $\beta = -.39, t = -.20, p < .05$ ). As with product meaning, the slope of NFU was significant and positive when personal identity motivation was not made salient ( $\beta = .08, t = 2.11, p < .05$ ). When the motivation was made salient, however, the slope of NFU was not significantly different than zero ( $\beta = -.01, t = -.45, n/s$ ; see figure 3b).

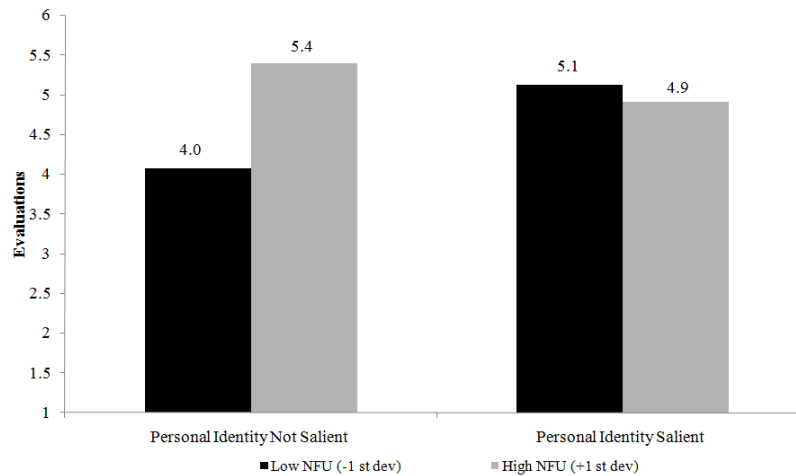
To test for mediation, meaning was added to the model predicting evaluations, and it was significant ( $\beta = .49, t = 5.57, p < .01$ ). With its addition, both the main effects as well as the interaction dropped below significance. Sobel tests confirmed that meaning mediated the main effect of NFU (2.35,  $p < .01$ ), the main effect of motivation salience (1.96,  $p < .05$ ) and marginally, their interactive effect (1.81,  $p = .06$ ; see figure 3b).

**FIGURE 3:**  
**THE EFFECTS OF NEED FOR UNIQUENESS (NFU) AND PERSONAL IDENTITY SALIENCE**  
**ON PRODUCT MEANING AND EVALUATIONS (STUDY 2A)**

*A) Product Meaning*



*B) Evaluations*



*Discussion*

The results from this study demonstrate that personal identity motivations, both chronic and situational, play a significant role in influencing the meaning and evaluations of customized products. For participants whose personal identity motivation was not salient, chronic need for

uniqueness played a significant role in influencing both the meaning ascribed to and evaluations of the customized t-shirt. Making a personal identity motivation salient removed that influence.

Since prior research (Franke and Schreier 2008) suggests that that product uniqueness enhances evaluations, it comes as no surprise that consumers with a chronic need for uniqueness tend to evaluate their products more favorably. However, a more compelling result from this study is that, by simply changing a few words to prime a personal identity motive, marketers can improve consumers' product evaluations for those lacking the chronic drive. The naming of many of these customization sites implies that our findings confirm what the firms already believed (e.g., myHeinz.com, MiAddidas.com, myMMs.com). Other companies like SkinIt, the maker of customizable cell phone and MP3 player covers, advises "Set yourself apart from the crowd with a skin that reflects your tastes and passions." Rather than focusing on social identity, these sites are encouraging consumers to reflect their personal, unique identities.

To provide additional support for these results, I examine the extent to which the meaning created by participants in study 2a was public or private in nature. I expect that consumers' chronic need for uniqueness will lead them to build private meaning into their customized products. Thus, NFU should be negatively correlated with the degree to which other consumers can understand the product's meaning. When personal identity motivation is made salient, however, I expect the strength of this correlation to decline:

H4a: Consumers' chronic need for uniqueness will be negatively related to the public meaning ascribed to their customized product.

H4b: This effect will be attenuated when consumers' personal identity is made salient.

### STUDY 2B

One hundred and twenty participants completed this study online. As in study 1b, each participant rated the public meaning associated with 14-15 of the original 67 designs. The designs were randomized such that each rater received designs that had been created across the two conditions in study 2a.

#### *Dependent Measures*

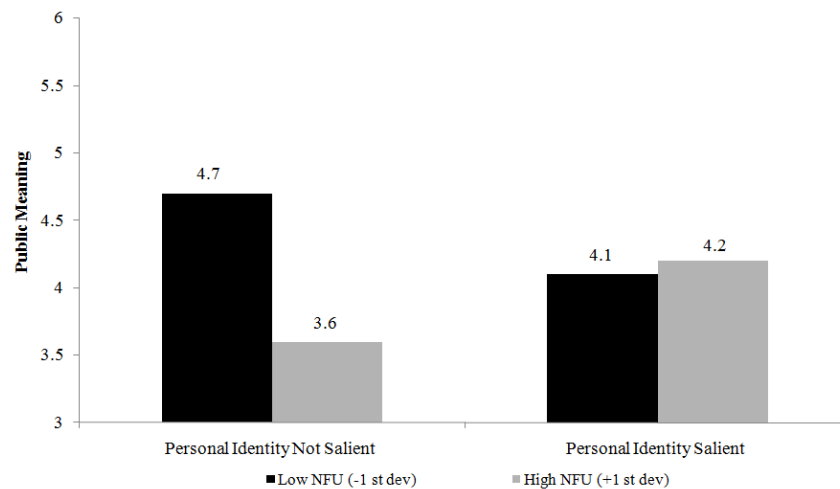
*Public meaning.* The same three items used in the study 1b were used to measure participants' ability to understand the meaning behind the design. Again, I calculated the coefficient alpha for each judge. Fifteen of the of the 120 judges were removed for having alphas lower than .65, one was removed for having no variance across all of the measures, and one was removed for failing to complete the study. Overall, alphas for the remaining judges were quite high (Mean  $\alpha = .89.37$ , Range: .66 to .99). I then examined the level of agreement across judges by the calculating intra-class correlation coefficient (ICC). Again, because not all judges viewed all designs, I calculated the ICC for each of the 5 grouping of designs, and all were in the acceptable range (range: .90 to .97). An overall index of public meaning was computed by averaging across the three items and across the judges that rated each design ( $M = 4.38$ ; Range: 2.17 to 6.43;  $\alpha = .96$ ).

*Attractiveness.* Attractiveness was measured as in study 1b ( $M = 3.13$ ; Range: 1.82 to 5.91;  $\alpha = .97$ ). As in that study, attractiveness was not influenced by the manipulated and measured factors.

## Results

*Public meaning.* A regression was used to assess the influence of the designer's NFU and the personal motivation salience on public meaning. As in study 1b, attractiveness was used as a covariate. As predicted by hypothesis 4a, there was a negative correlation between the designer's NFU and public meaning ( $\beta = -.19$ ,  $t = -2.17$ ,  $p < .04$ ). This main effect was qualified by an interaction ( $\beta = .22$ ,  $t = 1.92$ ,  $p = .05$ ). To better interpret the interaction, I used a spotlight analysis (Fitzsimons 2008). Consistent with hypothesis 4b, the slope of NFU was significant and negative when personal identity motivation was not made salient ( $\beta = -.22$ ,  $t = -2.94$ ,  $p < .01$ ). When the motivation was made salient, however, the slope of NFU was not significantly different than zero ( $\beta = .01$ ,  $t = .19$ ,  $p = .85$ ; see figure 4).

**FIGURE 4:**  
*EFFECTS OF NEED FOR UNIQUENESS (NFU) AND PERSONAL IDENTITY SALIENCE ON PUBLIC MEANING (STUDY 2B)*



## Discussion

From this study, I can conclude that personal identity, whether chronic or temporary, leads consumers to create designs with lower levels of public meaning. Just as consumers reflect

their personal style through purchasing novel or unique consumer goods (e.g., Tian, Bearden, and Hunter 2001), I find that they can accomplish the same personal identity goals through customization. The prior study shows that personal identity not only leads to differences in overall meaning derived from products, but also leads to differences in others' abilities to understand the meaning.

### *GENERAL DISCUSSION*

As consumers' demand for customized products grows rapidly across a wide range of product categories, understanding the meaning these products hold for consumers becomes increasingly important. A recent Booz Allen report notes that firms who aspire to become "smart customizers" must attain a solid understanding of the sources of value that customization brings to their consumers (Jaruzelski and Jones 2007), and meaning is a key determinant of value (Richins 1994).

My research demonstrates that by simply making salient an identity motivation prior to design, firms can significantly influence both the type (private or public) and amount of meaning with which consumers imbue the product. The distinction between public and private meaning is an important one because customization firms are able to provide consumers with varying degrees of design freedom. Design freedom is valued differentially by consumers based on their identity-based motives and this difference is based, at least in part, on their ability to create meaning that can or cannot be easily understood by others. My results suggest that only consumers who are motivated by personal identity goals are likely to translate that design freedom into more meaningful products, thereby qualifying the results of Franke and Schreier (2008). Consumers motivated by social identity goals can create meaningful products whether or

not such freedom is extensive. Thus, customization firms catering to consumers who are likely motivated by social identity motives (e.g., SororityTotes.com) may find investments in design freedom ineffective.

These findings also show that consumers' chronic need for uniqueness is a strong predictor of the meaning consumers build into their customized products, even when design freedom is held constant at a moderate level. Firms, however, can temporarily activate this need in consumers with little to no cost. When they do, even those with lower needs for uniqueness can create meaningful products that carry higher evaluations.

### *Theoretical Contributions*

My research identifies both consumer-based and firm-controlled factors that influence the meaning that consumers create when customizing products. As Shavitt, Torelli, and Wong (2009) note, the relationship between identity-based motivation and the creation of product meaning is not well understood. Together, four studies demonstrate that consumers' identity-based motivations influence both the amount and the type of meaning that consumers build into their products.

Study 1a demonstrates that consumers guided by personal identity motives can create more overall meaning when given greater design freedom. The insight provided by the "observers" in study 1b highlights that this additional meaning is largely private in nature. Consumers motivated by social identity motives created similar levels of meaning, regardless of the degree of design freedom afforded to them by the customization site. With the evidence provided by study 1b, I can conclude that even those with high levels of design freedom were choosing to create designs with a relatively high level of public meaning embedded in them. The

pairing of these two studies, therefore, provides insight into relationship between different identity motives (personal and social) and different types of meaning (public and private).

Study 2a examines how chronic and temporarily activated personal identity goals interact to influence product meaning. With design freedom held constant at a moderate level, consumers' chronic need for uniqueness was positively related to the meaning that they embedded in their customized products. However, with some small changes in the wording on the website, consumers' need for uniqueness was temporarily enhanced. With this enhancement, even those with a low chronic need for uniqueness were able to create products comparable to those created by the consumers with a high chronic need. When examined in conjunction with the study 2b results it becomes clear that as products become more meaningful to the consumer, they decline in public meaning for observers.

Across both sets of studies, I find that consumers motivated by a personal identity goal create more meaning in their customized products by reducing the amount of public meaning they contain. On the surface, this finding may look much like the customized-product version of identity signaling. However, identity signaling (even when signaling divergence) relies on the reception of meaning (Berger and Heath 2007, p.123). In fact Berger and Heath note (p. 123):

People do not just differentiate themselves...in whatever idiosyncratic way they happen to choose; indeed, to signal identity clearly, people do not want to be the only one holding a given taste.

My results show that customization provides additional value to the consumer through the creation of meaning, independent of the message it may or may not send to others. I was only able to come to this conclusion by having an independent set of observers assess the public meaning the customized products contained. This methodology allowed for a more objective and less intrusive assessment of the public meaning the products held. To my knowledge, this

research is the first to compare the meaning a product holds for the creator to the meaning that it conveys to others. Taken together, the results from all four studies demonstrate the important role that product meaning plays in customization and further explain why consumers are willing to pay such a substantial premium for these one-of-a-kind products.

### *Managerial Implications*

This research identifies the way in which firms can help consumers create greater meaning in their products by leveraging consumers' identity-based motivations. In the two design studies, greater meaning was positively correlated with product evaluations, and in the first study, also with actual product satisfaction. Because customization programs are expensive for firms to offer (Hirsch, Egol, and Martin 2005), it is crucial to understand how customization adds value to consumers. By identifying the conditions under which investments in certain customization options (e.g., the capability for high levels of design freedom) are and are not warranted, these findings may help decrease the waste associated with the indiscriminate approach most firms are using to add variety to their product mix (Jaruzelski and Jones 2007). Specifically, von Hippel and Katz (2002) suggest that, in order for toolkits to make sense, a consumer must have a need for something different that is strong enough to offset the costs of putting a toolkit to use (p. 831). These findings may prove useful in helping firms making such a need salient. Importantly, study 1a demonstrates that making such a need salient at the time of design can have enduring implications for satisfaction. Higher levels of satisfaction may influence important factors such as product usage, word-of-mouth communications as well as repeat purchases. As study 2a demonstrates, creating such a need can be virtually costless.

### *Limitations and Future Research Opportunities*

An important limitation of the current research is related to the methodologies chosen. Because participants engaged in the studies for class credit, I was unable to examine the basic motivations prompting them to initiate a customization experience on their own. While the sources of value identified in this research are likely to be influential in such a decision, my research does not fully document a comprehensive set of motivations. Future research is needed to understand the basic motivations underlying consumers' decisions to customize. This research could manipulate various identity motivations on a live website and test when participants actually make a purchase, how much they spend and evaluate their designs. This would provide a fuller understanding of consumers' natural motivations at the time of design.

The choice of methodology also influenced the type of dependent measures used. Because I used a live website in one study, participants had very strong reference prices for the customized products they created. Under these conditions, obtaining meaningful measures of consumers' willingness-to-pay is challenging. Future research may be able to avoid such limitations by creating customization interfaces devoid of pricing information.

As the digital opportunities for identity representation continue to expand, numerous research opportunities exist to provide a better understanding of the value created for both the firm and the consumer. As this research has shown, the two are often inter-related. On the consumer side, future research could examine how other individual differences influence consumers' reactions to customized products. On the firm side, such research could examine how different industry- and firm-specific variables (e.g., nature of the product (hedonic vs. functional), level of competition, strength and nature of brand equity) influence consumers'

reactions both in isolation and in conjunction with the different identity-based motivations active in the consumer.

## *CHAPTER 2*

### **Essay 2**

#### **Impress Yourself: Self-Signaling and Product Design**

A former 1-800-Mattress executive recently created a company called “Create-A-Mattress” that allows consumers to customize the fabric and patterns of their mattresses. One of his customers, a bachelor, created one with a label that reads “Where the magic happens.” Though the mattress is only visible when the sheets are changed, the message apparently provides value for the man who created it. Prior research has established that consumers derive value from their product choices and that these decisions may signal positive information to the consumer about him/herself (e.g., Akerlof and Kranton 2000; Bodner and Prelec 2002; Dhar and Wertenbroch 2007; Prelec and Bodner 2003).

Possessions play an important role in defining the self and helping consumers create a sense of identity (e.g., Ahuvia 2005; Ball and Tasaki 1992; Belk 1988; Richins 1994). The car we drive, the clothing we wear, and the house we purchase all signal something about our identity (i.e., our subjective perceptions of our values, morals, tastes, and social status). Controlling for functional and quality differences, consumers are often willing to pay a premium for products which they believe signal some positive aspect of their identity (e.g., Rucker and Galinsky 2008).

Surprisingly, researchers examining identity signaling have focused almost exclusively on what products communicate about us to others (e.g., Belk 1988; Belk et al. 1982; Berger and Heath 2007; Berger and Ward 2010; Grubb and Grathwohl 1967; Richins 1994; Rucker and Galinsky 2008; Tian et al. 2001). According to Berger and Heath (2007), “consumers make product choices in identity-relevant domains to signal particular identities to the broader social world” (p. 132). However, Berger and Heath’s (2007) definition of identity signaling focuses on

the social reception of the meaning, ignoring the identity signal that one sends to oneself. While other-signaling (i.e., using consumption choices and usage to signal identity to others) is a key topic for marketers, much can be learned by better understanding the role of self-signaling in marketing. I propose that self-signaling is important because it may explain value which consumers derive both from choice and usage situations and has been overlooked in the research thus far.

The current research examines the self-signaling process in the domain of product design and aesthetics. I propose that product aesthetics is an important domain in which consumers signal positive information to themselves. Similar to related work on product design, I use the terms “aesthetics” and “design” interchangeably to mean the physical look of a product (Townsend and Sood 2010). Just as consumers signal information to others by using attractive products, I expect that they engage in a similar process of signaling to themselves. The goal of this research is two-fold. First, I will demonstrate that both using and choosing aesthetically pleasing products can signal positive information to consumers about themselves. Evidence of this self-signaling process will be captured in heightened self-evaluations on domain-relevant dimensions. Second, I will identify two factors that moderate this effect: the level of consumer uncertainty in the relevant domain and the degree to which the signaling occurs in private. In the following sections, I will provide theoretical overviews of self-signaling and product design. Next, I will provide an overview of domain uncertainty and prior research which has documented the role of uncertainty in explaining the self-signaling effect. I will then derive hypotheses and present results from two studies in which participants engage in involving tasks. In each study, I will vary the aesthetics of the products that participants use and will then capture self-evaluations as well as related measures and downstream behavior.

### *SELF-SIGNALING*

Researchers have long recognized that consumers examine their behavior and then infer what type of person they are from that information (e.g., Bem 1972; Dunning 2007; James 1884). This idea of inferring information from observing yourself goes back almost 150 years: early work in psychology by James (the James-Lange theory; 1884) suggested that people infer their own emotional states from observing their behavior (i.e., they feel afraid if they see themselves running). Building upon these theories of self-perception, recent work on self-signaling has examined how consumers use information to do more than accurately assess themselves, they also use information to make themselves feel better (e.g., Bodner and Prelec 2002; Prelec and Bodner 2003; Dunning 2007). Like related work on self-enhancement and other self-motives, research on self-signaling suggests that consumers like to see themselves in a positive light and will interpret information in a way that is consistent with this goal (Leary 2007). While theories of both self-perception and self-signaling have been well-established, many questions regarding the underlying process and moderating effects remain unexplored (e.g., Dunning 2007).

*Self-signaling in economics.* A limited amount of research on self-signaling can be found in the economics literature (e.g., Akerlof and Kranton 2000; Bodner and Prelec 2002; Prelec and Bodner 2003). For example, Prelec and Bodner (2003) develop an economic model of strategic self-signaling which encompasses two utility components: outcome utility (i.e., the context-independent utility of an option) and diagnostic utility (i.e., the utility or disutility of learning about the type of person one is as signaled by one's choice). The latter component captures the value gained from self-signaling.

Self-signaling has been used to explain interesting behavior that does not follow traditional economics. For example, Shafir and Tversky (1992) use self-signaling to explain people's behavior in the Newcomb problem. In this problem, people are shown two closed boxes and are told that Box A contains a small, but significant, amount of money while Box B contains either nothing or \$1 million. Participants are also told that an all knowing deity has already made a decision about what Box B contains. If the deity thinks that the person is a nice person, the deity has put \$1 million in Box B. If the deity has deemed the person greedy, the deity has left Box B empty. With this information, participants are then asked to choose between 1) Box B alone or 2) a combination of both Boxes A and B. Rational economics suggests that the second choice is dominant. Yet, most people tend to pick the first choice: Box B only. To an economist, this choice is irrational because the deity has already made his choice; nothing about the participant's decision will change the contents of Box B. Because the choice of Box B alone signals that the participant is not a greedy individual, the consumer attains utility from making this seemingly irrational choice.

*Self-signaling in psychology.* In psychology, Quattrone and Tversky (1984) conducted a study in which they asked participants to submerge their arms in a container of cold water until they could no longer bear the pain. Participants were then told that recent medical studies had discovered a connection between the effects of exercise on one's ability to keep one's arm submerged and a certain type of heart condition. Half of the participants were told that the heart condition was associated with increases in tolerance to cold water, while the other half were told it was associated with decreases in tolerance. Participants then rode a stationary bike for one minute and repeated the cold water test. The majority of participants showed a change in submersion time in the direction correlated with "good news." While their behavior could not

cause them to have a healthy heart, it could provide them with a signal that they were among the healthy.

In addition to the experiments discussed above, self-signaling has also been used to explain why people engage in a variety of “real world” behaviors. People recycle to see themselves as responsible people (Brekke et al. 2003) and pursue challenging, even dangerous, activities like mountaineering to see themselves as brave and fit (Loewenstein 1999).

*Self-signaling in consumer behavior.* While there is likely an important connection between self-signaling and consumer behavior, limited research exists in this domain (Bennett and Chakravarti 2008; Dunning 2007). Dhar and colleagues (Dhar and Wertenbroch 2007; Khan and Dhar 2006) use self-signaling to explain consumers’ self-control in their decisions regarding “virtues” and “vices.” Consistent with the model laid out by Prelec and Bodner (Bodner and Prelec 2002; Prelec and Bodner 2003), Dhar and Wertenbroch (2007) examine how people use their choices between “virtues” and “vices” to generate self-attributions which either enhance or reduce the overall utility derived from these choices. In related work, Khan and Dhar (2006) find that once people have shown some type of altruistic behavior they feel licensed to engage in more self-indulgent behavior (i.e., the licensing effect). The authors propose that the effect works because the initial behavior dampens the negative self-attributions associated with certain indulgent decisions (Khan and Dhar 2006). Similarly, Gao et al. (2009) look at how product choice can restore self-views that have been temporarily brought into question. These authors find that when participants who believe they are exciting are temporarily made to question this self-view, they are more likely to purchase products with exciting brand personalities to bolster this momentarily shaken self-view.

The only work to my knowledge that focuses on self-signaling with product aesthetics is a working paper (e.g., Townsend and Sood 2010). These authors examine how choosing aesthetically pleasing products influences propensity to escalate commitment towards a failing course of action and openness to counter-attitudinal arguments. They also show that when consumers engage in a self-affirming task prior to product choice, they are less likely to pick a highly aesthetic product. From three studies, they conclude that good design is self-affirming.

Taken together, the work on self-signaling across these three literatures suggests that consumers do signal information to themselves in a consumption context. However, all of the work in this area focuses on product choice. Little research examines product use. My research will examine how simply using aesthetically pleasing (versus less aesthetically pleasing) products can influence self-evaluations. Importantly, while choice might enhance this self-signaling effect, I do not expect that it is necessary for self-signaling to occur.

### *PRODUCT DESIGN AND AESTHETICS*

Products vary greatly in their design. Across a range of overpopulated product categories, consumers are increasingly making product choices based on aesthetics and visual attractiveness (e.g., Bloch 1995; Bloch et al. 2003; Schmitt and Simonson 1997). Even above price, many consider design to be the key determinant in new product performance (Bloch 1995; Cooper and Kleinschmidt 1987; Creusen and Schoormans 2005; Veryzer 1995).

Despite its importance, surprisingly limited experimental research has examined aesthetics and product design (Veryzer and Hutchinson 1998). The limited research that has been conducted has largely focused on the definition of consumer aesthetics and the specific determinants of aesthetic response (i.e., prototypicality and unity; Veryzer and Hutchinson

1998). While there are some objectively agreed upon determinants of aesthetically pleasing products such as the ratios of the sides of a rectangular package (Raghubir and Greenleaf 2006) and perceived typicality (Veryzer and Hutchinson 1998), my focus is on overall aesthetics and how they influence the consumer's self-evaluations and evaluations of the results of activities utilizing the products (i.e., the cookies consumers make with attractive vs. unattractive utensils).

As Bloch et al. (2003) explain, visual aesthetics are growing in prominence for a wide selection of products, even in categories that are not typically thought of as aesthetic-relevant: "Vegetable peelers, wireless phones, car-washing buckets, and lawn tractors are all being designed with attention to the aesthetic value of their appearance" (p. 551). Marketers have long recognized that "a good design attracts consumers to a product, communicates to them, and adds value to the product by increasing the quality of usage experiences associated with it" (Bloch 1995). Yet, to my knowledge, no research examines how aesthetics add value in a usage situation and what factors moderate this influence. While it is agreed that good design provides both value to consumers (e.g., Schmitt and Simonson 1997) and a competitive advantage to firms, the sources of the underlying value remain largely unexplored. I propose that one source of value provided by aesthetically-pleasing products is their ability to signal positive information about the self. I anticipate that this ability is enhanced when consumers are relatively uncertain in the relevant domain.

### *DOMAIN UNCERTAINTY*

Several economists have determined that signaling is most important when high levels of uncertainty exist (Akerlof 1970). In general, people tend to be chronically uncertain about where they stand on a variety of dimensions, especially with respect to broad or abstract attributes

(Prelec and Bodner 2003). For example, when asked about one's "taste," there is little diagnostic information as to whether one has "good" or "bad" taste. Therefore, individuals look to their decisions, product choices, and current possessions to assess their own values, morality, taste, and ability to form a self-evaluation. Most researchers addressing self-signaling agree that uncertainty is a major contributor to the effect (Dunning 2007; Loewenstein 1999; Prelec and Bodner 2003; Shafir and Tversky 1992). In an analysis of Quattrone and Tversky's (1984) experiment, Shafir and Tversky (1992) explain it is their uncertainty of their prognosis that drives their willingness to do so (Shafir and Tversky 1992). Loewenstein (1999) concurs: "People are, in fact, unsure of their own dispositions. To resolve this uncertainty in a manner favorable to themselves, people attempt to signal to themselves that they have desirable attributes by taking actions that they believe are consistent with those attributes" (p. 323). Similarly, Gao et al. (2009) show that when a self-view is temporarily cast in doubt, consumers choose products that bolster their original self-view. These findings suggest that consumers with a higher level of uncertainty have a greater need to self-signal, and thus, stand to benefit more directly from positive self-signaling than those with a lower level of uncertainty.

While self-signaling may occur in unrelated domains, most prior work has focused on how product choice influences evaluations of the self and behavior in related domains. I expect that a low level of global self-signaling may occur as well (i.e., I choose healthy foods and that makes me feel good about myself in general, not just in the domains of health and food), but that the effect is strongest in self-evaluations in the relevant domain. Because I will be testing a potentially subtle self-signaling effect (including product use as well as choice), I anticipate that this self-signaling effect will be evident only in domain-relevant self-evaluations.

I expect a positive relationship between product aesthetics and self-evaluations on domain-relevant dimensions when uncertainty is high. Specifically, consumers who use attractive products will provide higher self-evaluations than those who are assigned to use unattractive products. I expect the strength of that relationship to be attenuated when uncertainty is low. Formally,

H1: Using attractive (vs. unattractive) products will positively influence self-evaluations on domain-relevant dimensions when uncertainty is high. When certainty is high, this effect will be attenuated.

This study will also test the influence of product choice on self-evaluations. Given the intentionality of choice, compared to the more passive nature of product assignment, I expect that differences in the self-signaling effect will occur. Because consumers can more justifiably utilize information from choice (vs. assigned product use) in self-evaluations, I expect that consumers who choose the aesthetics of their products will engage in higher levels of self-signaling than those who are assigned. Specifically, when consumers engage in active choice they may feel that they had a more deliberate role in the aesthetics of the product than those who are merely assigned to an attractive product. This choice leads them to feel more justified in integrating this aesthetics information into their self-evaluations. I expect that choice of aesthetics will exacerbate the effect of hypothesis 1 such that consumers choosing products that they deem attractive will experience the highest self-evaluations, and that this effect will be strongest when uncertainty is high.

H2: When the products are chosen rather than assigned, the effects predicted in H1 will be enhanced.

In order to show that a simple halo effect is not driving results, I will also measure non-relevant self-evaluations. I do not expect that aesthetics will have an influence on these dimensions (i.e., nice, funny). I propose:

- H3: Product attractiveness will not have a significant influence on self-evaluations on non-relevant dimensions, regardless of uncertainty.

### *STUDY 1*

The goals of study 1 are 1) to demonstrate that the aesthetic nature of products influence evaluations of the self in a private setting and 2) to examine the influence of intentionality (e.g., product choice vs. assignment) on self-evaluations and 3) to study the moderating influence of uncertainty on the effect.

#### *Stimuli and Procedure*

Participants were 108 University of Colorado undergraduates who participated in this study for course credit. This study was administered using on-line survey software, with participants completing the study when and where they chose (within a 48 hour window). The survey provided an overview of the study, the manipulations, directions for the writing task, and all relevant measures. In the survey, participants were asked to complete a writing task (see below) on a Word document. They then emailed that Word document to the experimenter. Following the writing task, they went back to the survey and completed the remaining dependent measures.

All participants received the same writing task, which was taken from a GMAT practice writing task:

“The National Parks Service is trying to make important decisions about national park preservation and they want your opinion. Please take 5-10 minutes to carefully think about the issue described below and provide them with suggestions and your view of how to handle their issues. Some people claim that in order to protect national parks and historical sites, public access to them should be greatly restricted. Others argue that there should be few restrictions, if any, because such places were intended for everyone to use. How do you think the National Parks Service should deal with this issue? Please

provide them with an opinion and detailed reasons using your own personal experience or any other relevant information.”

Immediately following the writing task, participants were told that in order to receive credit, they would need to email their completed writing assignment document to the experimenter. This ensured that I would capture the essays themselves as well as which document participants in the choice condition used.

### *Experimental Design*

Two factors were manipulated between-participants: (1) Aesthetics (assigned unattractive vs. assigned attractive vs. choice between unattractive and attractive) and (2) Uncertainty (uncertainty vs. certainty).

### *Independent Factors*

*Aesthetics.* Following the uncertainty manipulation, participants were asked to download a Word document (unattractive, attractive, or they were given a choice between the unattractive and attractive; see appendix C). The documents did not differ at all in terms of formatting or functionality. Pretests reveal a difference in attractiveness between the unattractive and attractive templates. On 7-point scales, participants rated the two design templates on the following scales: attractive, aesthetically pleasing, good-looking and ugly (reversed-coded). These measures were averaged to create an overall index of the Word document attractiveness ( $M = 3.78$ ; Range: 2.0 to 5.5,  $\alpha = .88$ ). A one-way ANOVA revealed a significant main effect of aesthetics as expected ( $M_{\text{Attractive}} = 4.14$ ,  $M_{\text{Unattractive}} = 3.41$ ;  $F(1,28) = 4.21$ ,  $p = .05$ ).

*Uncertainty.* Prior to the writing task, all participants are exposed to the uncertainty manipulation (adapted from Wichman 2010). Participants in each condition read the following paragraph (emphasis added), which contained the manipulation:

Please take a few minutes to think about a time in which **you felt confident about your actions (second guessed your actions) and knew how (were unsure of how)** to resolve a problem that you faced during your academic career. Describe this event in as much detail as possible and describe in detail how you felt during the experience. Please write about your thoughts and feeling as well as how you felt physically when you experienced this **certainty (uncertainty)** in how to respond.

Importantly, the uncertainty manipulation had no effect on whether participants chose the unattractive or attractive template ( $\chi^2 = .73, p = .39$ ). Seventy eight percent of participants (14 out of 18) chose the attractive template when they had been primed with uncertainty. Sixty five percent (11 out of 17) chose the attractive template when they had been primed with certainty.

### *Dependent Measures*

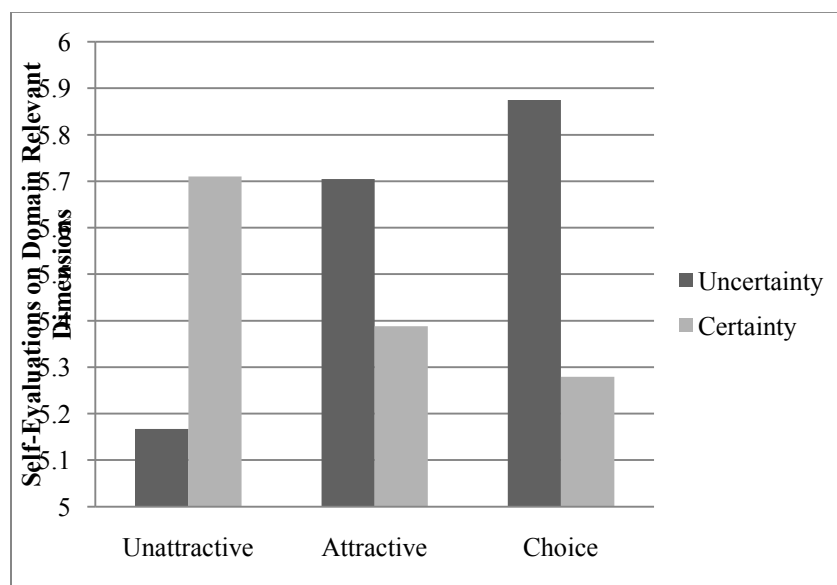
*Self-evaluations on domain-relevant dimensions.* Using seven-point scales, participants indicated the extent to which they were smart, talented, articulate, and competent. All items loaded on a single factor and were averaged to create an overall evaluation measure ( $M = 5.55$ ; Range: 3.7 to 7.0;  $\alpha = .74$ ).

*Self-evaluations on non-relevant dimensions.* Participants indicated the extent to which they were funny, nice, and likeable. All items loaded on a single factor and were averaged to create an overall evaluation measure ( $M = 5.7$ ; Range: 4.0 to 7.0;  $\alpha = .64$ ). All self-evaluation measures were subjected to factor analysis and loaded on their appropriate factors.

## Results

*Self-evaluations on domain-relevant dimensions.* A two-way ANOVA revealed a significant interaction between the two independent factors ( $F(1,107) = 5.75, p < .01$ ). Consistent with hypothesis 1, when participants were primed with uncertainty, they reported higher self-evaluations on domain-relevant dimensions when they used an attractive (vs. unattractive) document to complete the writing assignment ( $M_{\text{Uncertainty, Assigned Attractive}} = 5.7$  vs.  $M_{\text{Uncertainty, Assigned Unattractive}} = 5.2, F(1, 107) = 4.65, p < .04$ ). When participants are primed with certainty, no difference based upon aesthetics emerged ( $M_{\text{Certainty, Assigned Attractive}} = 5.4$  vs.  $M_{\text{Certainty, Assigned Unattractive}} = 5.7; F(1, 107) = 1.79, n/s$ ; see figure 5).

**FIGURE 5:**  
**EFFECTS OF UNCERTAINTY AND AESTHETICS ON SELF-EVALUATIONS ON**  
**DOMAIN-RELEVANT DIMENSIONS**  
**(STUDY 1)**



To test hypothesis 2, I ran a two-way ANCOVA between the uncertainty prime and two of the three aesthetics conditions. Specifically, I ran the analysis focusing on only the assigned attractive and choice conditions. This allowed me to hold attractiveness constant and focus only

on the effects of choice. If I compared the two assigned conditions (unattractive and attractive) to the choice condition, then it would be difficult to know how much attractiveness and choice each influence the results. Because a small percentage of people in the choice condition chose the “unattractive” Word document, design choice was included as a covariate. As you might expect, strong main effect of uncertainty emerges such that participants who were primed with certainty evaluated themselves more positively than those who were primed with uncertainty ( $M_{\text{Certainty}} = 5.8$ ,  $M_{\text{Uncertainty}} = 5.3$ ;  $F(1, 72) = 8.19$ ,  $p < .01$ ). However, the main effect of choice and the interaction are not significant. Comparing participants who were assigned to the attractive template and those who were given a choice of Word documents, no significant differences in self-evaluations emerge ( $M_{\text{Assigned Attractive}} = 5.6$ ,  $M_{\text{Choice}} = 5.6$ ;  $F(1, 72) = .07$ , n/s). The interaction between choice and uncertainty was not significant either ( $F(1, 72) = .79$ , n/s), leaving hypothesis 2 unsupported.

*Self-evaluations on non-relevant dimensions.* Consistent with hypothesis 3, the manipulations did not have a significant effect of participants’ self-evaluations on non-relevant dimensions (all  $p$ ’s  $> .21$ )

### *Discussion*

This initial study provides support for the idea that a product’s aesthetics can signal information to the user about him or herself. Specifically, the findings demonstrate that using aesthetically pleasing complementary products (i.e., a Word document template) can influence domain-relevant self-evaluations following a writing task. The results show that this self-signaling effect is strongest when uncertainty is high, supporting hypothesis 1. When consumers are primed with uncertainty, using assigned attractive (vs. unattractive) templates positively influences self-evaluations on domain-relevant, but not irrelevant, dimensions.

From this study, we can conclude that using attractive products leads consumers to feel better about themselves and that this effect is strongest when uncertainty is high. Surprisingly, allowing consumers to choose their products does not exacerbate this effect, as predicted by hypothesis 2. This suggests that attractive products do signal information to consumers about themselves even when they are using, not just when they are choosing their products. When uncertainty is high, consumers seem to desire positive self-signaling information to compensate for the uncertainty they are experiencing. They can acquire this information from aesthetic products, regardless of choice.

Interestingly, when consumers are certain, I find that the pattern is reversed. Specifically, participants who use unattractive aesthetics evaluate themselves more positively than those who use attractive aesthetics. I propose that attribution could be underlying this effect. The certainty prime may lead participants to evaluate themselves more favorably (vs. those primed with uncertainty or potentially, those not primed at all). Using aesthetically pleasing products may lead them to later attribute their positive self-feelings to the attractive cooking set, rather than to themselves. The fact that this effect was exacerbated when participants chose the products further supports this interpretation. By capturing self-evaluations at several points, future research can be used to further examine this process. Specifically, research could measure self-evaluations directly after the uncertainty manipulation and again following the writing task and aesthetics manipulation. Support for this explanation would come from an initial rise in self-evaluations for those primed with certainty followed by a decline after the writing task for those primed with certainty who use the attractive template.

From this study, I can conclude that when participants feel uncertain, they are more likely to use information from aesthetics to enhance their self-evaluations. I plan to have objective

reviewers (English teachers) evaluate these assignments on a variety of dimensions (i.e., well-written, thoughtful, articulate, and persuasive). These objective evaluations will serve multiple purposes: First, they may shed light on whether or not consumers are able to accurately evaluate their writing and whether the manipulations have an impact on their ability to do so. Second, and more importantly, these evaluations will assess whether using aesthetically pleasing templates can actually help participants to write better.

These results suggest that consumers do, in fact, incorporate product information into their own self-evaluations. In this first study, participants completed the task using online software to insure that they would be completing the study in private. My expectation is that a private setting is the purest context in which to observe self-signaling. Here, there is no “other” present to prompt any other-signaling motivation. While consumers may have some “imagined others” (e.g., Tetlock 2002) in their head, the contextual prompt is not there. Thus, any effects of the product’s aesthetics on consumers’ self-evaluations when they perform the task in private are likely to reflect an underlying self-signaling mechanism.

When consumers use products in a public setting, however, impression management motivations may become active (Schlenker 1980). Here, I propose that consumers are more likely to take an outsider’s view when evaluating themselves: what they think others think of them becomes a more salient input into their self-evaluations. When consumers consider how others would evaluate them, other relevant pieces of information will likely overwhelm the effect of product aesthetics, minimizing the positive effect of aesthetics on self-evaluations.

### *THE ROLE OF AUDIENCE*

In my next study, I will test how the presence of other people influences the self-signaling effect of aesthetically pleasing products. Dhar and Wertenbroch (2007) suggest that utility from self-signaling should not be impacted by whether or not others observe the consumption. I propose that this may not always be true: when consumers perform in front of others, I believe that self-signaling may not have as strong of an influence on self-evaluations as it does in private. The presence of an audience will lessen the self-signaling effect because having other observers present forces consumers to consider how objective outsiders might evaluate them. I explain that prediction in the following section.

While consumers are often driven by various self-motives such as self-enhancement, they like to think these motivated evaluations have no impact on them (e.g. Leary 2007). When consumers complete the task in private, they are not forced to consider how others might evaluate them, and therefore, have no reason to override the positive self-signaling effect that using aesthetically pleasing products provides. Therefore, I expect that for participants completing the task in private, using attractive products will enhance self-evaluations.

However, when consumers perform the task in front of an audience (in the case of the following study, a professional cook), they are likely to consider the observer's potential evaluation of them in their own self-evaluations. They may recognize that because functionality does not differ across the utensils, simple aesthetics should not make them better cooks in the eyes of the audience. Therefore, I expect that when consumers perform the task in public, product aesthetics will have little influence on their self-evaluations. Formally,

- H4: When participants are in private, using attractive (vs. unattractive) products will positively influence self-evaluations on domain-relevant dimensions and evaluations of the resulting creation. When consumers are in public, this effect will be attenuated.

While I expected choice of aesthetics to enhance self-evaluations more than product assignment in study 1, it did not. Given that I am testing choice in a new domain and with a new moderator (i.e., audience), I will again test whether choice will enhance self-evaluations more so than mere product assignment. As hypothesized in study 1, I expect that when participants actively choose the product, they will feel more closely connected to the aesthetics and are more likely than those who are simply assigned, to integrate aesthetic evaluations into their own self-evaluations. I expect that this effect will occur for all participants, regardless of audience. As suggested by hypothesis 4, I do not expect aesthetics to influence self-evaluations in a public context when the product is assigned. However, I expect that when consumers choose and their audience is aware of their active role in the process, choice will enhance self-evaluations. In the choice condition, consumers expect their audience to infer information from their choice of aesthetics and will integrate this into their evaluations of the participant. Therefore, unlike information gleaned from aesthetics when products are assigned, information from product choice is justifiable and therefore, will be integrated into self-evaluations for all participants, regardless of audience. Formally, I hypothesize:

H5: When the products are chosen rather than assigned self-evaluations will be enhanced, regardless of audience.

As in study 1, I will test self-evaluations on non-relevant dimensions. Again, I do not expect that the manipulations will significantly influence evaluations on non-relevant dimensions.

H6: Product attractiveness will not have a significant influence on self-evaluations on non-relevant dimensions, regardless of the presence of an audience.

## STUDY 2

The goals of study 2 are 1) to test the effects of aesthetics in a cooking environment, 2) to see if aesthetics influence evaluations of the resulting creation (i.e., cookies) and 3) to study the moderating influence of completing the task in front of an audience (vs. in private).

### *Stimuli and Procedure*

Participants were 133 University of Colorado undergraduates who participated in this study for course credit. Two participants were removed from the study because they did not complete the cooking task. To reduce variance and to ensure that aesthetic evaluations were relatively consistent among participants, only women participated in this study. For example, all cook stations included aprons and finding aprons that would be evaluated consistently between genders was a challenge. All participants came to the lab, at which time they were randomly assigned to one of the cooking work stations which included all ingredients, mixing bowls, measuring cups, measuring spoons and other relevant materials (see appendix D for work station examples). All participants were asked to complete the recipe provided at their assigned work station and then to complete the packet of dependent measures. All participants made “no-bake” cookies, which require no prior cooking experience and take less than 10 minutes total (appendix E). This recipe was chosen because it is quick and requires no prior expertise and minimal equipment (i.e. no ovens or a refrigerator). At the time of sign-ups, participants were screened for food allergies. The entire study including the cooking task and dependent measures took approximately 30 minutes.

### *Experimental Design*

Two factors were manipulated between-participants: (1) Aesthetics (unattractive assigned vs. attractive assigned vs. choice) and (2) Audience (public vs. private).

### *Independent Factors*

*Aesthetics.* Participants in two of the three conditions were assigned to one set of cooking utensils, including measuring cups, measuring spoons, spoons, plates and bowls (the only kitchen accessories needed to complete the recipe). The ingredients and additional materials were held constant across all conditions. The only thing that varies is aesthetics of the cooking utensils and containers used to hold the ingredients. Two sets of utensils were used: one aesthetically pleasing and one less so. A manipulation check confirmed the effectiveness of this manipulation. On 7-point scales, participants in the two assigned conditions rated the cooking materials they were given (i.e., the mixing bowls, measuring spoons, measuring cups, etc.) on the following scales: attractive, aesthetically pleasing, good-looking and ugly (reversed-coded). These measures were averaged to create an overall index of utensil aesthetics ( $M = 4.96$ ; Range: 1.0 to 7.0,  $\alpha = .94$ ). These measures came after the bulk of the study and before the covariates. Using a two-way ANOVA, I found a significant main effect of aesthetics such that the materials expected to be attractive, were in fact, found to be more attractive ( $M_{\text{Attractive}} = 5.78$ ,  $M_{\text{Unattractive}} = 4.02$ ;  $F(1,132) = 86.98$ ,  $p < .0001$ ). No other significant effects emerged. Participants in the third condition were given a choice between the attractive and unattractive sets. Importantly, neither the manipulations nor their interaction had an impact on participants' evaluations of the ingredients themselves (all  $F$ 's  $< 1$ ).

*Audience.* All participants completed this task either in private work stations that are separated by dividers or in front of an audience (a confederate who has been hired in order to maintain consistency among participants). When participants first enter the room, they are given a packet with details of study as well as the manipulation. The manipulation has been underlined.

“Cookbooks are growing in popularity, and a key segment for publishers is college students. Students tend to have good taste, but not always the time or expertise to make really good food. We are working with a major cookbook publisher to enhance their recipes for this target market.

**Thank you for participating in our study. Please take a few moments to read over the directions. You will be asked to make the dessert as described in the recipe. All of the materials you need are provided. As you complete the recipe, a professional cook who is working with the publishing company will be taking notes in order to provide feedback to the cookbook’s publisher about how to make this recipe more “user friendly.” (As you complete the recipe, be thinking about the recipe and how the cookbook publishers could make it more “user friendly.”)**

Please read the recipe at your work station and follow it as closely as you can. After you have completed the recipe, but before you taste your dessert, please turn to the next page in this packet to answer some questions. You do not need to worry about cleaning your station. We will take care of that at the end of the study.

Please put on your apron and follow the recipe card at your work station. Once you have completed the cooking activity, flip to the next page in this packet.”

When they were taken to their cooking station, all participants are told, “We are working with a cookbook publishing company that is interested in how college-age students cook with different recipes.” In the public condition, they are then introduced to the confederate and told that she was a cook representing the cookbook publishing company, and that she will be taking notes. Then they are told “go through the recipe as you normally would, but please explain to her each step as you go through the recipe.” Participants were debriefed at the conclusion of the study.

### *Dependent Measures*

*Self-evaluations on domain-relevant dimensions.* Three items similar to those used in study 1 were used to capture consumers' self-evaluations in the cooking domain. Participants reported the extent to which they agreed that they felt talented, competent, and like a great cook. All items loaded on a single factor and were averaged to create an overall domain-relevant self-evaluation measure ( $M = 4.62$ ; Range: 1.75 to 6.75;  $\alpha = .48$ ).

*Self-evaluations on non-relevant dimensions.* Participants evaluated themselves on the same three dimensions used in study 1 (funny, nice, and likeable). All items loaded on a single factor and were averaged to create an overall non-relevant self-evaluation measure ( $M = 5.69$ ; Range: 3.3 to 7.0;  $\alpha = .46$ ). All self-evaluation measures were subjected to factor analysis and loaded on their appropriate factors.

*Food evaluations.* Following the cooking task, all participants are told to try the dessert they made and rate it on the following scales (all 7-point scales): Delicious ("Not at all"/"Very"), Good ("Not at all"/"Very"), and to rate their agreement with the following statement: "This dessert was not as good as I expected it to be." (reverse-coded, endpoints: "Strongly Disagree"/"Strongly Agree"). All items loaded on a single factor and were averaged to create an overall food evaluation measure ( $M = 4.96$ ; Range: 1.2 to 7.0,  $\alpha = .82$ ).

*Covariates.* Two covariates were used in these analyses: the difference between ideal and actual weight, and attitudes toward recipe ingredients. The weight difference was calculated by subtracting ideal weight from actual weight ( $M = 7.85$  lbs.; Range: -10.0 to 50.0). Participants were also asked to "Please rate how much you like these individual ingredients that were included in today's recipe": cocoa, powdered sugar, graham crackers, coconut, corn syrup and orange juice (all on 7-point scales with "Really Dislike"/"Really Like" as endpoints). All

items loaded on a single factor and were averaged to create an overall measure of ingredient evaluations ( $M = 4.90$ ; Range: 2.8 to 7.0,  $\alpha = .49$ ).

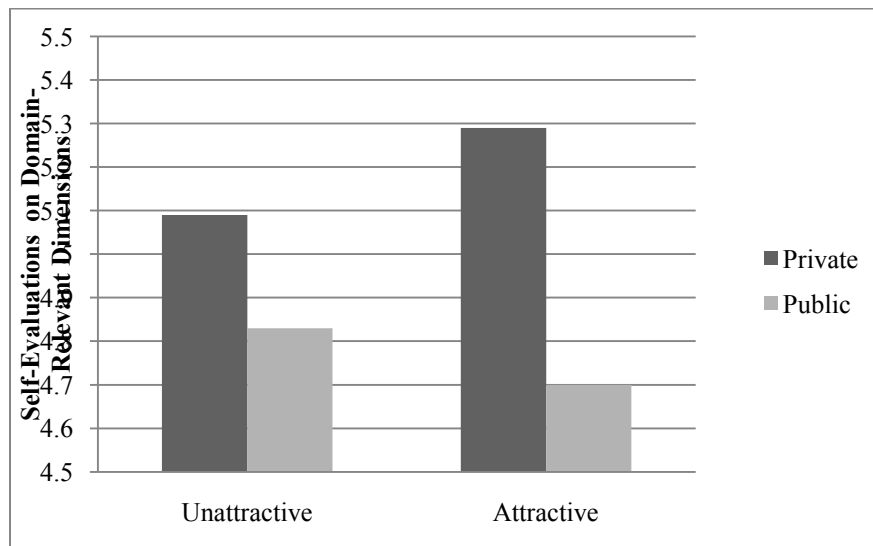
*Downstream behavior.* Another purpose of this study was to determine if aesthetics influence downstream choice behavior. Following the cooking task, all participants were told “As a thank you for participating, you may enter in a lottery to win one of the following cookbooks (see appendix F). They then chose between Cookbook A (“The Betty Crocker Quick and Easy Cookbook”) and Cookbook B (“The Martha Stewart Living Cookbook: Original Classics”).

## Results

*Preliminary analysis of the aesthetics choice results.* In analyzing participants’ cooking station choices when given both the attractive and unattractive cooking sets as options, I found that the audience manipulation (public vs. private) had a marginally significant influence on participants’ choices when given the two options. ( $\chi^2 = 3.09, p = .07$ ). Interestingly, when participants completed the cooking task in public, less than a quarter (5 out of 22) chose the unattractive set. When participants completed the cooking task in private, however, nearly half (11 out of 23) chose the unattractive cooking set. This difference is a fascinating one from both a self-signaling and other-signaling perspective. It is possible that participants who complete the task in front of another cook, feel that they “should” choose the more attractive set. However, when participants are in private, they may feel more comfortable using the unattractive set. While interesting, this finding makes comparisons with the other conditions challenging. Thus, further analyses only focus on participants in the assigned aesthetics conditions and will not test hypothesis 5. Appendix G includes means for participants in all experimental conditions.

*Self-evaluations on domain-relevant dimensions.* A two-way ANCOVA reveals a main effect of audience such that participants who perform the task in private evaluate themselves more positively than those who perform the cooking task in public ( $M_{\text{Private}} = 5.2$  vs.  $M_{\text{Public}} = 4.8$ ,  $F(1, 90) = 6.22$ ,  $p < .02$ ). The interaction predicted by hypothesis 4, however, was not significant ( $F(1, 90) = 1.66$ ,  $p = .20$ ). The pattern of data, though, is consistent with the prediction. When participants complete the cooking task in private, they evaluate themselves more positively when they use the attractive utensils. The direction of this effect is consistent with the hypothesis, but the effect is not significant ( $M_{\text{Private, Assigned Attractive}} = 5.3$  vs.  $M_{\text{Private, Assigned Unattractive}} = 5.1$ ,  $F(1, 90) = 1.27$ ,  $p = .26$ ). When participants complete the task in front of an audience, aesthetics have little influence on their self-evaluations ( $M_{\text{Public, Assigned Attractive}} = 4.7$  vs.  $M_{\text{Public, Assigned Unattractive}} = 4.8$ ;  $F(1, 90) = .54$ ,  $n/s$ ; see figure 6).

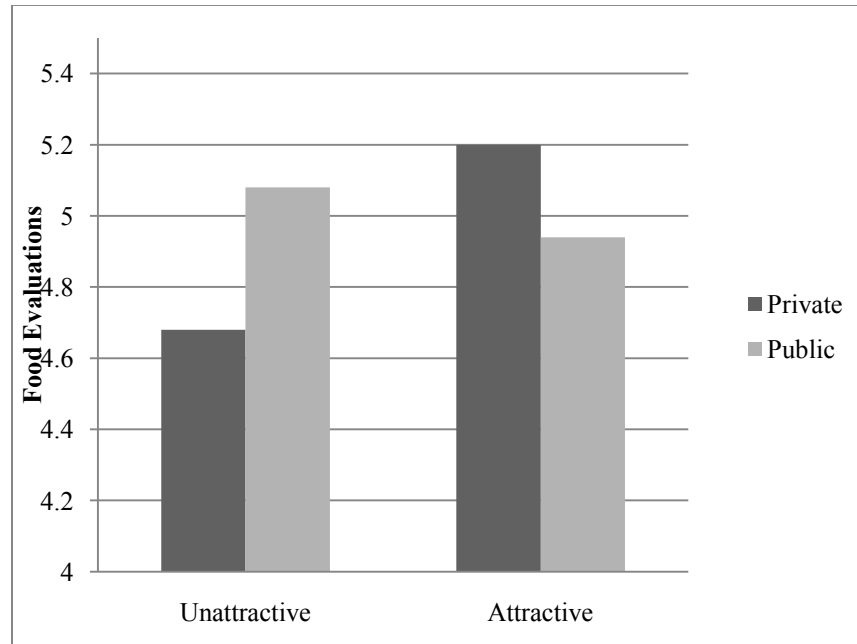
**FIGURE 6:**  
*EFFECTS OF AUDIENCE AND AESTHETICS ON SELF-EVALUATIONS*  
*(STUDY 2)*



*Food evaluations.* A two-way ANCOVA reveals a significant interaction between the two independent factors ( $F(1,90) = 4.10$ ,  $p < .05$ ). Consistent with hypothesis 4, when

participants completed the cooking task in private, they liked their cookie more when they used attractive cooking utensils ( $M_{\text{Private, Assigned Attractive}} = 5.2$  vs.  $M_{\text{Private, Assigned Unattractive}} = 4.7$ ,  $F(1, 90) = 4.23$ ,  $p < .05$ ). When participants completed the task in front of an audience, aesthetics had little influence on their evaluations of the cookie ( $M_{\text{Public, Assigned Attractive}} = 4.9$  vs.  $M_{\text{Public, Assigned Unattractive}} = 5.1$ ;  $F(1, 90) = .82$ , n/s; see figure 7).

**FIGURE 7:**  
*EFFECTS OF AUDIENCE AND AESTHETICS ON FOOD EVALUATIONS*  
*(STUDY 2)*



*Self-evaluations on non-relevant dimensions.* As predicted in hypothesis 6, the manipulations had no significant effect on participants' self-evaluations on non-relevant dimensions (all  $p$ 's  $> .22$ ).

*Downstream behavior.* Because of strong preferences across conditions (80% of participants chose Cookbook A), I did not find an effect of the manipulations on this downstream behavior measure ( $\chi^2 = 3.49$ ,  $p = .62$ ). For a complete list of choice by condition, see appendix F. I do find a pattern consistent with what I would expect: when participants are in private and

they use attractive (vs. unattractive) products, they are more likely to choose the challenging cookbook (24% vs. 14%). When participants are in public, this difference is much lower (17% of participants using attractive cooking products chose the challenging cookbook, while 15% of participants using the unattractive products choose the challenging cookbook). Future research will explore a similar type of downstream behavior to evaluate domain confidence without explicitly measuring self-evaluations.

### *Discussion*

The results from this study suggest that when consumers engage in a cooking task in private, the attractiveness of the materials influences their evaluations, both of the self and of the resulting creation. Interestingly, I find that this self-signaling effect is stronger for cookie evaluations than it is for direct evaluations of the self. I think this may be due to a few factors: 1) In the dependent measure packet, I asked participants to evaluate the cookies and provide many other measures before I captured self-evaluations. Perhaps this ordering led participants to use the aesthetics to self-signal in the food evaluations, dampening the effects of the manipulations on self-evaluations that are captured later. 2) There is a strong main effect of audience on self-evaluations, making it harder to pick up on the predicted, but more subtle, interaction. The pattern is consistent with the predictions, suggesting that had the ordering of the measures been different and if the audience manipulation was a little more subtle, a significant interaction may have occurred. Future research will use a confederate audience member, but will identify this person as another student rather than as a professional cook.

From this study, I can conclude that good design leads to positive self-evaluations and that these evaluations extend to related domains (i.e., the cookies taste better when they were

made with more attractive utensils). These effects are the strongest when participants complete the task in private. In private, these participants may be less concerned with what others think and more likely to rely on their own true self-evaluations following the task (which study 1 demonstrated includes self-signaling information from the aesthetically pleasing products). Participants completing the task in front of others may be more likely to override self-signaling information and attempt to evaluate themselves in a more objective manner, mitigating the positive self-signaling effect of aesthetically pleasing products.

I plan to collect objective evaluations of the cookies using pictures taken following the cooking task in study 1 (see appendix H for examples). As in study 1, these objective measures are intended to provide insights about whether the attractive products actually helped participants to make better cookies or simply improved their self-perceptions.

### *GENERAL DISCUSSION*

Signaling has been used to describe a variety of consumption behaviors including variety seeking (e.g., Ratner and Kahn 2002), risky health behaviors (e.g., Berger and Rand 2008), product choice (e.g., Berger and Heath 2007; Berger and Ward 2010) and product satisfaction (e.g., Wang and Wallendorf 2006). All of this research focuses on how consumers signal to others. While “other-signaling” may be driving much of these behaviors, I would suggest that “self-signaling” also plays a role and has been primarily overlooked in the research thus far. Future research will attempt to tease apart self- and other-signaling in these important consumption contexts.

### *Theoretical Contributions*

Across two studies, I demonstrate that consumers do signal to themselves and that this self-signaling process occurs regardless of whether consumers chose their products. Taken together, these studies provide evidence that consumers do use aesthetic information to signal to themselves. This effect is strongest when participants are in private and when uncertainty is high. Building upon prior work which shows that product choice influences self-evaluations (e.g., Dhar and Wertenbroch 2007; Khan and Dhar 2006; Gao et al. 2009; Townsend and Sood 2010), my research demonstrates that product usage (regardless of choice and ownership) influences evaluations of the self as well. Study 2 demonstrates that this effect extends to evaluations of the outcome of the task, not just evaluations of the self that were created using either attractive or unattractive utensils. This work provides an important foundation in establishing that self-signaling does not require active choice and that the process may work in less involving situations (i.e., usage rather than more proactive choice experiences).

The existent work on product use tends to focus on consumers' owned possessions, but my research suggests that product usage, regardless of ownership, may also signal information to consumers. Qualitative research has long recognized that because self-knowledge is inferential and not direct, consumers use products and other information to infer who they are and create a sense of identity (Csikszentmihalyi and Rochberg-Halton 1981; Kleine et al. 1996). Importantly, no research to my knowledge has looked at how using products influences identity and self-evaluations, regardless of ownership. This distinction has important implications for marketers as a wide variety of consumption experiences involve product use, regardless of purchase.

### *Managerial Implications*

Researchers and marketers alike have long recognized the importance of design and aesthetics in consumption (e.g., Bloch 1995; Bloch et al. 2003; Cooper and Kleinschmidt 1987; Creusen and Schoormans 2005; Schmitt and Simonson 1997). As product competition evolves, few companies are now competing on the bases of functionality and reliability, and most are hesitant to compete on price, leaving product design and aesthetics as an important differentiator on which companies in a variety of industries are now competing (Christensen 1997).

Marketplaces in a variety of product categories are becoming overcrowded and design is one way in which companies can differentiate themselves from competitors. As Bloch et al. (2003) explain, “Visual aesthetics are growing in prominence for an ever-wider selection of products” (p. 551). Aesthetics are believed to provide value to consumers (e.g., Schmitt and Simonson 1997) and a competitive advantage to firms, but few understand the value that aesthetics create. The current work provides an initial step toward understanding one source of value offered by aesthetics: in self-signaling positive information to consumers, thereby enhancing self-image.

Some marketers seem aware of the self-signaling effect, though most tend to focus on other-signaling and its influence on choice and satisfaction. Chris Bangle, former Chief of Design at BMW, recognized that even for publicly displayed possessions (e.g., cars and bumper stickers), “our real audience is really ourselves. And that person you’re really speaking to [is yourself]: You’re making a statement to yourself about yourself.” (Objectified 2009). By recognizing the potential importance of self-signaling in consumption (both for publicly and privately consumed products), marketers can help consumers to derive utility from product use and cater their advertising to capture this under recognized source of value.

This research has important managerial implications as consumers often use product prior to purchase (i.e., trying on a pair of shoes in the store prior to purchase) and there are entire industries dedicated to rental products. For example, if trying on rental boots picked by a boot fitter at a ski shop makes consumers feel better about themselves, holding comfort and functionality constant, this may influence their likelihood to purchase the boots or their openness to purchase other products at the store (i.e., the lip balm or hand warmers at the checkout). This work might extend to a variety of non-purchase related consumption contexts. For example, study 1 suggests that simply using an attractive writing utensil when filling out paperwork at a bank kiosk may actually lead consumers to feel better about themselves, especially if they are uncertain in the domain. This might influence their financial decisions (i.e., how much cash to withdraw) as well as evaluations of the banking process and company itself.

In addition, if simple product use influences self-evaluations, then these results might extend to consumption contexts in which the consumer does not even come in physical contact with an aesthetically pleasing product. For example, if product use influences self-evaluations, I would expect that simply being in an attractive room or store might make consumers evaluate themselves (and perhaps the company and its products) more favorably. This has important implications for store design and shopper marketing.

This research has important public policy issues as well. Research has long recognized that consumers in a negative mood are likely to engage in mood-improving behaviors (e.g., Clark and Isen 1982). In a consumption context, this could include indulging in fatty foods that are hedonically rewarding (Garg, Wansink and Inman 2005), using shopping as a means for repairing negative emotional states (Woodruffe 1997) or seeking luxury goods (such as a Rolex watch) to display one's status to others (i.e., conspicuous consumption; Rucker and Galinsky

2008). Unlike other potentially damaging “repair” opportunities (like those listed above), the current research suggests that simply using aesthetically pleasing products can enhance and potentially repair low self-evaluations without negative consequences (i.e., overspending, overeating).

### *Future Research*

These two studies were designed to form a platform for my future research. From study 1, I learned that consumers appear to use information from attractive products to signal positively to themselves, demonstrated by enhanced self-evaluations. These enhanced self-evaluations are strongest for domain-relevant dimensions and do not appear to enhance global self-evaluations. Importantly, uncertainty enhanced this effect such that participants who are uncertain and potentially in greater need of positive self-signaling information, are more likely to derive this positive information and integrate it into their self-evaluations. While I expected choice to further enhance this effect when controlling for attractiveness, I find little difference in self-evaluations based on choice vs. use. The foundational findings from this initial study suggested a number of additional research questions: 1) All participants completed the task in private (on their home computers), does private vs. public context influence the self-signaling effect? 2) The primary dependent measure in this study was self-reported self-evaluations. Would these effects hold for other related measures (i.e., evaluations of the resulting creation) and other downstream behavior (i.e., product choice following the task)? The next study was developed to answer these specific questions.

Study 2 demonstrates that performing a task in public does lessen the self-signaling effect and that in a cooking context, aesthetics do influence evaluations of a resulting creation (i.e., the

cookie) but only for those who complete the task in private. While one goal of this study was to test downstream behaviors (i.e., cookbook choice), these results were not significant. Future research will emphasize downstream behavior to determine if the self-signaling effect influences downstream behaviors (both domain-relevant and non-relevant). Study 2 was also developed to test the effects of choice on self-signaling, but because the audience manipulation influenced choice, the choice conditions had to be removed from analyses. Future research will seek to better understand the influence of choice on the self-signaling effect. By not manipulating audience, I can ensure a cleaner study in which aesthetics and choice are consistent among participants. Several other relevant research questions developed from these two studies:

*Determining the strength of the self-signaling effect.* In future studies, I plan to examine how environmental aesthetics influence consumers' self-evaluations, further distancing the aesthetics from the individual, to determine the strength of this aesthetic self-signaling effect. I also plan to test the strength of these effects over time. Because the studies presented focus on initial exposure to aesthetic products, it is difficult to determine if these effects will hold, or even strengthen over time. Future research will capture how number of exposures moderates the influence of aesthetically pleasing products on self-evaluations (see appendix I for additional details).

*The role of consciousness in self-signaling.* These results from study 2 suggest that perhaps self-signaling is a nonconscious process. When consumers perform a task in private, they are less concerned about what others think (and how they would evaluate them) and have no motivation to override any naturally occurring self-signaling effect. When others are present, their self-signaling motive becomes more obvious (as they realize the differences between their initial inclination and the one they might expect from an outside observer). The limited research

on self-signaling suggests that it is an implicit process (e.g., Bennett and Chakravarti 2008), yet no research has explicitly tested the underlying mechanism. Anecdotal evidence from Quattone and Tversky (1984) provides support for this theory. When the researchers followed up with participants following the cold water study, most deny that they were trying to bias the results of the bogus medical test. This suggests that the self-signaling mechanism occurs at a nonconscious level. Prelec and Bodner (2003) explain, “While we do know that people engage in self-signaling, there is little experimental evidence on the level of subjective awareness of the process” (p. 293). In their economic model, they account for awareness and predict that when consumers engage in self-signaling and are aware of this motivation, the information they receive fails to improve their intrinsic self-image, as it might when they are unaware of the self-signaling motivation (Prelec and Bodner 2003, p. 293-294). Extensive research has shown that consumers mimic each other in a consumption context (e.g., Tanner et al. 2008). Specifically, the authors demonstrate that both consumption and preferences can be influenced by behavioral mimicry. Similarly, it is possible that consumers are “mimicking” the products to which they are exposed (i.e., they believe that a product seems professional and therefore, they act in a way that is congruent with that assessment). Research has also shown that when a signal is beared falsely, a cost must be incurred (e.g., Lo, Lynch and Staelin 2007). By making consumers aware of how they use aesthetics to signal, future research can also test if they believe this signal is appropriate and if it is not deemed appropriate, whether or not cost are incurred.

Future research will examine how making consumers aware of this self-signaling effect moderates its influence on self-evaluations. If making participants aware increases the effect, then marketers may want to raise awareness, encouraging participants to consider how using attractive products will make them feel, both at the time of choice and during use following

purchase. If making participants aware reduces the effect, then marketers will want to be very strategic in how they alter aesthetics to increase the self-signaling effect. Future research will seek to better understand this underlying process.

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## *APPENDIX A: PILOT STUDY*

Given page limit constraints at *JMR*, this study has been removed from the paper but will be presented at the final dissertation defense. This study provided important foundation for the remaining studies in demonstrating that design freedom influences product evaluations (both at the time of design and at delivery) and that identity goals moderate this effect. Also, participants in this study were asked to describe specific identity motives that might be active during the customization task. The results from these open-ended responses were used to inform the manipulations in the remaining studies.

### *Stimuli and Procedure*

Customizable “skins” (vinyl covers for products such as cell phones or MP3 players) were selected as the product category for the study based on their affordability, relevance to the undergraduate participant population, and the type of customization options provided by the firm. MyTego.com agreed to provide me with unique coupon codes (at a 50% discount) and to oversee the shipping of our batched orders. This cooperation allowed me to distribute the products to the participants personally and to collect satisfaction measures.

Participants were 95 undergraduates from a large North American university who participated in this study for both course credit and receipt of the skin. The study was administered using on-line survey software. Participants completed the study at any time during a 48 hour period.

Participants received an email message containing their id number, coupon code, and link to the on-line survey. Upon opening the survey, participants were given an overview of the study, exposed to the manipulations, and directed to open the MyTego.com website in a separate

window to customize their skins. Once they had decided on a final design, participants completed the remaining measures on the survey. Approximately ten days following the study, I received and distributed the completed skins and collected the satisfaction measures.

### *Experimental Design*

Two factors were manipulated between-participants: (1) Identity Prime (identity prime vs. no prime) and (2) Design Freedom (low vs. high).

### *Independent Factors*

*Identity prime.* Prior to the design task, participants identified the product (cell phone, MP3 player, Blackberry) for which they planned to design a skin. Participants in the “no prime” condition were then asked two open-ended questions about the functions and features of their device. In the first, they described “the most important functions and features of the device,” and in the second, they described “the key functions and features” they would mention when trying to convince someone that their device was a good product. Participants in the “identity prime” condition were asked two open-ended questions designed to highlight their relationship with the device, prompting them to think of it as an identity-relevant product. In the first, they described “how long they had had the device, how often it is with them, and how closely connected they are to it;” in the second, they were asked to think about and describe the important events in their life where the device had played an important role.<sup>3</sup>

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<sup>3</sup> Participants’ responses were reviewed by two raters who were blind to the participants’ prime condition. Their coding reveals a successful manipulation. All participants in the “identity prime” condition described life events, while those in the “no prime” condition focused solely on the device’s functionality.

*Design freedom.* The MyTego website allows consumers to either upload their own unique images or to select and manipulate any of the 300+ images stored in their library when designing their own skin. Like Franke, Schreier, and Kaiser (2010), I manipulated the design freedom offered by the toolkit: participants in the “low design freedom” condition were told to use only the images stored in the library when customizing their skin; participants in the “high design freedom” condition were told they could either upload their own unique images or use the MyTego library. Importantly, even participants in the “low design freedom” condition could create a genuinely unique skin by manipulating and combining the different library images during the design process. To assess the effectiveness of this manipulation, I asked participants the following question (on a 9-point scale): “How likely is it that someone else would design a skin that looks almost exactly like the one you just designed?”.

#### *Dependent Measures at the Time of Customization*

*Evaluations of the customized skin.* Participants evaluated their skins on four 7-point scales, indicating how attractive, well-designed, and stylish their skin was, and how satisfied they were with their design. All items loaded on a single factor and were averaged to create an overall evaluation measure ( $M = 5.2$ ; Range: 1.5 to 7;  $\alpha = .89$ ).

*Covariates.* In their paper, Franke, Schreier, and Kaiser (2010) define the “I designed it myself” effect as “the value increment a subject ascribes to a self-designed object, arising purely from the fact that she feels like the originator of that object” (p. 125). Through several studies, the authors demonstrate that consumers are willing to pay more for objects they designed themselves than for identical (or comparable) objects designed by a firm. In their third study (“Feeling of Accomplishment as a Mediator of the ‘I designed it myself’ effect”), the authors use

three measures to assess these feelings of accomplishment: “When I look at the ski I have self-designed, the feeling I have can best be described by the word ‘pride’”; “I feel proud because I did a good job”; and “I feel proud of having accomplished something” (p. 132). Thus, to control for the potential influence of the “I designed it myself” effect (Franke, Schreier, and Kaiser 2010), participants reported the pride and accomplishment they felt from having created their design. These two items were positively correlated ( $r = .60, p < .001$ ) and were averaged and used as a covariate in the analyses along with participants’ age and whether or not they had uploaded their own pictures.

#### *Dependent Measure Following Customization*

*Satisfaction.* Following the design task, eighty-five percent of participants ( $n=81$ ) requested that I order their skins. Ten days later, 69 participants actually picked them up and provided satisfaction ratings. Participants reported how well the skin fit their expectations, how likely they were to put it on the intended device, and how excited they were to show it to other people ( $M = 6.6$ ; Range = 1 to 9;  $\alpha = .91$ ). The independent factors did not influence pick-up behavior.

#### *Results*

*Preliminary analysis.* A two-way ANOVA was used to assess the effectiveness of the design freedom manipulation. The results show only a main effect of the design freedom manipulation ( $F(1, 94) = 10.3, p < .01$ ). Participants in the low freedom condition reported that it was significantly more likely that someone else would design the exact same skin ( $M_{\text{High Design Freedom}} = 3.6$  vs.  $M_{\text{Low Design Freedom}} = 5.3$ ).

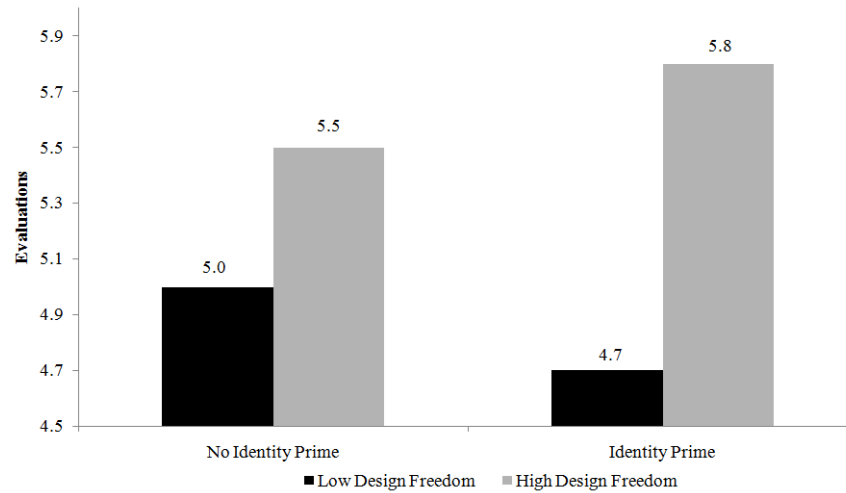
A set of two-way ANCOVAs was used to assess the influence of the two manipulated factors on the perceived value of the customized products.

*Evaluations of the customized skin.* Evaluations were higher when design freedom was high ( $M_{\text{High Design Freedom}} = 5.6$  vs.  $M_{\text{Low Design Freedom}} = 4.8$ ;  $F(1, 94) = 6.61, p = .01$ ). This difference is enhanced when participants are exposed to the identity prime, and the predicted interaction was significant ( $F(1, 94) = 4.64, p < .05$ ). When participants were primed with identity, the level of design freedom mattered significantly ( $M_{\text{Identity Prime, High Design Freedom}} = 5.8$  vs.  $M_{\text{Identity Prime, Low Design Freedom}} = 4.7$ ;  $F(1, 47) = 4.14, p < .05$ ). When participants were not exposed to the identity prime, however, the effect was less pronounced ( $M_{\text{No Prime, High Design Freedom}} = 5.5$  vs.  $M_{\text{No Prime, Low Design Freedom}} = 5.0$ ;  $F(1, 46) = .86, n/s$ ; see figure 8a). These effects were observed after controlling for the “I designed it myself” effect which was positive and significant ( $F(1, 94) = 47.7, p < .01$ ). No other covariates were significant.

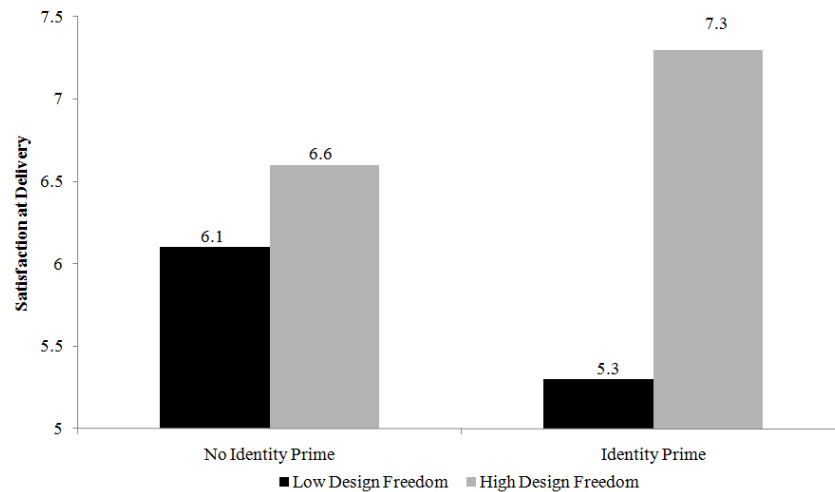
*Satisfaction.* At delivery ten days later, these effects remained. Those with high design freedom reported higher levels of satisfaction with their actual skins than did those who were limited to the library’s images ( $M_{\text{High Design Freedom}} = 7.0$  vs.  $M_{\text{Low Design Freedom}} = 5.7$ ;  $F(1, 68) = 9.11, p < .01$ ). A significant interaction also emerged ( $F(1, 68) = 3.91, p = .05$ ). The effect was larger when the identity prime had been active at the time of design ( $M_{\text{Identity Prime, High Design Freedom}} = 7.3$  vs.  $M_{\text{Identity Prime, Low Design Freedom}} = 5.3$ ;  $F(1, 36) = 11.52, p < .01$ ) than when it had not ( $M_{\text{No Prime, High Design Freedom}} = 6.6$  vs.  $M_{\text{No Prime, Low Design Freedom}} = 6.1$ ,  $F(1, 32) = 1.05, n/s$ ; see figure 1b). The “I designed it myself” effect measured at time 1 remained positive and significant ( $F(1, 68) = 8.41, p < .05$ ; see figure 8b).

**FIGURE 8:**  
**THE EFFECT OF DESIGN FREEDOM AND IDENTITY MOTIVATION ON EVALUATIONS**  
**AND SATISFACTION (PILOT STUDY)**

*A) Evaluations (time of customization)*



*B) Satisfaction (10 days later at pick-up)*



*Discussion*

This study demonstrates that consumers given greater design freedom evaluate their custom products higher and are more satisfied at delivery than those given less design leeway. This effect, however, was enhanced by priming consumers with identity-based motivations, and the influence of the identity prime was significant even after controlling for the “I designed it

myself” effect (Franke, Schreier, and Kaiser 2010). Importantly, the effect of the identity prime remained following the ten day delay between design and delivery. Thus, the pilot study provides initial evidence that consumers have a desire to express their identity via customized products.

While the findings validate the effectiveness of the positioning strategies used by identity-based customization firms emphasizing identity value, the results from this study are unable to specify the type of identity motivation underlying the effects. When identity-primed participants were asked to think about the events in their lives where the device had played an important role, I found great variance in the types of events and experiences that participants described. Some, for example, described events related to their social or interdependent self (e.g., “The most moving experience that my phone provided me was a way to contact my best friend that went to school at Virginia Tech after the school shooting. It helped me contact him and relieve a lot of my fear that I had built up inside.”) Others, however, discussed important personal events that reflected their individual achievements (e.g., “I was skiing in the US extreme skiing championships and I needed my iPod blasting Johnny Cash in my ear to get me pumped up.”) Further, the devices themselves may cue different motivations: cell phones are used to connect with others (social); iPods are often used to isolate oneself from others (personal); multi-purpose devices like the iPhone offer a combination of the two. Thus, in order to better understand the influence of different identity motives on customization, it is important to isolate the effects of these different identity-based motivations (personal and social).

*APPENDIX B:  
DESIGN EXAMPLES*

*Study 1*

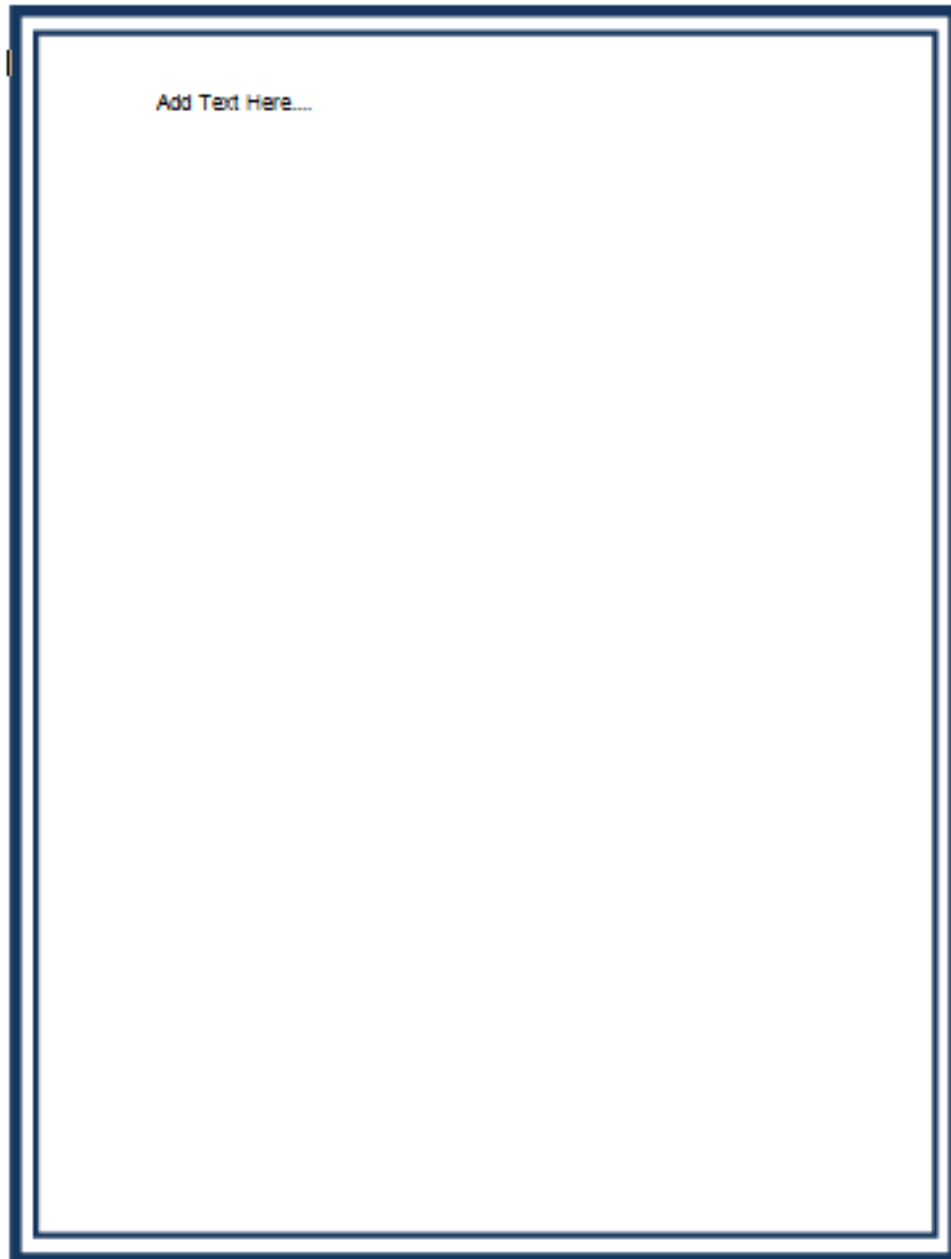


*Study 2*



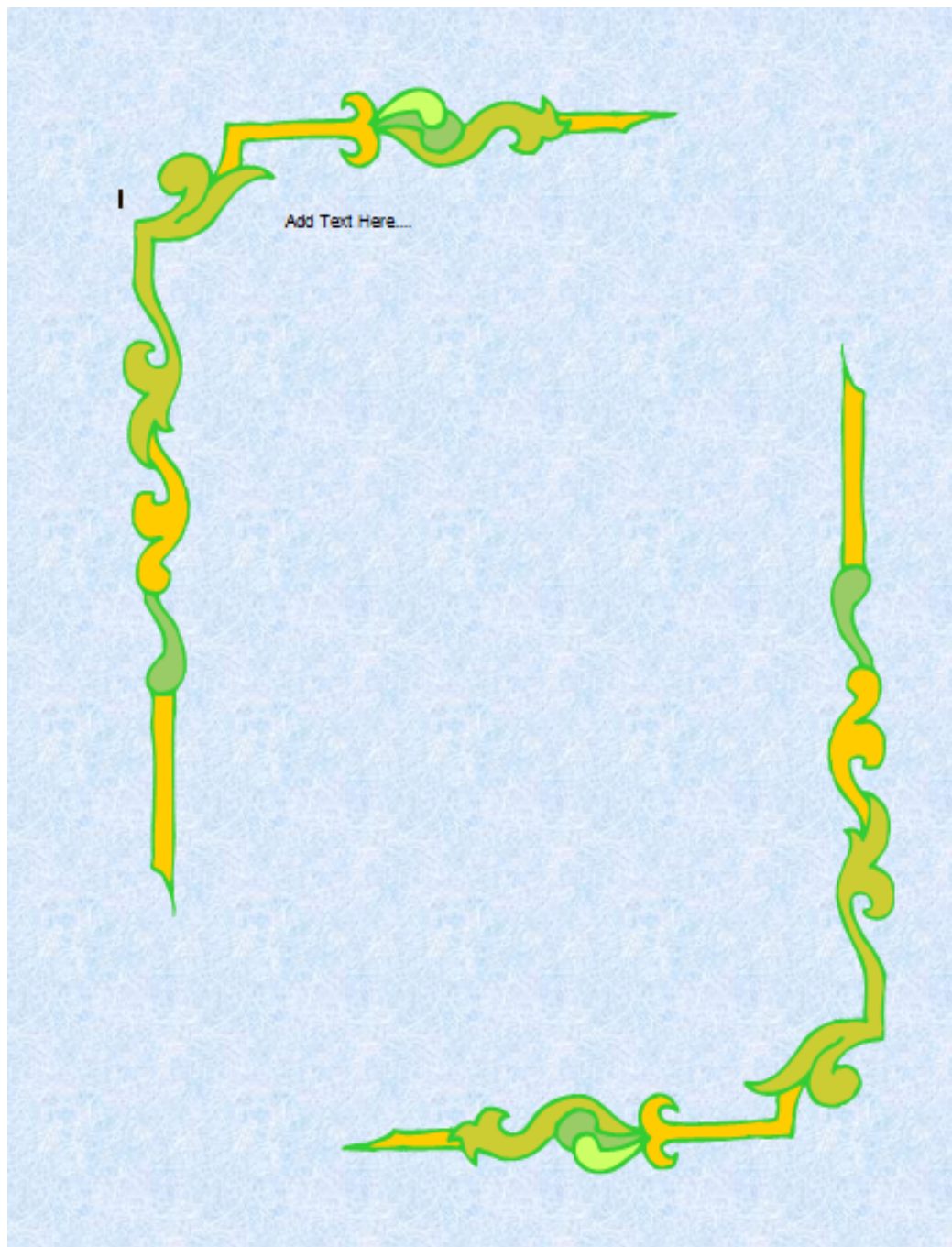
*APPENDIX C:  
DOCUMENT TEMPLATES (STUDY 1)*

*A) Attractive Template*



Add Text Here....

***B) Unattractive Template***



*APPENDIX D:  
COOKING STATIONS (STUDY 2)*

*Attractive Cooking Station*



*Unattractive Cooking Station*



*APPENDIX E:*  
*NO-BAKE COOKIE RECIPE (STUDY 2)*

**Chocolate Truffles**

1/4 cup of crushed up graham crackers (approximately 10 crackers)  
1/4 cup of powdered sugar  
2 teaspoons (tsp) of corn syrup  
1 tablespoon (tbsp) of cocoa  
2 tablespoons (tbsp) of coconut  
1 tablespoon (tbsp) of finely granulated sugar  
1 tablespoon (tbsp) of orange juice

1. First, crush up the graham crackers. You can use the small bowl and spoon or your hands to crush up the crackers.
2. Mix the dry ingredients (the graham crackers, powdered sugar, cocoa, sugar and coconut) together in a large bowl until well blended. Slowly stir in the corn syrup and orange juice until the mixture is of moldable consistency and not too wet.
3. Form the mixture into balls about 3/4-inch in diameter. Makes approximately 5 truffles.
4. Roll the balls in smaller bowl in a confection of your choice (powdered sugar, finely granulated sugar, cocoa powder, coconut, nut topping, sprinkles). You may use more than one topping.
5. When finished, place truffles on plate. \*\*\* **Please do not try them yet.** You'll have a chance after you've answered some questions. Please turn to your packet for remaining instructions.

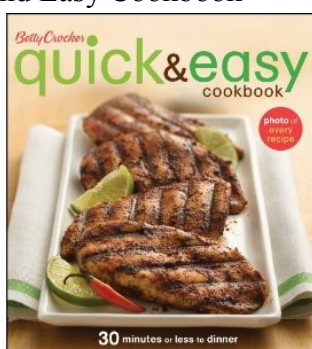
*APPENDIX F:  
DOWNSTREAM BEHAVIOR: COOKBOOK CHOICE (STUDY 2)*

As a thank you for participating, you may enter in a lottery to win one of the following cookbooks.

If you would like to be entered, please give us your email address:

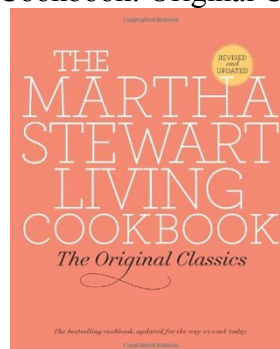
Cookbook A

The Betty Crocker Quick and Easy Cookbook



Cookbook B

The Martha Stewart Living Cookbook: Original Classics



Please choose ONE of these cookbooks for your lottery entry.

I choose:

\_\_\_\_\_ Cookbook A (Quick and Easy) \_\_\_\_\_ Cookbook B (Martha Stewart)

**Results:**

Condition	Percentage Choosing Cookbook A	Percentage Choosing Cookbook B
<b>Private, Unattractive</b>	86%	14%
<b>Private, Attractive</b>	76%	24%
<b>Private, Choice</b>	67%	33%
<b>Public, Unattractive</b>	85%	15%
<b>Public, Attractive</b>	83%	17%
<b>Public, Choice</b>	83%	17%

*APPENDIX G:  
CELL MEANS INCLUDING CHOICE CONDITIONS  
(STUDY 2)*

**Self-evaluations on domain-relevant dimensions**

	<b>Private</b>	<b>Public</b>
<b>Unattractive</b>	5.09	4.83
<b>Attractive</b>	5.29	4.69
<b>Choice</b>	5.33	4.84

**Food evaluations**

	<b>Private</b>	<b>Public</b>
<b>Unattractive</b>	4.68	5.08
<b>Attractive</b>	5.20	4.94
<b>Choice</b>	4.97	5.03

**Self-evaluations on non-relevant dimensions**

	<b>Private</b>	<b>Public</b>
<b>Unattractive</b>	5.71	5.78
<b>Attractive</b>	5.59	5.85
<b>Choice</b>	5.87	5.54

*APPENDIX H:  
TRUFFLE EXAMPLES*



*APPENDIX I:  
FUTURE RESEARCH: SELF-SIGNALING OVER TIME*

In one anticipated study, I will have participants complete writing tasks in attractive or unattractive journals over several weeks. Each week, I will capture self-evaluations on domain-relevant dimensions, self-evaluations of the writing assignments, and objective evaluations to see if the self-signaling effect captured in studies 1 and 2 holds over time. Importantly, all participants will be told to complete the writing assignments each week in private.

*Stimuli and Procedure*

This study will be run over an entire semester (using two marketing classes, ideally with the same professor teaching two sections). Participants in both classes will be given notebooks in the beginning of the semester and asked to complete several writing assignments throughout the semester. Notebooks were chosen because of their relevance to the target population, affordability and because they vary on aesthetic, but not functional differences. These assignments (and their timing) will be held consistent across conditions. Assignments will relate to the class and topics will include a variety of concepts including product innovation (i.e., “Write about a product category where you see a consumer need that remains unmet”), advertising (i.e., “Discuss examples of advertisements you have seen recently and relate them to the topics we are covering this week in class”) and word-of-mouth (“i.e., “How do you think modern technology has changed word-of-mouth. What impact might these changes have for companies?”).

In the beginning of the semester, all participants will receive a notebook in which they will complete all writing assignments throughout the semester. These notebooks will be provided to the students at no cost. Participants will be assigned to an attractive notebook, assigned to an

unattractive notebook, or given a choice between the two. Pretests with the target population will determine if the notebooks differ on attractiveness but not on functionality. Below are two examples of the types of notebooks that will be used.

*Notebook in the assigned unattractive condition:*



*Notebook in the assigned attractive condition:*

