

Super-size Product Display as a Forceful Persuasion Attempt:
Self-esteem Determines Compliant versus Reactant Behaviors

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CONTRIBUTION STATEMENT

Prior studies have demonstrated that the size of a product image displayed in print ads can influence consumer search, attention, and inference (e.g., Janiszewski 1998; Kirmani 1990; Pieters and Wedel 2007). In these studies, the image sizes were relatively small compared to products' actual sizes. We contribute to the product display literature by examining super-size product displays, which are much larger than products' actual sizes, and uncovering their unintended effects on consumer perception and behavior. Because we focus on on-site, super-size product displays commonly used inside retail spaces, our findings also add to the emerging literature on environmental psychology (e.g., Meyers-Levy and Zhu 2007).

We show that the same super-size product display can induce either compliant or reactant behaviors, depending on consumers' self-esteem. The current research extends previous findings on self-esteem by showing that not only are low-esteem consumers more likely to comply with what external cues suggest (e.g., Argo and White 2012; Dahl, Argo, and Morales 2012; McFerran et al. 2010), but also high-esteem consumers are more likely to react against external persuasion attempts when they perceive these attempts as forceful.

ABSTRACT

Super-size product displays are commonly used in retail stores. Because consumers are often in close proximity to these displays inside stores, these displays look overly large in the eyes of consumers. In the current research, we show unintended consequences of using super-size product displays on consumer perception and behavior. Specifically, we demonstrate that consumers perceive super-size product displays as forceful persuasion attempts, and, as a result, they demonstrate either compliant or reactant behaviors in front of super-size product displays, depending on their self-esteem. In studies 1 and 2, we show that participants perceive super-size product displays as forceful persuasion attempts, because these displays appear to be powerful entities. In studies 3 and 4, we show that participants' self-esteem determines whether super-size product displays induce compliant or reactant behaviors: whereas low-esteem participants reveal compliant behaviors, high-esteem participants demonstrate reactant behaviors in front of super-size displays. In study 5, we further demonstrate that perception of a super-size product display as a forceful persuasion attempt drives the interaction effects of display size and self-esteem on participants' behaviors. These results consistently show that super-size product displays can have systematic influences on consumer perception and behavior, and demonstrate the process underlying these influences.

The use of super-size product displays inside of retail spaces is a recent trend in marketing. Consumer electronics stores display life-size sculptures of electronics such as cellphones and laptops. Grocery stores use blown-up pictures or statues of products for point-of-purchase promotions. Shoe stores display giant shoes. Luxury brands, such as Hermes, display giant-size handbags inside of their stores. Appendix A shows examples of super-size product displays used in retail spaces.

For outdoor advertisements such as billboards, which consumers usually view only at a distance, super-size displays would be a natural response to limited human visual perception: as displays become distal from observers, they look smaller; thus displays need to be big enough to be visible at a distance. In retail spaces, however, consumers are often in very close proximity to product displays. Hence, super-size product displays are not merely visible to them, but also indeed look over-sized.

As consumers' visual environment becomes more and more cluttered with various visual stimuli, super-size product displays would stand out in the environment and attract consumers' visual attention. But other than such a role of grabbing consumers' attention, little is known about their possible impacts on consumer behavior. The current research aims to demonstrate important psychological and behavioral consequences of using super-size product displays in retail spaces, where consumers are in close proximity to the displays. In particular, we show that (1) consumers perceive super-size product displays as forceful persuasion attempts, and, as a result, (2) they demonstrate either compliant or reactant behaviors in front of super-size product displays.

Size is associated with physical and social power. People can learn this association in many social relations from childhood to adulthood: parents have power over smaller children

(Schwartz, Tesser, and Powell 1982), and taller people often achieve higher social status (Judge and Cable 2004). Reversely, powerful people tend to overestimate their own height (Duguid and Goncalo 2012). Recent research has further demonstrated that perception of size is a part of a person's conceptual understanding of power (Giessner and Schubert 2007; Schubert 2005). Because of the well-learned symbolic association between size and power, we argue that consumers perceive super-size product displays as powerful entities, and thus they feel that these displays are trying to forcefully influence their behavior. For instance, in making a choice between two alternatives, consumers standing in front of a super-size display of one of the alternatives would feel forced to choose the product featured in the display. We further demonstrate that as a result of such perception of super-size displays as forceful persuasion attempts, consumers exhibit either compliance or reactance, depending on their self-esteem: consumers low in self-esteem show compliant behaviors, whereas those high in self-esteem show reactant behaviors. In the following sections, we review relevant literatures and discuss our predictions in detail.

THEORETICAL DEVELOPMENT

In the present research, we are interested in super-size product displays used inside of retail spaces. Product images in such displays are much bigger than the actual sizes of products. In addition, because consumers often stand in close proximity to product displays in retail spaces, such displays look overly large in the eyes of consumers.

Consumer research has studied various size-related effects. For instance, one stream of research has focused on what factors influence consumers' assessments of the physical size of a

product or product package (Chandon and Ordabayeva 2009; Dai and Hsee 2013; Folkes and Matta 2004; Ordabayeva and Chandon 2013; Raghbir and Krishna 1999; Sevilla and Kahn 2014; Wansink and Van Ittersum 2003) and how the physical size of a product or product package influences consumers' preferences (Dubois, Rucker, and Galinsky 2012; Yan, Sengupta, and Wyer 2014) and consumption (Coelho do Vale, Pieters, and Zeelenberg 2008; Scott et al. 2008; Van Ittersum and Wansink 2012; Wansink 1996). More relevant to the present research, several prior studies have examined how the size of a product image displayed in print ads influences consumers' attention (Finn 1988; Lohse 1997; Pieters and Wedel 2004, 2007), search (Janiszewski 1998), and inferences about the company that advertises the product (Kirmani 1990). Nevertheless, most product images in these investigations were still smaller than the products' actual physical sizes, and research on super-size product displays is still scant. In the present research, we fill this gap by examining how consumers perceive and respond to super-size product displays inside of retail spaces where they encounter these displays from a short distance.

Super-size Product Display as a Forceful Persuasion Attempt

Product displays used in retail spaces often accompany specific persuasion messages. These messages can be explicit, such as sales presentations of salespeople or advertising slogans shown on advertising posters or statues (e.g., "Have a break. Have a Kit-Kat;" "It's Miller time!"). Even when explicit messages are absent, consumers can easily infer persuasion attempts from the contexts (Campbell and Kirmani 2000; Frieszad and Wright 1994; Hardesty, Bearden, and Carlson 2007; Kirmani and Zhu 2007). For instance, a display of a chocolate bar image in a

grocery store implicitly suggests that consumers should buy the chocolate bar. In this circumstance, consumers know that a product display in a retail store is not merely a decoration or art piece, but an attempt to influence them to buy the featured product. To sum, consumers are in general aware that product displays serve as explicit or implicit persuasion attempts in a retail context. In the current research, we examine how the size of a product display influences the way consumers perceive its associated persuasion attempt. Specifically, we propose that when product displays are super-size, consumers perceive these displays as *forceful* persuasion attempts designed to propel them to follow what the persuasion context suggests. We find the reason for this prediction in the well-learned association between size and power.

Research in multiple disciplines has demonstrated that the physical size of an object is associated with physical strength and power. Size is a good predictor of winners in animal fights (Archer 1988). Physical size is also used to signal the physical strength of mammals: some small animals, such as chameleon or pufferfish, inflate their size to signal power when threatened by predators (Wainwright and Turingan 1997), and dominant people tend to make postures that make them look larger (Keltner, Gruenfeld, and Anderson 2003). Moreover, a big physical size helps people acquire social power, such that taller people are more likely to obtain a job in high-status occupations and be appointed or elected to be leaders (Duguid and Goncalo 2012). Recent studies in cognitive psychology have further suggested that size is essentially a part of a person's conceptual understanding of power (Schubert, Waldzus, and Gissner 2009; Schubert, Waldzus, and Seibt 2008). That is, power can be perceived based on the size of representation (e.g., size of product images) even if an object presented in an image is small in its actual size and thus not associated with power in reality. For instance, although tiny bite-size chocolates might not be perceived as powerful stimuli, inflated images of them can be perceived as powerful entities.

Based on the association between size and power, we expect that consumers will perceive a super-size product display as a forceful persuasion attempt, just as requests from a powerful entity are generally perceived as more forceful and coercive (Michener and Burt 1975; van Dijke, Cremer, and Mayer 2010). That is, consumers in the presence of super-size product displays will feel as if a powerful entity is imposing a persuasion attempt. Based on these discussions, we hypothesize and test the following:

H1: Participants will perceive a super-size product display as a forceful persuasion attempt.

H2: Perceived powerlessness of displays will drive the effect of super-size product displays on perceived forcefulness of persuasion attempts.

Self-esteem and Behavioral Responses to Super-size Product Displays

We further examine important behavioral consequences of perceiving super-size product displays as forceful persuasion attempts. Psychology literature has documented that people vary in terms of how they respond to persuasion attempts (Crawford et al. 2002). In particular, separate streams of research have suggested that people's self-esteem can be an important predictor of such variability: those low in self-esteem tend to show compliant behaviors (e.g., Bearden, Netemeyer, and Teel 1989), whereas those high in self-esteem tend to display reactant behaviors (e.g., Brockner and Elkind 1985). Thus, we examine how self-esteem determines consumers' behavioral responses to forceful persuasion attempts perceived from super-size product displays.

Compliance Effect. Numerous studies in the long history of research on social influence (Milgram 1974) and organizational behavior (Lauter 1969) have documented compliance with a powerful entity. Such compliant behaviors have their functional value in terms of enhancing social affiliation, avoiding punishment, and gaining reward, and because of repeated conditioning processes, subtle cues can elicit compliant behaviors in a non-conscious manner (Cialdini and Goldstein 2004). In the marketing literature, recent studies have suggested that the effectiveness of persuasion messages in inducing consumers' compliant responses is not universal (Kronrod, Grinstein, and Wathieu 2012). Thus, it is natural to expect that not all consumers would automatically comply with forceful persuasion attempts perceived from super-size product displays.

In particular, research on interpersonal influence has suggested that people low in self-esteem are more susceptible to influence from others (Bearden et al. 1989; Cox and Bauer 1964; Janis 1954; Lehmann 1970). Several reasons may account for such susceptibility. For instance, low-esteem people are less confident in themselves and thus more concerned about social disapproval resulting from non-compliant behaviors (Cox and Bauer 1964). Relatedly, low-esteem people exhibit a greater reliance on interpersonal evaluations in defining their self-worth (Schneider and Turkat 1975). Further, they become even more interdependent after ego threat (Vohs and Heatherton 2001). The marketing literature has also suggested that low-esteem consumers are more easily influenced by external cues that exist in the marketing environment, such as package sizes (Argo and White 2012) and social referents (Dahl, Argo, and Morales 2012; McFerran et al. 2010). Likewise, when threatened by forceful persuasion attempts associated with super-size product displays, low-esteem consumers may become less independent and thus more likely to comply with the persuasion attempts from the external

source. Hence, we predict that consumers low in self-esteem will be more likely to display compliant behaviors in front of super-size product displays.

Reactance Effect. We predict the opposite effect for consumers high in self-esteem. Research on psychological reactance proposes that when individuals' freedom of behavior is eliminated or is threatened with elimination, individuals experience a motivational state that drives them to restore their behavioral freedom (Brehm 1966; Brehm and Brehm 1981; Clee and Wicklund 1980). For instance, consumers may experience reactance when the attempted influence of a salesperson restricts their freedom to make a choice (Fitzsimons and Lehmann 2004; Wicklund, Slattum, and Solomon 1970), or when they face situational constraints such as stock-outs in stores (Fitzsimons 2000) or confinement in store spaces (Levav and Zhu 2009). In inducing psychological reactance, the strength of the threat to behavioral freedom is an important condition. Thus, super-size product displays, which represent powerful entities that deliver persuasion messages in a forceful manner, would make consumers feel that their behavioral freedom is threatened, and consequently induce reactant behaviors.

Nevertheless, not everyone feels the same degree of psychological reactance when facing super-size product displays. Indeed, many studies have found that only those with high self-esteem—those who more strongly believe in their right to act freely—experience psychological reactance (Brockner and Elkind 1985; Brockner et al. 1983, 1998; Hellman and McMillin 1997; Joubert 1990). For instance, Brockner and Elkind (1985) tested whether receiving a coercive message to support a candidate running for office induces reactance, and found that such a message elicited unfavorable attitudes toward the candidate only among high-esteem participants. Likewise, when consumers face forceful persuasion attempts perceived from super-size product displays, we predict that those high in self-esteem will be more likely to show reactant behaviors.

To summarize, we hypothesize and test the following:

H3: In front of super-size product displays, low-esteem participants will show compliant behaviors, whereas high-esteem participants will show reactant behaviors.

H4: Perception of a super-size product display as a forceful persuasion attempt will drive the interaction effects of display size and self-esteem on participants' behaviors.

Overview of Studies

We test our hypotheses in five studies. In studies 1 and 2, we test whether participants perceive super-size product displays as forceful persuasion attempts. In study 1, we show that a persuasion attempt associated with a super-size product display is perceived as more forceful than that associated with an actual-size product display (hypothesis 1). In study 2, we demonstrate that perception of a super-size product display as a forceful persuasion attempt results from perceived powerlessness of the display (hypothesis 2). In studies 3 to 5, we further test the prediction that participants' self-esteem determines whether super-size product displays induce compliant or reactant behaviors. Following prior research (Argo and White 2012; Dahl et al. 2012; Ferraro, Shiv, and Bettman 2005; McFerran et al. 2010; Vohs and Heatherton 2001), we treat self-esteem as a trait-level variable and examine how it moderates participants' behaviors in front of super-size product displays. Specifically, in studies 3 and 4, we show that whereas low-esteem participants comply with persuasion attempts associated with super-size product displays, high-esteem participants show reactance to such attempts (hypothesis 3). Finally, study 5 connects the findings of studies 1 and 2 with those of studies 3 and 4 by

demonstrating that perception of a super-size product display as a forceful persuasion attempt drives the interaction effects of display size and self-esteem on participants' behaviors (hypothesis 4).

STUDY 1: PERCEIVED FORCEFULNESS OF PERSUASION ATTEMPTS

In study 1, we tested whether participants would perceive a super-size product display as a forceful persuasion attempt (hypothesis 1). For this purpose, we asked participants to write reasons for buying earphones in front of either blown-up or actual-size displays of the earphones. Then, we measured their perceptions of the product display as a forceful persuasion attempt. Another purpose of this study was to examine whether different super-size product displays varying in sizes contribute equally to the perception of a forceful persuasion attempt.

Method

One hundred undergraduates (58 females) from a large private university in the United States participated in this study for partial course credit. In the study, participants sat individually in workstations and worked on a product survey in front of a 23-inch computer display of a pair of earphones. We randomly assigned them to five conditions. In the baseline condition, we displayed the earphones in their actual size (.6 inches in diameter) at the center of the computer screen. We further created four super-size conditions, in which participants saw the same pair of earphones displayed 4 (2×2) times, 16 (4×4) times, 36 (6×6) times, or 64 (8×8) times larger than their actual size, respectively (see Appendix B). The sizes of the earphone images in the

super-size conditions may not be overly large in an absolute sense. Yet, given that the screen was located only about 15 inches from participants, and if we consider the visual angle of the earphone images, the sizes of the earphone images in terms of the earphones' diameter would be equivalent to 12, 24, 36, and 48 inches respectively at a 150-inch distance to look the same size in the eye.

After the earphone image appeared on the computer screen, participants received a paper-and-pencil survey about the product. To minimize the possible influence of factors other than the product display, in this and all remaining studies in the paper, we delivered all instructions in a written form, and experimenters did not give any verbal instructions. On the first page of the survey, we first asked participants to think of one or two reasons why people should buy the pair of earphones shown on the computer screen, and to write down their comments. After the writing task, participants proceeded to the next page and rated three items concerning the perceived forcefulness of the persuasion attempt created by the product display: "I feel as if the product image on the computer display in front of me is intended to *force (coerce or compel)* me to evaluate the earphones positively." The three items were presented on an 11-point scale (-5 = *strongly disagree*, 5 = *strongly agree*) and formed a perceived-forcefulness index ($\alpha = .86$).

Results and Discussion

We used the actual-size condition as the baseline condition and dummy coded four super-size conditions in a regression model. We found that compared to the actual-size product display ($M_{actual} = -.17$), the super-size display directionally increased the perceived forcefulness of the persuasion attempt when it was four times larger than the actual product size ($M_{4x} = 1.13$; $t(95) =$

1.64, $p = .104$). This effect became significant when the display size further increased to 16 times ($M_{16x} = 1.33$, $t(95) = 1.78$; $p = .078$), 36 times ($M_{36x} = 1.74$, $t(95) = 2.37$, $p = .020$), and 64 times ($M_{64x} = 1.28$, $t(95) = 1.95$, $p = .055$) the actual product size. Overall, these results support hypothesis 1 that participants perceive a super-size product display as a forceful persuasion attempt more so than an actual-size product display. In the following study, to directly examine the hypothesized relationship between perception of super-size product displays as forceful persuasion attempts and perceived powerlessness of the displays, we measured both variables and tested their relationship.

STUDY 2: THE ROLE OF POWERFULNESS PERCEPTION

Physical size is symbolically associated with power (Schubert et al. 2009), and people generally feel forced to accept instructions from a powerful entity (Michener and Burt 1975; van Dijke et al. 2010). Thus, we predicted that the perceived powerlessness of super-size product displays would mediate the effect of super-size displays on the perceived forcefulness of a persuasion attempt (hypothesis 2).

Method

Forty-three undergraduates (26 females) from a large private university in the United States participated for partial course credit. We randomly assigned them to either an actual- or a super-size display condition. Participants sat individually in workstations. On a 23-inch computer screen, we displayed either a super-size (17.7×4.9 inches) or an actual-size ($2.9 \times .8$

inches) photograph of a Mars chocolate bar (see Appendix C). The chocolate bar image in the super-size display was about 37 times larger than the one in the actual-size display. Given that participants were about 15 inches from the display, the size of the chocolate bar image would be equivalent to 177×49 inches if participants were at a 150-inch distance.

Once participants were seated in front of the chocolate bar image, an experimenter brought them a paper-and-pencil survey. On the first page of the survey, we presented them an actual slogan of Mars chocolate bars (“A Mars a day helps you work, rest, and play.”) and asked them to read and write the slogan. On the next pages, participants first completed the three-item perceived-forcefulness scale ($\alpha = .91$) adapted from study 1: “I feel as if the product image on the computer display in front of me is intended to *force (coerce or compel)* me to evaluate the chocolate brand positively.” We then presented them three questions: “How *powerful (dominant or strong)* do you think the product image on the computer display looks?” These three questions adopted an 11-point scale (-5 = *not at all*, 5 = *very much*) and formed a perceived-powerfulness index ($\alpha = .95$).

Results and Discussion

A factor analysis of all six items with a Varimax rotation generated two expected factors. All the factor loadings were above .8, and all the cross-loadings were below .4. These results suggest that the perceived forcefulness of the persuasion attempt and the perceived powerfulness of the product display were indeed two different constructs. Thus, we ran separate analyses for the perceived forcefulness and for the perceived powerfulness. A pair of ANOVAs revealed that compared to the actual-size product display, the super-size product display increased both the

perceived forcefulness of the persuasion attempt ($M_{\text{actual}} = -1.02$, $SD = 2.35$ vs. $M_{\text{super}} = .90$, $SD = 2.60$; $F(1, 41) = 6.37$, $p = .016$) and the perceived powerfulness of the product display ($M_{\text{actual}} = -1.84$, $SD = 2.75$ vs. $M_{\text{super}} = 2.61$, $SD = 1.28$; $F(1, 41) = 46.94$, $p < .001$).

We then tested whether perceived powerfulness of the product display mediated the impact of display size on perceived forcefulness of the persuasion attempt. In a series of regression models, we found that display size (0 = actual, 1 = super) influenced perceived powerfulness of the product display ($B = 4.45$, $t(41) = 6.85$, $p < .001$) and perceived forcefulness of the persuasion attempt ($B = 1.91$, $t(41) = 2.52$, $p = .016$). When we entered both display size and perceived powerfulness of the product display into the regression model, perceived powerfulness of the product display predicted perceived forcefulness of the persuasion attempt ($B = .58$, $t(39) = 3.64$, $p < .001$), whereas the direct effect of display size on perceived forcefulness of the persuasion attempt disappeared ($B = -.68$, $t(39) = -.70$, $p = .490$). More importantly, a bootstrap analysis with 1,000 resamples recommended by Zhao, Lynch, and Chen (2010) generated a significant indirect effect of display size on perceived forcefulness of the persuasion attempt through perceived powerfulness of the product display (95% confidence interval: 1.53 to 4.47). These results support the full mediating role of perceived powerfulness of the product display in the process through which display size affects perceived forcefulness of the persuasion attempt (hypothesis 2).

STUDY 3: SELF-ESTEEM AND BEHAVIORAL RESPONSES

In studies 1 and 2, we showed that participants perceived super-size product displays as a forceful persuasion attempt because of the powerfulness perception derived from a super size.

Study 3 aimed to further demonstrate behavioral consequences of the forcefulness perception. We expected that consumers low in self-esteem would be more likely to comply with a forceful persuasion attempt perceived from a super-size product display, whereas those high in self-esteem would be more likely to show reactant behaviors in the presence of a super-size product display (hypothesis 3). To test this hypothesis, we asked participants to write the phrase “I love Chipotle” as many times as possible in front of either a super- or actual-size display of a Chipotle burrito. We predicted that participants low in self-esteem would write the phrase more times (i.e., compliance) in front of a super-size display than in front of an actual-size one, whereas the super-size display, compared to the actual-size one, would reduce the number of written phrases for those high in self-esteem (i.e., reactance).

Method

Sixty-five undergraduates (45 females) from a large private university in the United States participated in a 20-minute session and received \$5 for their participation. We randomly assigned them to either an actual- or a super-size display condition, with self-esteem measured as the second factor.

Pre-session Measures. At the beginning of the session, participants filled out a pre-session questionnaire before they moved to a separate individual room (i.e., a room with a single workstation) to participate in the main part of the study. This questionnaire included a consent form, demographic information, and a 10-item Rosenberg self-esteem scale (4-point; Rosenberg 1965). In addition, because most participants had existing attitudes toward or experiences with the focal stimulus (i.e., a Chipotle restaurant is located right next to the university campus), we

measured their pre-existing preference for Chipotle to control for possible error variances in their behavioral responses (“What is your general attitude toward Chipotle?” 1 = *very negative*, 11 = *very positive*).

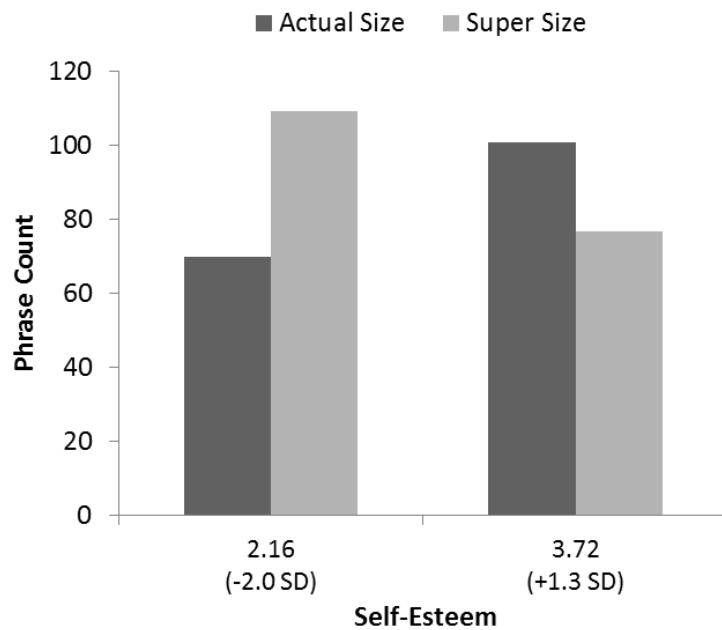
Main Study. After participants completed the questionnaire, an experimenter led them into an individual room where they sat alone facing a cuboid board that displayed either a super-size (48×30 inches) or an actual-size (8.2×5.6 inches) image of a Chipotle burrito (see Appendix D). The burrito image in the super-size display was about 32 times bigger than the one in the actual-size display. As a cover story, the instruction told participants that researchers were testing the lay belief about the relationship between writing and attitude. The lay belief was described as “when a person writes a lot about how much one loves something, then the person is inclined to like it more.” The experimenter provided participants with a pen and pieces of blank paper (17×11 inches), and the instruction asked them to begin writing the phrase “I love Chipotle” as many times as possible during the next 10 minutes. We used the total number of times participants wrote the phrase as the main dependent variable to capture participants’ behavioral responses in front of a super-size product display. After the writing task, to be consistent with the cover story, we also measured participants’ post-writing attitude toward Chipotle, which was not the focus of this study.

Results and Discussion

We regressed the phrase count on display size (0 = actual, 1 = super), self-esteem (mean-centered continuous variable), and their interaction term. This analysis did not reveal a main effect of display size ($B = .54$, $t(61) = .06$, $p = .950$) or self-esteem ($B = 19.94$, $t(61) = 1.54$, p

$= .130$). Only a significant display size \times self-esteem interaction emerged ($B = -40.84$, $t(61) = -2.16$, $p = .035$). To better understand the interaction effect, we ran a floodlight analysis (Spiller et al. 2012). Specifically, we found that low-esteem participants (at 2.0 standard deviations below the mean) wrote the phrase more times in front of the super-size display than in front of the actual-size display ($B = 39.32$, $t(61) = 2.00$, $p = .050$). By contrast, high-esteem participants (at 1.3 standard deviations above the mean) wrote the phrase fewer times in front of the super-size display than in front of the actual-size display ($B = -24.24$, $t(61) = -1.67$, $p = .100$). When we used pre-existing preference for Chipotle as a covariate, the display size \times self-esteem interaction on phrase count remained the same ($B = -39.48$, $t(60) = -2.14$, $p = .036$). Figure 1 graphically depicts the interaction.

FIGURE 1
PHRASE COUNT AS A FUNCTION OF DISPLAY SIZE
AND SELF-ESTEEM IN STUDY 3



Supporting hypothesis 3, the results of study 3 show that compliant and reactant behaviors can both result from the presence of a super-size product display, depending on consumers' self-esteem. That is, low-esteem consumers exhibit compliant behaviors in front of a super-size product display, whereas high-esteem consumers exhibit reactant behaviors in front of a super-size product display.

STUDY 4: SELF-ESTEEM AND CONSUMPTION

The purpose of Study 4 was to generalize the findings of study 3 in two important ways. First, we aimed to show the behavioral consequences of super-size product displays using a task involving actual consumption. Second, whereas participants' task in study 3 might have been displeasing (i.e., writing the same phrase for 10 minutes), we aimed to extend our findings by employing a task that was pleasant and enjoyable. For these two purposes, we asked participants to sample jelly beans in front of a product display in study 4.

Method

Fifty undergraduates (29 females) from a large private university in the United States participated in this study and received \$5. They were randomly assigned to either an actual- or a super-size display condition.

Pre-session Measures. As in study 3, at the beginning of the session, participants filled out a pre-session questionnaire in a separate room, where we measured their self-esteem using the 4-point Rosenberg self-esteem scale (Rosenberg 1965). We also measured participants' usual

consumption of jelly beans (“How often do you eat jelly beans?” 1 = *not at all*, 11 = *very much*), current energy level (“How tired or energized do you feel right now?” 1 = *tired*, 11 = *energized*), and health consciousness (“How health conscious are you?” 1 = *not at all*, 11 = *very much*) to control for possible error variances in their jelly bean consumption.

Main Study. After participants completed the pre-session questionnaire, an experimenter led them into an individual room where they sat alone facing a cuboid board that displayed either a super-size photograph of jelly beans (40 × 30 inches) or an actual-size photograph of jelly beans (2.11 × 2 inches; see Appendix E). The jelly bean image in the super-size display was about 170 times larger than the one in the actual-size display. Then, the experimenter brought a box that contained 16 jelly beans for each of 40 different flavors (640 in all; see Appendix F). As a cover story, the instruction asked participants to taste different flavors of jelly beans and to record how much they liked each. Specifically, we told them, “In each trial, you must indicate which jelly bean you chose to taste and how much you liked it. Then, you will do this again with a different flavor.” To ensure that they understood they did not have to taste all of 40 flavors, we further told them “You may taste none to all 40 flavors of jelly beans. Also, you may stop anytime. You may eat the same jelly bean multiple times. Just keep in mind that you need to indicate which jelly bean you just ate and how much you liked it each time you try one.” To be consistent with the cover story, participants received a tasting record sheet that presented a series of 11-point scales (1 = *strongly dislike*, 11 = *strongly like*) for the jelly beans they sampled. The jelly bean ratings on the tasting record sheet were not the focus of this study. The focal behavioral dependent measure of this study was the consumption quantity of the jelly beans participants sampled. After the study session, an undergraduate research assistant who did not

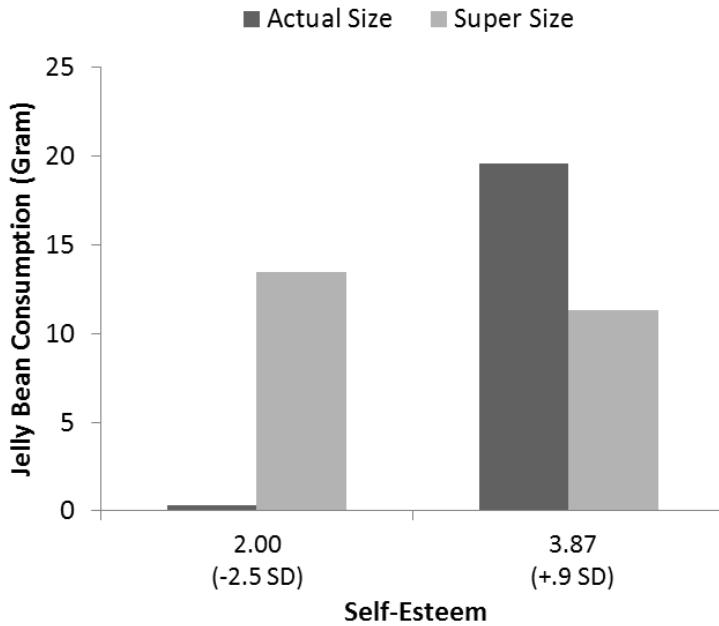
know about the hypothesis measured each participant's jelly bean consumption in grams using a digital food scale.

Results and Discussion

We regressed jelly bean consumption on display size (0 = actual, 1 = super), self-esteem (mean-centered continuous variable), and their interaction term. This analysis did not reveal a main effect of display size ($B = -1.94$, $t(46) = -.64$, $p = .523$). There were a main effect of self-esteem ($B = 11.59$, $t(46) = 2.23$, $p = .031$) and, more importantly, a significant display size \times self-esteem interaction ($B = -12.75$, $t(46) = -2.06$, $p = .045$). A further floodlight analysis (Spiller et al. 2012) confirmed our prediction: jelly bean consumption of low-esteem participants (at 2.5 standard deviations below the mean) was higher in the super-size condition than in the actual-size condition ($B = 15.41$, $t(46) = 1.68$, $p = .100$). By contrast, high-esteem participants (at .9 standard deviations above the mean) sampled fewer jelly beans in front of the super-size display than in front of the actual-size one ($B = -8.30$, $t(46) = -2.01$, $p = .050$). Figure 2 graphically depicts this interaction. When we controlled for participants' usual jelly bean consumption, energy level, or health consciousness, the display size \times self-esteem interaction was still significant ($B = -13.95$, $t(45) = -2.28$, $p = .028$; $B = -12.80$, $t(45) = -2.05$, $p = .047$; $B = -12.43$, $t(45) = -1.97$, $p = .055$, respectively).

To summarize, using a different task and a different product stimulus, we replicated the findings that a super-size product display induces compliant behaviors from low-esteem consumers and reactant behaviors from high-esteem consumers. Study 4 also extended the results of study 3 to the domain of actual consumption behavior.

FIGURE 2
JELLY BEAN CONSUMPTION AS A FUNCTION OF DISPLAY SIZE
AND SELF-ESTEEM IN STUDY 4



STUDY 5: THE ROLE OF PERCEIVED FORCEFUL PERSUASION ATTEMPT

In studies 1 and 2, we explored why super-size product displays represent a forceful persuasion attempt to consumers; in studies 3 and 4, we showed that self-esteem determines how consumers respond behaviorally to super-size product displays. In study 5, we aimed to connect these findings by demonstrating that perceived forceful persuasion attempt drives the interaction effects of self-esteem and display size on consumer behavior (hypothesis 4). In addition, we introduced several variations from the experimental design used in our prior studies in order to increase the generalizability of our findings by simulating a real-life retail setting and examining consumers' real product choice.

Method

One hundred and sixteen undergraduates (66 females) from a large private university in the United States participated for partial course credit.

Pre-session Measures. In a large room with multiple stations, participants first filled out a pre-session questionnaire in which we included a 10-item, 4-point self-esteem scale (Rosenberg 1965). We also measured participants' general attitude toward chocolates ("What is your attitude towards chocolates in general?" 1 = *very negative*, 11 = *very positive*), usual chocolate consumption ("How often do you eat chocolates?" 1 = *not at all*, 11 = *very much*), current energy level ("How tired or energized do you feel right now?" 1 = *tired*, 11 = *energized*), and health consciousness ("How health conscious are you?" 1 = *not at all*, 11 = *very much*) to control for possible error variances in the dependent variable.

Main Study. After participants finished the pre-session measures, computerized instructions asked them to walk across the hallway and enter another room individually, and to select one piece of chocolate either from a bowl of M&M's or a bowl of Reese's chocolate they would find there. Participants were randomly directed to one of two individual rooms. In one room, a cuboid board with a super-size photograph (27 × 24 inches) of a Reese's chocolate was placed on the desk against the wall. In front of the super-size display were a cuboid board with an actual-size image of an M&M's chocolate behind the M&M's chocolate bowl and a cuboid board with an actual-size image of a Reese's chocolate behind the Reese's chocolate bowl. In the other room, the setting was identical, except that we placed a super-size cuboid board of an M&M's chocolate image (31 × 24 inches) instead of a Reese's chocolate image on the desk. To

sum, in both rooms, participants saw one actual-size product display for each of the two brands and one super-size product display showing either a Reese's chocolate image or an M&M's chocolate image (see Appendix G). Unlike our previous studies in which participants saw one display about a specific product and engaged in a task about the focal product only, study 5 adopted a real-life-like retail setting in which consumers usually see displays for different products simultaneously and choose among different products. In addition, the presence of the display about a competing product and the freedom in choosing the product not shown in the super-size display made the study very conservative by creating an implicit forceful-persuasion context for our hypothesis testing.

After participants made their product choice by selecting one piece of chocolate in the individual room, they returned to their station to answer several questions about the super-size display they saw in the individual room (we did not ask any questions about the actual-size displays). We adapted the perceived-forcefulness scale used in studies 1 and 2 and asked participants to indicate their agreement with the following three statements on an 11-point scale (1 = *not at all*, 11 = *very much*): “When I was making a choice between two chocolate brands, I felt *forced* to choose the chocolate brand featured in the super-size display,” “When I was making a choice between two chocolate brands, I felt *coerced* to choose the chocolate brand featured in the super-size display,” and “When I was making a choice between two chocolate brands, I felt *compelled* to choose the chocolate brand featured in the super-size display,” which formed a perceived-forcefulness index ($\alpha = .95$).

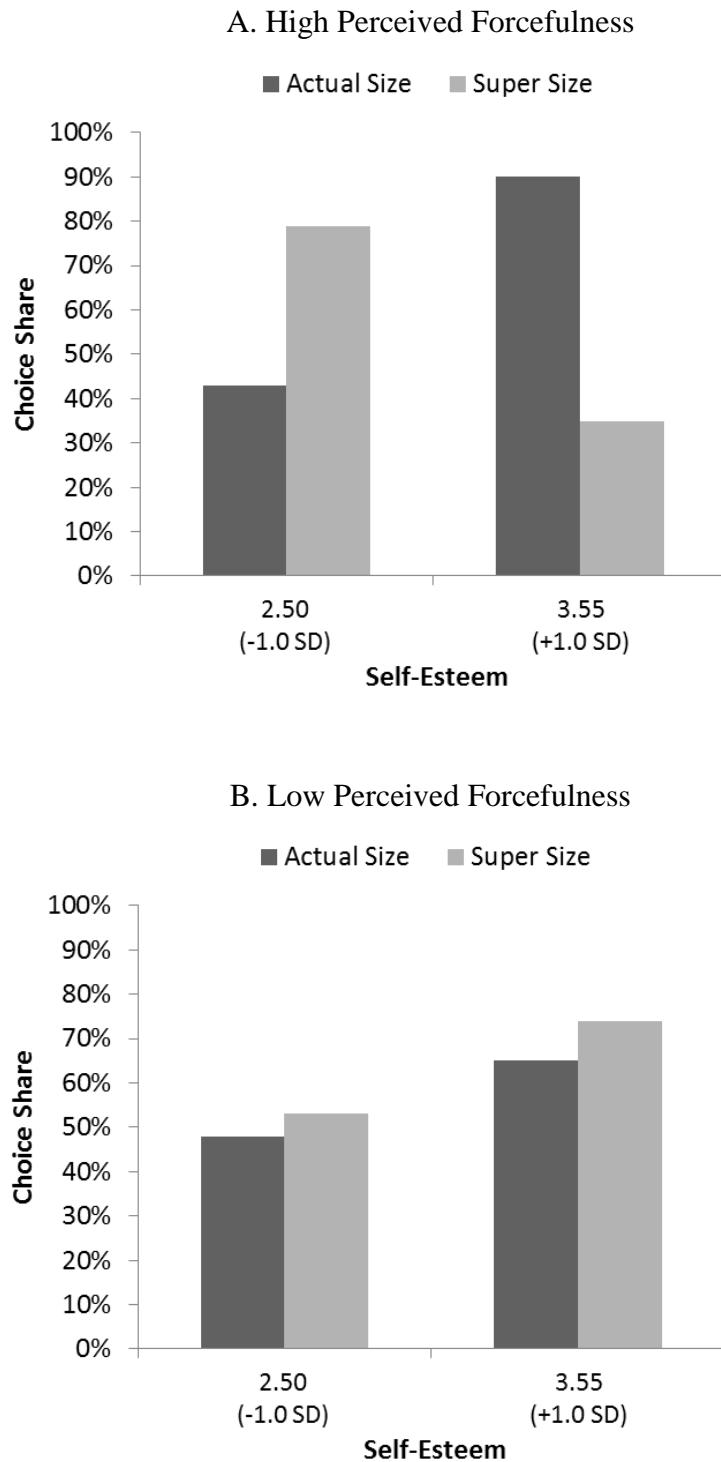
Results and Discussion

We analyzed how display size of Reese's chocolate (0 = actual, 1 = super), self-esteem (mean-centered continuous variable), and perceived forceful persuasion attempt (mean-centered continuous variable) influenced participants' product choice of Reese's chocolate (0 = no, 1 = yes). Because in both of the manipulated conditions, we measured the perceived forceful persuasion attempt regarding the super-size product display only (and not regarding the actual-size product display), we tested the role of perceived forcefulness in driving the display size \times self-esteem interaction on product choice by examining its moderating effect. If the display size \times self-esteem interaction on product choice is indeed driven by a forceful persuasion attempt perceived from the super-size product display, this interaction should be stronger for participants whose perceived forcefulness is stronger versus weaker.

Central to our hypothesis testing, a logistic regression generated a significant display size \times self-esteem \times perceived forcefulness interaction ($B = -1.59$, $z = -2.17$, $p = .030$). Because this three-way interaction involved two continuous variables, we conducted spotlight analyses for simplicity, rather than using the floodlight analysis we adopted in studies 3 and 4, to further illustrate this interaction (see Figure 3).

First, we examined how the display size \times self-esteem interaction varied as a function of perceived forcefulness. We found that whereas this interaction was significant for participants who perceived a relatively more forceful persuasion attempt from the super-size display (i.e., at one standard deviation above the mean of perceived forcefulness: $B = -4.25$, $z = -2.25$, $p = .024$), the interaction disappeared for participants who perceived a relatively less forceful persuasion attempt from the super-size display (i.e., at one standard deviation below the mean of perceived forcefulness: $B = .21$, $z = .22$, $p = .825$).

FIGURE 3
 PRODUCT CHOICE AS A FUNCTION OF DISPLAY SIZE, SELF-ESTEEM, AND
 PERCEIVED FORCEFULNESS IN STUDY 5



Then, we further decomposed the display size \times self-esteem interaction for participants who perceived a relatively more forceful persuasion attempt from the super-size display. Among these participants, those low in self-esteem were more likely to choose the Reese's chocolate when it was shown in a super-size display than when it was shown in an actual-size display only (i.e., at one standard deviation below the mean of self-esteem: $B = 1.66$, $z = 1.81$, $p = .070$). By contrast, those high in self-esteem were less likely to choose the Reese's chocolate when it was shown in the super-size display than when it was shown in the actual-size display only (i.e., at one standard deviation above the mean of self-esteem: $B = -2.82$, $z = -1.69$, $p = .092$).

Finally, when we included general attitude toward chocolates, usual chocolate consumption, current energy level, or health consciousness as a covariate in the logistic regression analysis, the significant interactions or spotlight analyses reported above remained unchanged. In addition, because in this study, both the product choice (Reese's vs. M&M's) and the target of the super-size display (Reese's vs. M&M's) were symmetric, the above results were identical when we analyzed participants' choice of M&M's chocolate as the dependent variable.

In sum, study 5 extended our prior studies to a real product-choice context and, more importantly, demonstrated that the forceful persuasion attempt perceived from a super-size product display drives the joint effect of display size and self-esteem on consumers' compliant or reactant behaviors.

GENERAL DISCUSSION

In five studies, we demonstrate that when super-size product displays are present in close proximity to consumers, they can elicit unintended consequences. Compared to an actual-size

product display, a super-size product display makes its associated persuasion attempt appear more forceful (studies 1 and 2) because a super-size display acts like a powerful entity (study 2). Consequently, super-size product displays induce compliant behaviors from low-esteem consumers but reactant behaviors from high-esteem consumers. Specifically, low-esteem participants wrote a slogan about Chipotle more times in front of the super-size display of a Chipotle burrito than in front of the actual-size display, whereas high-esteem participants wrote the slogan fewer times in the presence of the super-size display than in the presence of the actual-size display (study 3). Similarly, low-esteem participants sampled more jelly beans in front of the super-size display of jelly beans than in front of the actual-size display, whereas high-esteem participants sampled fewer jelly beans in front of the super-size jelly bean display than in front of the actual-size display (study 4). Supporting the role of perceived forcefulness in driving the effect of super-size product display on consumers' behavioral responses, low-esteem participants were more likely to choose Reese's over M&M's in front of the super-size display of Reese's chocolate, whereas high-esteem participants were less likely to choose Reese's over M&M's in front of the super-size Reese's display, only when they strongly perceived the super-size display as a forceful persuasion attempt (study 5). These results consistently show that super-size product displays can have systematic influences on consumer perception and behavior, and demonstrate the process underlying these influences.

Theoretical Contributions

Environmental Psychology. Unlike prior research that has examined relatively smaller product images shown in print ads (Finn 1988; Janiszewski 1998; Kirmani 1990; Lohse 1997;

Pieters and Wedel 2004, 2007), the present research demonstrates how super-size product displays, in which products are shown much larger than their actual sizes, influence consumer perception and behavior. In particular, we focus on large on-site product displays that are employed ubiquitously in retail spaces. Our findings therefore provide additional insights for the emerging environmental psychology literature that investigates how environmental cues, such as ceiling height (Meyers-Levy and Zhu 2007), flooring (Meyers-Levy, Zhu, and Jiang 2010), physical order (Chae and Zhu 2014; Vohs, Redden, and Rahinel 2013), seating arrangement (Zhu and Argo 2013), space (Levav and Zhu 2009), noise (Mehta, Zhu, and Cheema 2012; Shen and Sengupta 2014), and temperature (Cheema and Patrick 2012; Huang et al. 2014), influence behavior.

Self-esteem and Consumer Behavior. In the marketing literature, several prior studies have examined how self-esteem determines consumers' susceptibility to external influence. For instance, Argo and White (2012) found that food consumption of participants low in appearance self-esteem were more susceptible to the influence of package sizes; Dahl et al. (2012) and McFerran et al. (2010) showed that participants low in appearance self-esteem were more subject to social influence in their food consumption and product evaluation. Yet, in these studies, participants high in appearance self-esteem did not overreact against the external stimuli. Our findings extend these studies by not only demonstrating that low-esteem consumers are more likely to comply with external information, but also documenting that high-esteem consumers are more likely to react against external information. A comparison between our findings and those of prior research (Argo and White 2012; Dahl et al. 2012; McFerran et al. 2010) suggests that behavioral reactance of high self-esteem consumers would depend on whether external information is presented in a forceful manner or not. When external information is presented

mildly (as in Argo and White 2012; Dahl et al. 2012; McFerran et al. 2010), high-esteem consumers are indifferent to such information. By contrast, only when external information is perceived as forceful (as induced by super-size product displays in our research) will reactant behaviors emerge among high-esteem consumers.

Managerial Implications

Various marketing activities in retail stores frequently employ super-size product displays. The current research shows that super-size displays can have unintended consequences on consumer perception and behavior, especially when they are in close proximity to consumers (i.e., they appear overly large to consumers). Hence, marketers and retailers will be better off by understanding the potential influences of the product displays they use in retail spaces.

Self-esteem is known to be associated with other variables. For instance, prior research has found that self-esteem is correlated with social class (Rosenberg and Pearlin 1978; Twenge and Campbell 2002). A meta-analysis of 446 samples ($N = 312,940$) has shown a significant positive relationship between self-esteem and social class (Twenge and Campbell 2002). High self-esteem can also result from high social power. A study conducted by Wojciszke and Struzynska-Kujalowicz (2007) revealed that participants who were experimentally induced to experience high social power (taking the role of supervisor) reported higher self-esteem than those induced to experience low social power (taking the role of subordinate). The relationship between self-esteem and social class as well as social power provides a hint that makes our findings more actionable for marketing practice. For instance, our results suggest that in discount stores or residential areas of lower-class people, retailers can employ super-size product displays

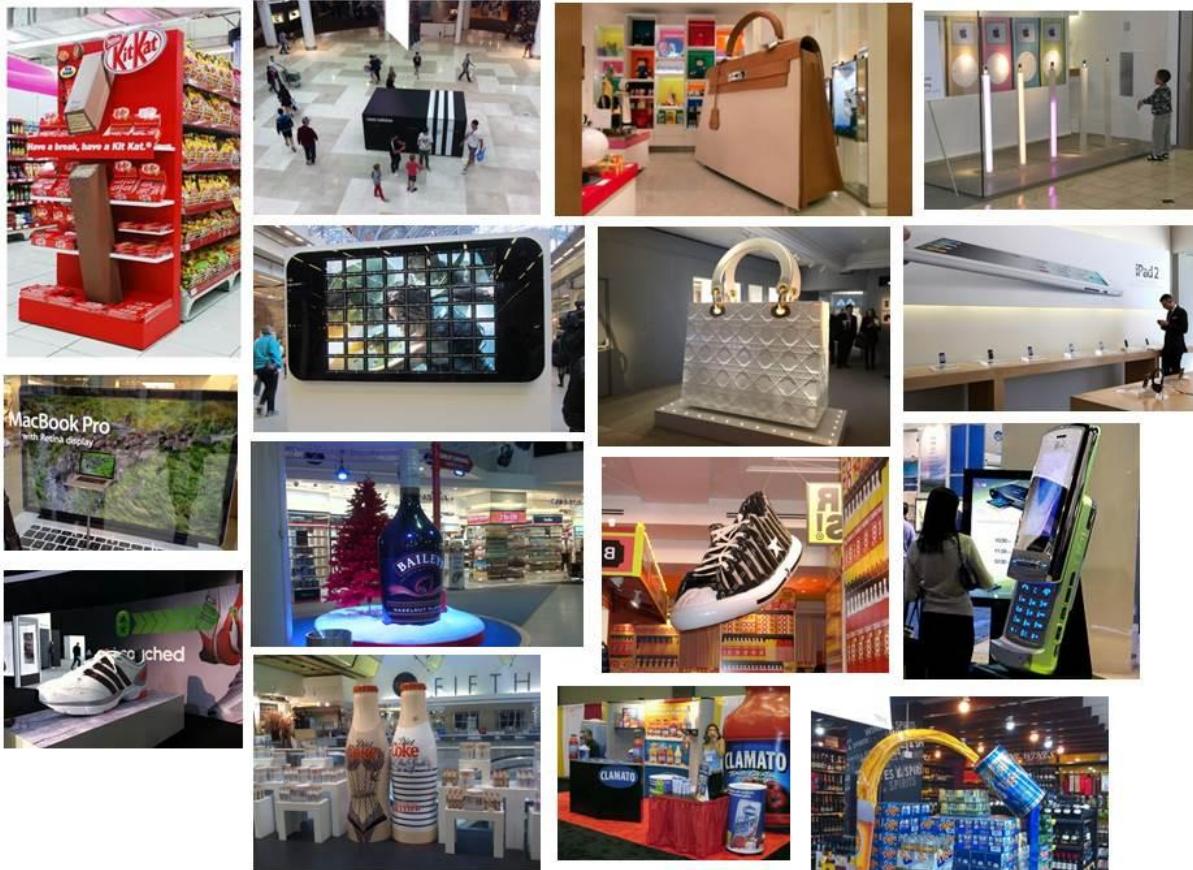
to elicit more compliant purchasing behaviors. In upscale shopping malls or residential areas of higher-class people, marketers should be cautious in employing super-size product displays to avoid potential reactant behaviors from their target customers. Another implication is that to better facilitate the compliance-inducing function of super-size product displays, marketers could incorporate into the retail environment some subtle cues that remind consumers of their low-power status.

Future Research Directions

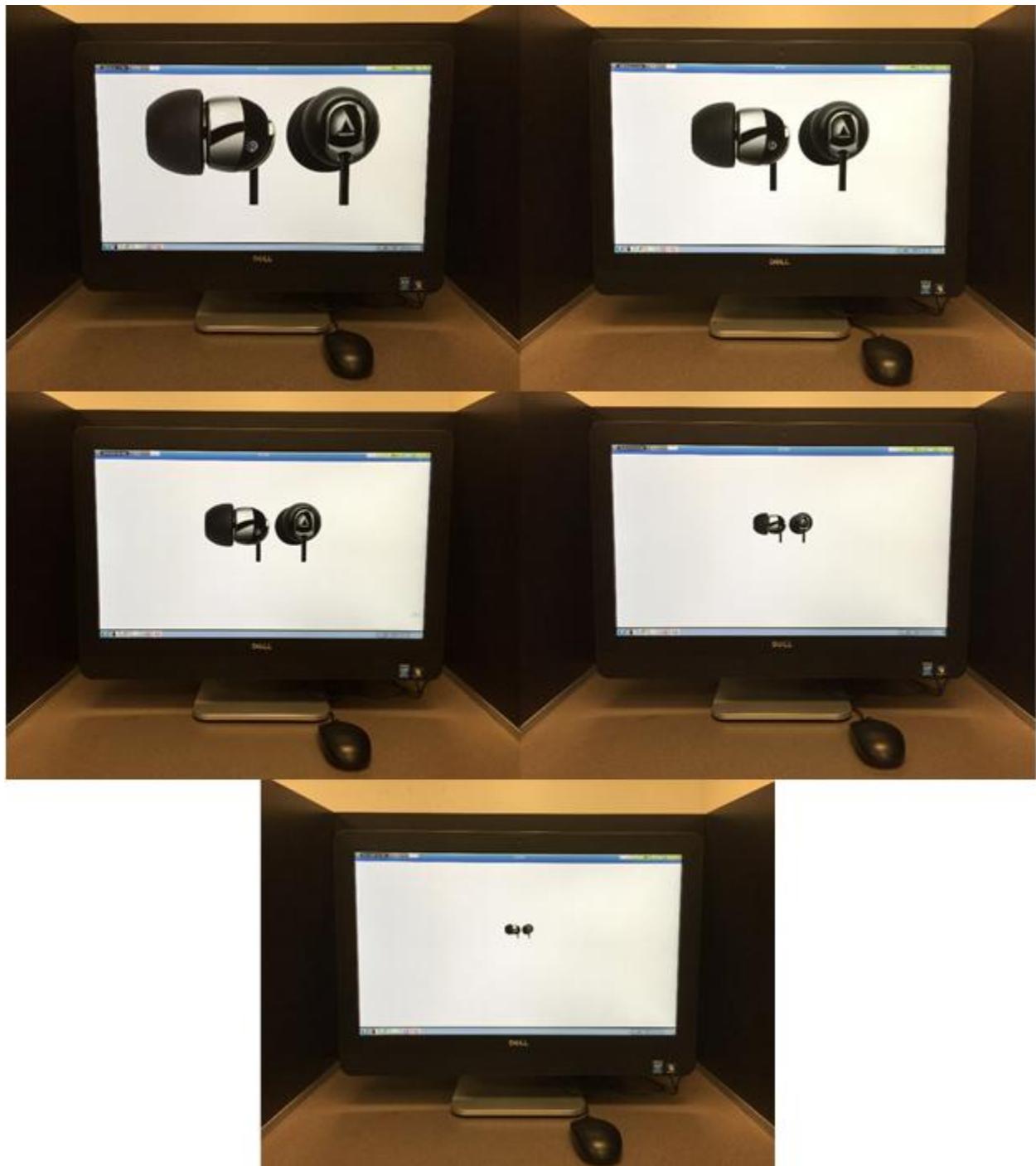
Considering the possibility of physical objects serving as a powerful entity may allow researchers to identify other situations in which physical cues in the environment induce compliant or reactant behaviors just as super-size product displays would. For instance, past research has found that not only the size, but also the vertical position (Giessner and Schubert 2007; Schubert 2005) or posture (Hall, Coats, and LeBeau 2005) of objects, is associated with social power or dominance. These environmental cues may also induce either compliance or reactance among consumers through their conceptual association with power. Future research may further address the potential effects of these cues.

Another interesting avenue for future research is to examine how consumers react to super-size product displays when they feel strongly connected to the products featured in the displays (e.g., when a super-size display of Nike shoes is present to consumers strongly attached to Nike). In such situations, low-esteem consumers may not only comply with but even admire super-size displays. High-esteem consumers might also no longer feel that they are forced to like or buy the focal product. Furthermore, for consumers strongly attached to the focal product, a

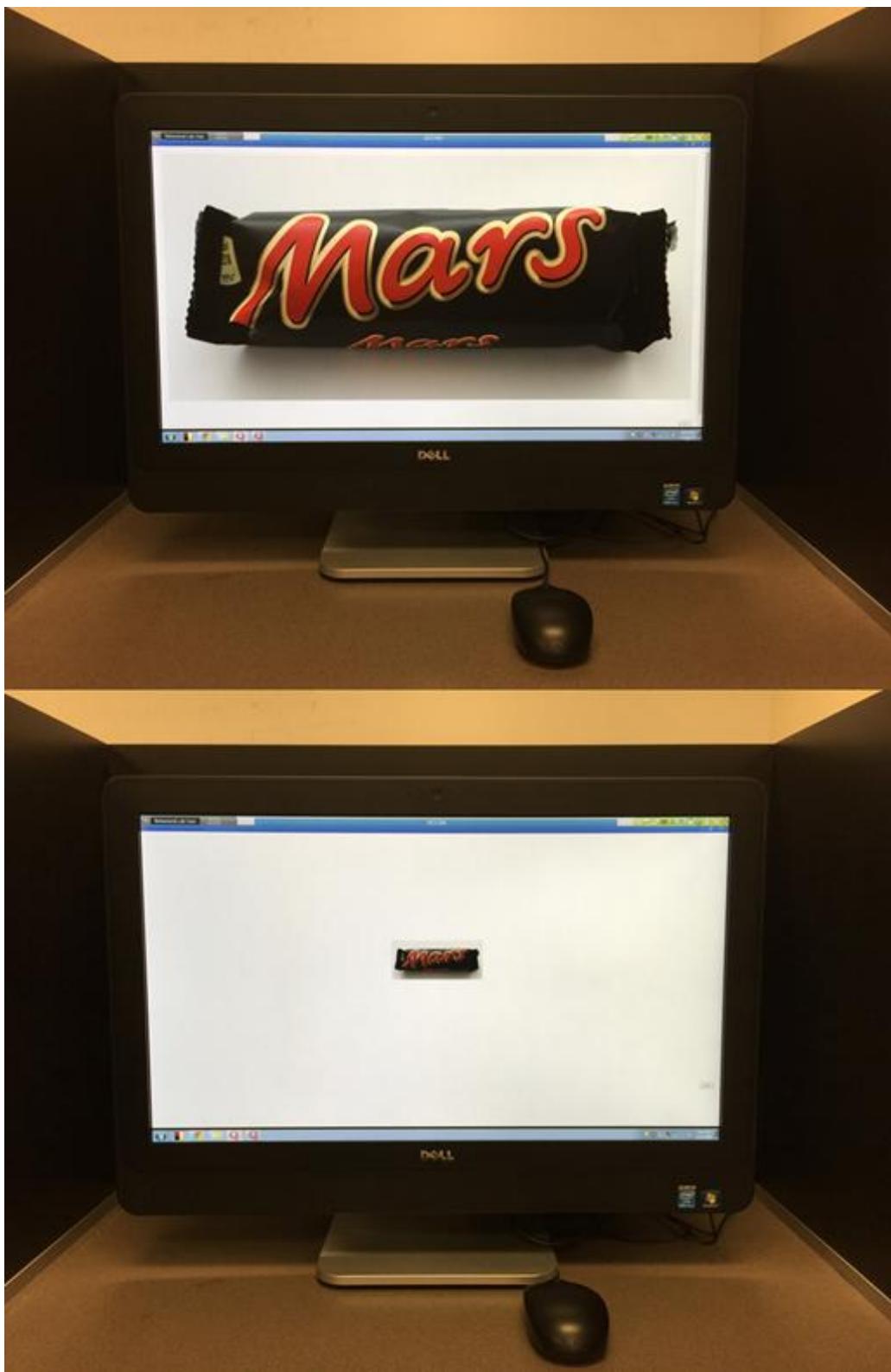
super-size product display might improve consumers' self-perception via their connection to the product and could thus have carry-over effects on consumers' subsequent behaviors in an unrelated domain. The intriguing role of attachment awaits future research.

APPENDIX A**EXAMPLES OF SUPER-SIZE PRODUCT DISPLAYS IN RETAIL SPACES**

APPENDIX B
MATERIALS AND ROOM SETTING IN STUDY 1



APPENDIX C
MATERIALS AND ROOM SETTING IN STUDY 2



APPENDIX D
MATERIALS AND ROOM SETTING IN STUDY 3



APPENDIX E
MATERIALS AND ROOM SETTINGS IN STUDY 4



APPENDIX F

JELLY BEANS GIVEN TO EACH PARTICIPANT IN STUDY 4



APPENDIX G
MATERIALS AND ROOM SETTINGS IN STUDY 5



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