The Cake Looks Yummy on the Shelf up There: The Interactive Effect of Retail Shelf Position and Consumers' Personal Sense of Power on Indulgent Choice

Abstract

This paper advances our understanding of consumer responses to retail product displays by examining the interplay between the vertical shelf position of choice options and consumers' personal sense of power in determining their preference for indulgent options. Six experiments show that when consumers choose from assortments placed on a low shelf position, requiring them to lower their heads, those higher (vs. lower) in personal power are more likely to choose an indulgent option over its prudent counterpart. In contrast, when choosing from assortments placed on a high shelf position, requiring consumers to raise their heads, those lower (vs. higher) in personal power are more likely to choose an indulgent option. This effect hinges on a mismatch (vs. match) between consumers' personal sense of power and that triggered by the products' retail shelf position, increasing affective discomfort and guiding consumers, thus, towards indulgent choices.

Keywords: Retail Environment, Retail displays. Retail shelf position, Indulgent choice, Power

The Ice Cream Looks Yummy on the Shelf up There:

The Interactive Effect of Retail Shelf Position and Consumers' Personal Sense of Power on Indulgent Choice

The retail environment is a key determinant of product choice. Proctor and Gamble's now famous "First Moment of Truth" (i.e., FMOT) refers to the paramount importance of the first three to seven seconds consumers behold a product on a store shelf before its selection, underscoring the critical role of shelf displays in shaping consumer choices. Not surprisingly then, a small but growing body of research has started to examine how different shelving-related cues influence attention (Atalay, Bodur, and Rasolofoarison, 2012), consumer inferences (Valenzuela and Raghubir, 2009) and even brand choice (Chandon, Hutchinson, Bradlow and Young, 2009). While these works, together, implicate product shelf location as a driver of consumer response, the effects of consumers' shelf location-induced physical movements on their product choices remain, to the best of our knowledge, unexamined.

Vertical head movements are an integral part of the retail shopping experience; consumers routinely look up or down to locate products on store shelves. Might such vertical movements actually influence consumer choice? This paper contributes to our understanding of how shelf displays affect consumer behavior by demonstrating that consumers' directed movements (i.e., looking up or down) to locate a product on the shelf interact with their innate, personal sense of power to influence their likelihood of making an indulgent choice. Specifically, we draw on both research on the ergonomics of self-perception and power (Beck, Canamero, and Bard, 2010; Huang, Galinsky, Gruenfeld and Guillory, 2011; Lance and Marsella, 2007; Ramseyer and Tschacher, 2014; Yap, Wazlawek, Lucas, Cuddy and Carney, 2013) and the broader literature on

trait-context fit (Chen, Langner and Mendoza-Denton, 2009; Joseph, Sellers, Newman and Mehta, 2006) to propose and demonstrate that consumers with a lower [higher] personal sense of power are more likely to make indulgent choices from high [low] shelf positions, which require them to make upward [downward] head movements, cuing, contextually, an increased [decreased] sense of power.

In doing so, this research makes three conceptual advances. First, it documents the role of consumers' movement-induced sense of power as a retail-based influence on product choices. It is the first, to the best of our knowledge, to take a motivational perspective on consumer reactions to retail shelf position, in contrast to the perceptual and cognitive perspective taken by extant investigations into this retailing domain (see Valenzuela and Raghubir 2015 for a recent review). Second, and more specifically, it suggests that such product choices are driven not just by the previously examined context-based inductions of power (Briñol, Petty and Wagner, 2009*;* Huang et al., 2011; Yap, et al., 2013) but in fact by its match or mismatch with the personal sense of power consumers bring to these retail contexts. In doing so, this research advances our current understanding of consumer reactions to retail shelf position by implicating the consumer as a key moderator of shelf position – preference link. Finally, the paper implicates a mismatch-induced increase in affective discomfort as the driver of the interactive effect of shelf position and consumer's personal power on their likelihood of indulgent choice. Next we draw upon prior research on consumers' sense of power, and its link to head movements to derive our basic predictions. We then present six studies that test these predictions and end with a discussion of our findings.

Power and Vertical movement

Power, construed typically as “asymmetric control over valued resources in social relations” (Rucker, Galinsky and Dubois 2012, page 353), is a fundamental concept in the social sciences (Russell, 1938). High power is connected with approach-related, positive thoughts, feelings and behaviors, with greater attention to rewarding aspects of the environment (Anderson and Berdahl, 2002; see Rucker et al. 2012 for recent review). Power comes either from individual dispositions (e.g., personality traits, physical characteristics, chemical levels) or/and situational contexts (e.g., authority/status/role, social interactions; Keltner, Gruenfeld and Anderson, 2003), and can be activated (see Rucker, Galinsky and Dubois, 2012 for recent review) cognitively (e.g., priming; Smith and Trope 2006), structurally (e.g., role playing) and/or physically (e.g., posture; Hall, Coats and LeBeau, 2005).

Interestingly, a growing body of research documents the contribution of people’s directed physical movements to their sense of power and self-esteem (Carney, Cuddy, and Yap, 2010; Huang et al., 2011; Koo, Wong and Shavitt, 2012; Ostinelli, Ringberg and Luna, 2013; van Kerckhove, Geuens, and Vermeir, 2015). For instance, drawing on the notion that humans and other animals express high power through open, expansive postures, and low power through closed, contractive postures, Carney et al. (2010) show that short and simple high-power poses (as opposed to low-power poses) change behavior in ways consistent with an enhanced sense of power (see also Yap et al. 2013). Similarly, Huang et al. (2011) define body postures as one of the most proximate correlates of the manifestations of power while Ostinelli et al. (2013) demonstrate that just by imagining oneself moving upward versus downward, the self is also judged as more versus less worthy.

This is consistent with a diverse, and even more germane to our retail context, body of work, ranging from psychotherapy (Ramseyer and Tschacher, 2014) to robotics (Beck, Canamero and Bard, 2010), that documents the psychophysiological consequences of upward versus downward head movements. This research builds on the established premise that somatic biofeedback from facial and postural movements contribute significantly to emotional experience (Laird 1974; Izard 1993) to causally link head raises to a host of approach-related emotions such as pride and joy and head lowering to the avoidance-related feelings of shame, embarrassment, humiliation, and sadness (Shafir, Tsachor and Welch, 2015; Mignault & Chaudhari, 2003). More specifically, some research (Lance and Marsella, 2007) associates upward [downward] head turns with both greater [lower] dominance (i.e., how controlling and dominant versus controlled or submissive one feels) and arousal (i.e., how energized or soporific one feels) (Mehrabian and Russell, 1974). As well, this is reflected in a causal connection between, more generally, expansive, upright physical postures, of which a raised head is a key component (Riskind and Gotay, 1982), and more positive thoughts (Wilson and Peper, 2004), more energy, and greater motivational levels and slumped, slouched postures, of which a lowered head is a key component, and lower motivational levels, greater helplessness and even depressiveness.

Notably, high power is characterized by an approach, achievement-oriented motivational state, accompanied by dominance, arousal and, more generally, positive emotions (and low power, with the converse; Rucker et al. 2012). Thus, it seems reasonable to expect, given the aforementioned causal links between vertical head movements and these components of power, that upward [downward] head movements will produce, contextually, an increased [a decreased] sense of power. This is underscored by recent research (Van Kerckhove, Geuens and Vermeir

(2015)) linking consumers' upward head movements with their preference for desirable, over feasible, products, which suggests that the effects of vertical movements on level of processing might be due, at least in part, to accompanying changes in consumers' sense of power (Koo, Wong and Shavitt, 2012). More generally, the use of upward [downward] vertical head movements by humans (and other animals) to signal dominance [submission] to relevant social others (Mignault and Chaudhuri 2003) may also cause such movements to serve as self-signals of power (Bodner and Prelec, 2003) reinforcing the causal link between vertical head movements and consumers' experienced sense of power.

In sum, we argue that consumers' upward [downward] head movements necessitated by products on a high [low] retail shelf will produce in them, implicitly, directly, and quickly (Huang et al. 2011), an increased [decreased] sense of power relative to when the products are at eye level, requiring no vertical head movements. More formally,

H1: When a product in a high [low] shelf position causes consumers to raise [lower] their heads, such a movement is likely to induce in them an increased [decreased] sense of power.

Next, we discuss how this context-based change interacts with consumers' personal sense of power to affect indulgent choices.

Person-Environment Fit and Indulgence

While environmental cues, such as shelf position, may influence consumers' sense of power, consumers also bring to such environments their own personal power-related characteristics and dispositions (Anderson and Galinsky, 2006; Chen, Langner, and Mendoza-Denton, 2009; Operario and Fiske, 2001). In fact, such situational and personal sources of power have been shown to interact (Huang et al. 2011), located by many researchers within the broader rubric of person-environment (P-E) fit (Chatman 1989; Roberts and Donahue, 1994). For instance, Briñol et al. (2009) demonstrate that the meaning people ascribe to power postures varies with physical markers of personal power such as gender, body size and shape. Similarly, people with different levels of testosterone (Joseph et al., 2006) or innate sense of power (Schubert and Koole, 2009) react differently to earned status or assigned roles of varying dominance. Finally, Chen et al. (2009) demonstrate that people's personal power interacts with their context based, role-triggered power to determine their self-expression: people are more likely to behave in line with their states and traits when their personal power matches, rather than mismatches, their role power.

At the heart of these facilitating [debilitating] effects of a person-environment match [mismatch] on power are the opposing motivational states accompanying low versus high power. To reiterate, high power is thought to trigger an agentic orientation (Rucker et al. 2012) and/or approach-related tendencies (Keltner, Gruenfield and Anderson 2003), characterized by freedom, rewards, self-protection, self-assertion and self-expansion, in contrast to low power, which triggers a communal orientation and/or inhibition-related tendencies, characterized by threat, punishment, and social constraints, and manifesting as greater attention paid to others and a reluctance to act without consideration of others. Not surprisingly, then, a mismatch between a

consumer's personal power and that induced by, say, vertical head movements in front of a store shelf are likely to pit these opposing motivational states against each other engendering an uncomfortable experience (Josephs et al. 2006) or what could be called, more basically, affective discomfort. As well, this is consistent, more broadly, with the person-environment fit literature that documents numerous adverse affective consequences of low P-E fit (Yu 2009).

What are the implications of this for the role of vertical shelf placement on product choice? We propose that the mismatch between consumers' personal power and that induced by their vertical head movements is likely to contribute to greater discomfort than when they experience a match between their personal and movement-induced sense of power. We assert that this discomfort will steer consumers towards more indulgent options (i.e., vices) over their prudent counterparts (i.e., virtues). Our assertion is based, most directly, on a substantial body of research on the link between affect and self-control (Andrade 2005; Andrade and Cohen 2007; Fishbach and Labroo 2007; Labroo and Patrick 2009), which suggests that negative moods produce a breakdown in self-control (Leith and Baumeister 1996) whereas positive moods tend to enhance self-control (Tice, Bratslavsky and Baumeister 2001; Fedorikhin and Patrick 2010). Given this, we would expect self-control to decline with an increase in discomfort, making it more difficult for consumers experiencing a power mismatch to resist the indulgent options, choosing these, consequently, over their prudent counterparts.

This is due, in part, to the impulse of consumers who experience greater discomfort to compensate for this through any means readily available to them (Larsen and Prizmic 2004; Tice and Bratslavsky, 2000). Given the greater affective, or hedonic, appeal of indulgent products over prudent ones (Fry 1975; Shiv and Fedorikhin 1999), the former comprise a better means of

compensating for a mismatch-based discomfort or unease than would the latter (Garg, Wansink, and Inman 2007; Tice, Bratslavsky, and Baumeister 2001). More generally, to the extent that a mismatch between a consumer's personal power and that induced by product shelf position causes affective discomfort, consumers' subsequent choices are likely to be in the service of alleviating this discomfort rather than based on deliberative thought. This tilt towards an affective, as opposed to a cognitive, choice process should also increase consumers' likelihood of choosing the typically more affectively appealing but cognitively unjustifiable indulgent option (Joseph et al., 2006; Khan, Dhar, and Wertenbroch, 2005; Schultheiss 2007; Wirth, Welsh, and Schultheiss 2006). In sum:

H2: Consumers looking down [up] to products on a low [high] retail shelf are more likely to choose an indulgent option over its prudent counterpart when they exhibit high [low] personal power, experiencing, thus, a power mismatch.

H3: Consumers who experience a power mismatch will display higher levels of affective discomfort than those who experiences a power match. This difference in affective discomfort is likely to mediate the effect of power match/mismatch on indulgent product choice.

Next, we describe six studies that test our predictions. The first study tests the predicted effect of shelf-placement induced vertical head movements on the implicit activation of power (H1). Studies 2a, 2b and 2c examine our basic outcome prediction (H2) with different manipulations of product shelf position. As well, study 2c includes an eye-level shelf position as

a baseline condition. Study 3 focuses on enhancing the internal validity of our findings by manipulating rather than measuring sense of personal power. Finally, study 4 tests for the process hypothesized to underlie our basic outcome effect (H3).

Study 1

Method

Participants and Design. Ninety-seven undergraduate students from an east coast U.S. university (35 males, 62 women; average height = 65.6 inches; SD = 4.3 inches) participated in exchange for course credit. They were randomly assigned to one of three levels of a one-factor (shelf position: 1 = high; 2 = low; 3 = eye level) between-participant design. We expect participants in the high [low] shelf position condition to display an increased [decreased] sense of power relative to those in the baseline, eye level condition.

Procedure. Participants were invited, one at a time, to enter a mock store. They were instructed to imagine that they were in a supermarket, trying to evaluate a particular brand of bottled water for possible purchase. The mock store comprised a single shelf display, located at the center of the back wall of a room (21 x 10 x 9 feet) and several units of the same bottle water brand were placed either on the top shelf, at the height of 70 inches (i.e., shelf position = high), 50 inches (i.e., shelf position = eye level, on average), or 30 inches (i.e., shelf position = low). Participants were asked to stand still in front of the display and evaluate the product by just moving their head, without actually removing the products from the shelf (this set of instructions is common to all of the studies reported in this paper; confederates ensured that instructions were

followed). After participants stood in front of the shelf for several minutes inspecting the products visually, they were asked to proceed to an adjacent room to answer some questions. Once in the other room, respondents sat in front of a computer and responded to the study measures in the following order:

Vertical Movement Induced Power. We measured the implicit activation of power by respondents' head movements using a word completion task similar to that used by Huang, Galinsky, Gruenfeld and Guillory (2011) in their examination of the power correlates of physical posture. Based on the notion that power triggers an agentic, approach-related orientation, characterized by optimism, self-assertion and self-expansion, we included four words that reflect an approach orientation: "Approach", "Direct", "Active" and "Optimist" within a word completion task comprising a total of 20 word fragments. Participants were instructed to complete these word fragments with the "first word that comes to mind." Each of the approach orientated words was scored as one if it was completed as intended, and as zero otherwise, producing a measure of implicit power activation ranging from 0 – 4. Importantly, Huang et al. (2011) find that this measure is not influenced by participants' personal sense of power.

Personal Power. Huang et al. (2011) suggest that participants' explicit appraisals of power, as opposed to its implicit activation, are driven primarily by their socially derived, personal sense of power rather than those resident in bodily postures and movements. Based on this, we assessed respondents' personal power using Anderson and Galinsky's (2006) personal power scale (M = 4.46, SD= .87; alpha=.76). Specifically, respondents were asked, as part of an ostensibly unrelated short survey, to rate (7-point scales: 1 = strongly disagree; 7 = strongly agree) the extent to which the following items represented who they were: "In your relationships

with others, you can get others to listen to what you say", "You can get others to do what you want", "Your wishes don´t carry much weight" [reverse coded], "You think you have a great deal of power," "Even if you voice them, your views have a little sway," [reverse coded] "Your ideas and opinions are often ignored," [reverse coded] "You are the leader making a group decision," "Often, you are not able to get your way [reverse coded]".

Finally, respondents indicated their gender, age, height and weight (since these physical markers had been indicated by prior research as correlates of power; Briñol et al. 2009; Freedman, 1979; Judge and Cable 2004). None of the physical markers were significantly correlated with either our dependent variable, the implicit activation of power (*p's* >.10), or the personal power measure (*p's* >.10). At the end, respondents were thanked and debriefed.

Results and Discussion

Personal Power. To confirm that our shelf position manipulation did not influence respondents' sense of personal power, we conducted a one-way ANOVA on the personal power measure with shelf position as predictor. In line with prior research (Huang et al. 2011), shelf position did not significantly influence personal power ($F(2, 96) = .414$, $p > .60$); participants who looked up to the high shelf position were no different in their personal power assessment ($M = 4.41$, $SD = .78$) than those who looked eye level ($M = 4.56$, $SD = .90$) or looked down to the low shelf position ($M = 4.59$, $SD = .75$; all *p's* > .50).

Implicit Activation of Power. To test H1, we regressed the number of approach oriented words participants generated in the word-completion task on shelf position, respondents' personal power measure and their interaction. As expected, shelf position had a significant effect

on respondents' implicit sense of power ($F(2, 96) = 4.42$, $p < .02$). Specifically, participants who looked up to evaluate the products displayed an increased sense of power, as reflected in their generation of significantly more approach oriented words ($M = 3.26$, $SD = .87$), relative to participants who looked at eye level ($M = 2.90$, $SD = .78$; $t(64) = -1.95$, $p = .05$). On the other hand, participants who looked down to evaluate the products displayed a decreased sense of power, as reflected in their generation of significantly fewer approach oriented words relative to those who looked at eye level ($M = 2.45$, $SD = 1.04$; $t(62) = -1.60$, $p = .10$), though the difference was marginally significant. Notably, the contrast between the number of approach oriented words generated when looking up to evaluate products was significantly greater than that when looking down ($t(62) = 2.61$, $p = .01$). As expected, neither the personal power measure nor its interaction with shelf placement were significant predictors (p's $> .50$).

Thus, when a product is placed in a high [low] shelf location, the head movement required to evaluate it induces an increased [decreased] sense of power compared to the baseline, eye level shelf position. However, changes in the shelf position of the evaluated product do not alter consumers' personal sense of power. Next, study 2 (with two different manipulations of shelf position and two different measures of choice preference) investigates our main outcome prediction, H2.

Study 2a

Method

Participants and Design. Eighty-six undergraduate students (73% women, height: mean = 64 inches; SD = 3.01 inches) from several universities in a major Southeast Asian city

participated in a two factor (shelf position: high versus low; personal power: measured) experiment in exchange for a small monetary remuneration. Shelf position was manipulated using shelf displays of different heights – a 47 inches high (i.e., short) display in the low shelf position condition and a 78 inches high (i.e., tall) display in the high shelf position condition - and the choice options were always placed on the top shelf of each display. Participants were recruited through a mall intercept to participate in a study about consumer behavior and were randomly assigned to one of the two shelf position conditions. Participants were invited, one at a time, to enter a mock store (22 x 13 x 9 feet). We used two dividers to create three sections, with the sections on the two extremes containing the tall and short displays. The middle section contained tables and chairs for participants to complete the questionnaire.

Procedure. Participants were instructed to imagine that they were in a supermarket, trying to make a choice between two snacks of equal price from a shelf display. Depending on their assigned condition, participants were directed to either the section containing the tall or that containing the short display. Two types of snack, namely a piece of chocolate cake with cherry topping and a serving of fruit salad, were on display in transparent plastic containers (four of each) that were placed on the top shelf of either the short or the tall display (depending on condition). Participants were asked to choose either the cake or the mixed fruit, record their choice, and then go to the next (i.e., middle) section to complete the rest of the questionnaire.

The questionnaire asked respondents to rate the extent to which they considered both chocolate cake and mixed fruit to be appealing, nutritious, fattening, expensive, and tasty (7-point scales; 1 = not at all, 7=very much), the extent to which they felt guilty eating indulgent food (7-point scales; 1 = not at all, 7=very much), and the extent to which they had strict

nutritional habits, were health conscious, impulsive, a "chocolate fanatic" and a "fruit fanatic" (7-point scales; 1=seldom would describe me 7= usually would describe me; Shiv and Fedorikhin, 1999), and, finally, how often they were on a diet (5-point scale; 1= never 5=always)(see Table 1 in the Appendix for summary statistics). They then indicated, as in study 1, their gender, height and weight. Of all these measures, only the likelihoods of being a fruit (Wald's $\chi 2 = 9.48$, $p < .01$) and chocolate fanatic (Wald's $\chi 2 = 22.68$, $p < .01$) covaried significantly with the dependent variable, and were, therefore, included as covariates. Finally, respondents evaluated the display on 7-point scales anchored by "low/high," "small/big," "narrow/wide," "bright/dark," "weak/strong," "not stable/stable," "not easy/easy to reach products," "poorly designed/well designed" (see Table 1). As intended, the tall display was rated as higher ($M_{Tall}= 4.67$) than the short display ($M_{Short}= 3.87$; $F (1, 85) = 8.98$, $p < .05$). Interestingly, the short display was rated as wider ($M_{Short}= 3.80$) than the tall display ($M_{Tall}= 3.22$; $F (1, 85) = 5.24$, $p<.05$). The remaining display-related measures did not vary across experimental conditions and, importantly, did not affect choice (all p's > .10).

After completing this questionnaire, respondents were asked to participate in a final unrelated study in which we elicited, as in study 1, their personal power using Anderson and Galinky's (2006) generalized sense of power scale (M = 4.55; SD= .77; alpha=.73). This sequence is in line with prior research that assesses the relevant trait after the central experimental task (e.g., Lalwani and Shavitt (2013) for self-construal; Chiu, Morris, Hong, and Menon (2000) for need for closure and, importantly, Rucker and Galinsky (2009) for generalized sense of power itself). We informed respondents that the objective of these measures was to learn about human characteristics, which would be used for another study. Only participants' ratings

of health consciousness were significantly correlated with their personal power ratings (r = .32, p < .01). However these health consciousness ratings were not significantly correlated with the dependent variable (Wald's $\chi 2 = 1.96$, $p > .10$). At the end, respondents were thanked and debriefed.

Results and Discussion

Indulgent choice. A logistic regression with snack choice as the dependent variable, shelf position, personal power (continuous variable), and their interaction as independent variables, and ratings of fruit and chocolate fanaticism as covariates revealed the expected interaction between shelf position and personal power (Wald's $\chi 2 = 7.67$, $p < .01$). None of the main effects were significant (Wald's $p > .10$). To facilitate interpretation and exposition of the interaction (see Figure 1a), simple slopes analyses were conducted. In line with our outcome prediction (H2), participants in the high shelf position condition (i.e., when they had to look up to evaluate the snacks) chose the indulgent option significantly more often (72% vs. 41% of the time) when their personal power was low (-1 SD = 3.78) compared to when it was high (+1 SD = 5.33; $z = 2.68$, $p < .01$). On the other hand, in the low shelf position condition (i.e., when they had to look down to evaluate the snacks), participants were more likely to choose (66% vs. 47% of the time) the indulgent option when their personal power was high compared to when it was low ($z = -2.53$, $p = .01$).

-- Insert Figure 1a around here. --

Study 2b

Method

Participants and Design. Eighty undergraduate students (60% women, height: mean = 65 inches; SD = 3.16) from several universities in a major Southeast Asian city participated in a two factor (shelf position: low versus high; personal power: measured) experiment in exchange for a small monetary remuneration.

Procedure. The study procedure was identical to study 2a with two notable exceptions. First, unlike study 2a, we used a single 70 inches tall retail display, manipulating shelf position by placing the snacks either on the top (i.e., high) or the second from the bottom (i.e., low) of its five shelves. The remaining shelves were filled with storage boxes. Second, to get a preliminary sense for the validity of our theorized process of affective discomfort, in the post-choice questionnaire participants also indicated (7-point scales, as in Shiv and Fedorikhin 1999) the extent to which their choice was driven by (a) "the rational side of me" (i.e., 1) versus "the emotional side of me" (i.e., 7) and (b) "thoughts" (i.e., 1) versus "feelings" (i.e., 7) (see Table 1). After completing this questionnaire, respondents were asked to participate in a final unrelated study in which they completed the personal power scale. This scale was averaged into an index, which showed acceptable reliability (M = 4.71; SD=.89; alpha=.76).

All the ratings of chocolate cake and mixed fruit as appealing, nutritious, fattening, expensive, and tasty (7-point scales; 1 =low, 7=high), the extent to which they felt guilty eating indulgent food, and the extent to which they had strict nutritional habits, were health conscious, impulsive, a "chocolate fanatic" and a "fruit fanatic," and how often they were on a diet (5-point scale; 1= never 5=always) did not vary across the two shelf positions or personal power levels.

Of these measures, only the likelihoods of being a fruit (Wald's $\chi 2 = 6.01$, $p < .02$) and chocolate fanatic (Wald's $\chi 2 = 20.80$, $p < .01$) covaried significantly with the dependent variable, and were, therefore, included as covariates. Participants again indicated their gender, height and weight, which, as in both prior studies, did not covary significantly with either their personal power score or the dependent variable (all *p*'s> .10).

Results and Discussion

Indulgent choice. A logistic regression with snack choice as the dependent variable (see Figure 1b), shelf position, personal power and their interaction as independent variables, and ratings of fruit and chocolate fanaticism (as in study 2a) as covariates replicated the significant interaction between shelf position and personal power (Wald's $\chi 2 = 6.20$, $p < .05$) obtained in study 2a. None of the main effects were significant (Wald's $p > .10$). As in study 2a, participants were more likely to make an indulgent choice (i.e., chocolate cake) placed on the high shelf position when their personal power was low (-1 SD = 3.82) compared to when it was high (+1 SD = 5.60) (75% vs. 50%; $z = 3.88$, $p < .001$). However, when options were place on the low shelf position condition, participants were more likely to choose the indulgent option when their personal power was high rather than low (76% vs. 59%) ($z = -2.77$, $p < .01$).

-- Insert Figure 1b around here. –

Affective decision process. The two items used to assess whether the choices made were based on feelings/emotions (i.e. affect), as opposed to rational thought (i.e., cognition), were

correlated (r = .61) and were averaged into a composite variable. We ran a linear regression of this composite variable as the dependent variable with shelf position, personal power and their interaction as independent variables and not only ratings of fruit and chocolate fanaticism but also gender as covariate, since, in line with prior research linking gender to affective regulation (Timmers, Fischer and Manstead, 1998), it was significantly correlated with the dependent variable. This regression revealed a significant interaction between shelf position and personal power (t = -1.96, p = .05). None of the main effects was significant (p > .10). Simple slopes analyses revealed that when choosing from the higher shelf position, low personal power respondents were more likely to choose based on affect (M = 5.41) than high personal power respondents (M = 4.39; t = -2.01, p < .05). Conversely, when choosing from a lower shelf position, high personal power participants were more likely to choose based on affect (M = 5.37) than the low personal power participants (M = 5.04), though not significantly so (p > .20).

Study 2c

Method

Participants and Design. Ninety-three undergraduate students (59% women, height: mean = 62 inches; SD = 2.27) from a major East Coast U.S. university participated in a three-factor design (shelf position: 1 = low; 2 = high; 3 = eye level; personal power: measured) experiment in exchange for a small monetary remuneration. We used apples as the prudent option and chocolate cupcakes as the indulgent option. Eight participants were not included in the analysis because they did not respond to whole sections of the questionnaire.

Procedure. As in study 2b, we used a single 70 inches tall retail display, manipulating shelf position by placing the snacks either on the top (i.e., high), on the second shelf (i.e. eye level), or the second shelf from the bottom (i.e., low) of its five shelves. The procedure was identical to study 2b, except in the following ways. First, we assessed product preference, the main dependent variable, using a continuous choice likelihood scale: Participants were asked "if the experimenter was going to give you a snack" which one they would be likely to choose (Likelihood of choice ranging from -15 (Certainly Chocolate) to 15 (Certainly Fruit)). Second, we replaced the "chocolate fanatic" and "fruit fanatic" measures with overall evaluations of the two choice options (7-point scales: 1= Bad, 7 = Good; 1 = Do not like at all, 7 = Like a lot). As in prior studies, the personal power scale items were averaged into an index, which showed acceptable reliability (M = 4.49; SD = .86; alpha = .75).

Again, the respondents' ratings of chocolate cupcakes and apples as appealing, nutritious, fattening, expensive, and tasty (7-point scales; 1 =low, 7=high), the extent to which they felt guilty eating indulgent food (7-point scales; 1 =not at all, 7=a lot), the extent to which they were health conscious (7-point scales; 1 =not at all, 7=a lot), and how often they were on a diet (7-point scale; 1= never, 7=always) did not vary across the three shelf positions or personal power levels. Of these measures, only the overall evaluations of chocolate cupcakes and apples covaried significantly with the dependent variable, and were, therefore, included as covariates. Participants again indicated their gender, height and weight, which, as in all prior studies, did not co-vary with their personal power score or the dependent variable (all *p*'s> .10).

Results and Discussion

Indulgent choice (choice likelihood reverse coded so higher values = more indulgent choice). We ran a moderated regression (Model 1 of the PROCESS SPSS macro; Hayes, 2013) with snack choice likelihood (reversed coded) as the dependent variable (see Figure 1c), shelf position (manipulated), personal power (continuous) and their interaction as independent variables, and overall evaluations of chocolate cupcakes and apples as covariates replicated the significant interaction between shelf position and personal power ($F(2, 83) = 2.08$, $p < .05$) obtained in study 2a and 2b. None of the main effects were significant ($p < .10$). As in the prior studies, in the high shelf position condition, participants were more likely to make an indulgent choice when their personal power was low (-1 SD = 3.63) rather than high (+1 SD = 5.35), albeit marginally so (Low power = 1.07, High power = -3.92; $t(26) = -1.75$, $p < .09$). On the other hand, in the low shelf position condition, participants were more likely to choose the indulgent option when their personal power was high rather than low (High power = 4.18, Low power = -2.20; $t(30) = 2.04$, $p < .05$). At eye level, however, there was no difference in terms of the choice likelihood of the indulgent option for respondents with low (.53) versus high personal power (-.22; $t(26) = -.37$, $p > .70$).

-- Insert Figure 1c around here –

In summary, studies 2a, 2b and 2c provide evidence for our basic outcome prediction (H2) across different respondent populations (South East Asian and US), different operationalizations of shelf height, and both choice likelihood and, importantly, real choice. As well, study 2b provides some evidence for the affective process theorized to underlie this basic

preference interaction. Finally, study 2c includes a baseline, eye-level condition to show that, when choice options are placed at eye-level, respondents' choice likelihood does not hinge on their sense of personal power.

Our next study, study 3, focuses on enhancing the internal validity of the study 2 finding by manipulating consumers' sense of personal power, based on the sense provided by prior research that because it is stored as a trait in memory (Galinsky et al., 2003), it can, together with the behavioral tendencies associated with it, be primed (Bargh, Raymond, Pryor, & Strack, 1995; Chen, Lee-Chai, and Bargh, 2001). This also allows us to demonstrate more clearly the effect of power match versus mismatch on indulgent choice.

Study 3

Two hundred four undergraduate students (47% women, height: M = 67 inches; SD = 4.19 inches) at an east coast university in the U.S. were randomly assigned to a 2 (primed personal power: low vs. high) by 2 (shelf position: low vs. high) between-participants design. Six outliers were removed from the analysis because they did not report looking up, mostly due to their height (74 -77 inches). Data was collected at two different collection times, due to subject recruitment limitations, using either chocolate cake and fruit salad or chocolate cookies and apples as stimuli. Such use of multiple products is not unusual in this stream of research (Dubois, Rucker, and Galinsky 2012; Inesi, Botti, Dubois, Rucker, and Galinsky 2011).

Participants were asked to participate in two unrelated studies in exchange for course credit. First, they completed the power priming task portrayed as a study about human

characteristics. Power was manipulated through an experiential prime procedure used by Galinsky et al. (2003): Participants were seated at individual work stations and asked to recall, and describe on the computer, a particular incident in which they had power over another individual or individuals (high-power condition) or someone else had power over them (low-power condition).

Then, they were escorted to the same mock store as in study 1 in an adjacent room, wherein a retail shelf contained their options of chocolate cake and fruit salad or chocolate cookies and fruit (apples), which represented the indulgent and prudent choice respectively. As in study 2c, participants were asked "if the experimenter was going to give you a snack" which one they would be likely to choose (Likelihood of choice ranging from -15 (Certainly Chocolate) to 15 (Certainly Fruit)). We manipulated shelf position height by placing the snacks either on the top shelf (i.e., high) or the second from the bottom shelf (i.e., low) of a single five-shelf (i.e., top, eye-level, waist-level, knee-level and ankle-level) 70 inches display.

Participants then returned to their workstations, where we measured snacks evaluation and choice, food preference, display ratings and demographics as in studies 2a, 2b and 2c. Of these measures, again, only the likelihoods of being a fruit ($r = .41$, $p < .01$) and chocolate fanatic (= -.30, $p < .01$) covaried significantly with the dependent variable (choice likelihood), and were, therefore, included as covariates. Finally, as in studies 2a, 2b and 2c, neither gender, height and weight, nor the ratings of display characteristics covaried significantly with the dependent variable (all p's> .10).

Results and Discussion

Manipulation Check. In line with Galinsky et al. (2003), we had a coder classify all the different power relationships described in the essays and rate each essay based on how much power the participant reported having, using a 7-point Likert scale (1 = none; 7 = a lot). We had a second coder rate 25% of the essays and since the reliability was high ($r = .75$, $p < .01$), we used the first coder's ratings. In terms of the typology of power relationships described, the major groups were: manager/subordinate (25%), job interview (12%), parent/child (10%), with a teacher (9%), with friends (9%), with a club leader (7%), and between peers (7%). As expected, participants described themselves as having significantly more power in the high-power (M = 6.47, SD = .75) essays than in the low-power essays (M = 2.87, SD = 1.31; t (202) = 18.52, $p<.01$).

Indulgent Choice (choice likelihood reverse coded so higher values = more indulgent choice). An ANCOVA with primed personal power (high vs. low) and shelf position (high vs. low), along with ratings of fruit and chocolate fanaticism, the date of data collection and all higher interactions as predictors of choice likelihood (reversed coded) revealed a significant interaction F (1, 187) = 5.83, $p < .02$) between primed personal power and shelf position. The only other significant predictor was the main effect of data collection date (F (1, 187) = 8.75, p = .01), which is not surprising since the stimuli were not exactly the same (cookies preferred over chocolate cake; F (1, 201) = 6.29, $p<.02$). As in the prior studies, and predicted by H2 (see Figure 2), participants choosing from the higher shelf position indicated a lower likelihood of choosing the indulgent option (i.e., cookies or cake) versus the prudent option (fruit) when they had been primed with high personal power (M = -3.60, SD = 11.48) rather than with low personal power (M = 3.02, SD = 11.63, F (1, 89) = 7.33, $p <.01$). The opposite pattern holds,

although only directionally, when choosing from the lower shelf position, those in the low primed personal power condition indicated a lower likelihood of choosing the indulgent over the prudent option (M = 1.42, SD = 11.42) than those in the high primed power condition (M = 3.21, SD = 10.79; F (1, 97) = .63, p >.30).

To examine more directly the power match/mismatch – indulgent choice prediction, we recoded the experimental conditions as match (i.e., high primed power/high position and low primed power/low position) and mismatch (i.e., high primed power/low position and low primed power/high position). The simple contrast was, as expected, significant (F (2, 186) = 5.24, p< .03): respondents' preference for the indulgent option (i.e., cookies or cake) over the prudent option (fruit) was significantly greater when there was a mismatch between their primed power state and shelf position (M = 3.11, SD = 11.16) than when there was a match (M = -1.04, SD = 11.63).

-- Insert Figure 2 around here –

In sum, study 3 replicated the predicted interaction between shelf position and personal power on indulgent choice obtained in study 2 using a manipulation of personal power (as in Galinsky et al. 2003): consumers' preference for the indulgent option over its prudent counterpart is significantly higher when there is a mismatch, as opposed to a match, between their personal power state and that induced by the shelf position of the choice options. Next, our final study tests our process prediction, H3, using explicit measures of affective discomfort (Elliot and Devine 1994; Levav and Zhu 2009). Given the stronger results obtained in study 3 for

high primed power, we restricted, for the sake of simplicity, our test of the retail shelf height-induced power match/mismatch - indulgent choice link to the high power condition, comparing the effects, in terms of affective discomfort and indulgent choice, of both looking up to a high retail shelf (i.e., power match) and looking down to a low retail shelf (i.e., power mismatch) to a baseline, eye-level shelf condition.

Study 4

Method

Participants and Design. One hundred twenty-two undergraduate students (61% women, height: M = 66.7 inches; SD = 4.42 inches) from an east coast university in the U.S. were primed with high personal power before being randomly assigned to one of three shelf positions: high (i.e., power match), low (i.e., power mismatch) or eye level (i.e., baseline). Six participants were dropped for either not following the power priming instructions or not completing one of the two parts of the two-part study that followed. All participants chose between chocolate muffins (indulgent choice) and apples (prudent choice).

Procedure. Participants were asked to participate in two unrelated studies in exchange for $10 compensation. As in study 3, high personal power was primed experientially (Galinsky et al. 2003): Participants were seated at individual work stations and asked to recall, and describe on the computer, a particular incident in which they had power over another individual or individuals. An independent coder read all the power-prime essays and indicated whether instructions had been followed and the priming procedure had been completed successfully.

After completing the high power priming task, participants were escorted to the same mock store as in study 2c and study 3 in an adjacent room with a retail shelf displaying chocolate muffins and apples. The choice options were placed either on the top shelf, at the height of 70 inches (shelf position = high), at the height of 50 inches (shelf position = eye level, on average), or on a much lower shelf, at the height of 30 inches (shelf position = low) of a retail display.

Participants were asked to visually evaluate, keeping a standing position, the options on the shelf. After three minutes, a confederate came back with an iPad and asked participants to answer a set of questions keeping the same position. First, we assessed their level of affective discomfort in an open-ended manner by telling them: "We want to know what you are feeling right now. Below, please list five words that reflect your feelings right now." After that, participants were asked to indicate their level of affective discomfort (Garbarino and Edell 1997; Levav and McGraw 2009) through explicit self-ratings (Elliot and Devine 1994; Levav and Zhu 2009) of the extent to which they felt: Confined, Uneasy, and Anxious (7-point scale; 1 = Does not apply at all; 5 = Applies very much; alpha=.84) (see Table 3 for summary statistics). At that point, respondents were asked to examine the two snack options on the shelf again and indicate, using the same measure as in study 3 (i.e., a continuous likelihood scale from +15 (apple) to -15 (chocolate muffin), their relative preference for the two available options.

Next, respondents were asked to sit back down in front of desktop computer and complete a survey in which they were asked to rate the two snacks in terms of their overall evaluations of the two choice options (7-point scales: 7 = Good, 1= Bad; 7 = Like a lot, 1 = Do not like at all) as well as their more specific perceptions of how appealing, nutritious, fattening, tasty, and expensive the snacks were (7-point scales; 1 =low, 7=high). Respondents then indicated the

extent to which they felt guilty eating indulgent foods, the extent to which they had strict nutritional habits, were health conscious, or were on a diet (7-point scale; 1= never 7=always), and, finally, display ratings and demographics as in all the prior studies. Of all the measures, only the overall evaluations (Good/Bad; Like/Not like) and the evaluation of how expensive the fruit option was (Apple expensive) co-varied significantly with the dependent variable (fruit: Good/Bad r = .481, $p < 0.01$; Like/Not like r = .567, $p < 0.01$; chocolate: Good/Bad r = -.322, $p < 0.01$; Like/Not like r = -.579, $p < 0.01$) or the mediating variable (Apple expensive: r = .377, $p < 0.01$) and were included as covariates.

Results

Indulgent Choice. An ANCOVA with shelf position (power match, power mismatch, and baseline) as predictor of choice likelihood (reversed coded; higher values = more indulgent choice), along with the overall evaluations of the fruit and chocolate options as covariates, revealed a significant effect of shelf position ($F (2, 115) = 2.95$, $p = .05$). As in our prior studies, participants in the power mismatch condition (i.e., choice placed on low shelf position) indicated a higher likelihood of choosing the indulgent option (M = 2.02, SD = 10.97) compared to those in the power match condition (i.e., choice placed on high shelf position) (M = -2.10, SD = 10.91; $F (2, 83) = 4.28$, $p < .05$). The baseline condition (eye level shelf position) fell between the two (M = -.65, SD = 9.82) but was not significantly different from either (all *p*'s> .10).

Affective Discomfort: Open-Ended Measure. We analyzed the extent to which respondents indicated affective discomfort in the feelings listing task by creating a binary variable that was one if participants listed one or more (very few participants listed more than one discomfort-

related feeling) discomfort-related words (e.g., conflicted, confused, anxious, worried, unsure, stressed, and awkward) and zero if they did not (e.g., Leith and Baumeister 1996 or Liu and Aaker, 2007). As expected, responses to the open-ended question indicated more reported discomfort-related feelings (55%) when in the power mismatch condition compared to the power match condition (43%; Wald's χ^2 (1) = 4.37, p <.05 with evaluations of the fruit and chocolate as covariates). In the baseline condition, participants reported discomfort-related feelings 40% of the time, which was not significantly different from the match condition (χ^2 (1) = 0.14, p >.50).

Affective Discomfort Ratings. An ANCOVA of the respondents' affective discomfort ratings with evaluations of the fruit (including how expensive) and chocolate options as covariates revealed, as expected, a significant effect of shelf position (F (2, 115) = 4.05, p < .05). Participants in the power match (i.e., high shelf position) condition expressed less discomfort (M= 3.56, SD = 1.38) compared to those in the power mismatch (low shelf position) condition (M = 4.19, SD = 1.33; F (1, 82) = 6.29, p < .05). Discomfort ratings (M= 3.70, SD = 1.46) of the participants in the baseline condition (i.e., choice set at eye level) fell between the two (the contrast with the mismatch condition was significant (F (1, 77) = 5.18, p <.05) but, with the match condition, it was not, p > .10). In sum, in line with H3, a retail shelf position-induced power mismatch increased affective discomfort relative to a power match.

To test for mediation by affective discomfort (H3), we applied a mediated bootstrap procedure (Model 4 of the PROCESS SPSS macro; Hayes, 2013) to the continuous discomfort rating data due to its greater suitability, compared to the binary feeling list-based measure of discomfort, for this procedure (Iacobucci, 2008). We expected the indirect effect of power match/mismatch on the likelihood of indulgent choice through the affective discomfort ratings to

be significant. Upon specifying 10,000 bootstrap resamples, the analysis confirmed the indirect effect of power match/mismatch on the likelihood of choice of the indulgent option through the ratings of affective discomfort (β= .3317, SE = .2391, 95% CI = .0027 to .9816).

In sum, supporting H3, the mismatch between respondents' personal sense of power and that triggered by the retail environment increased affective discomfort, increasing, in turn, their preference for the indulgent option. In order to replicate the pattern of results reported in study 4, based on conditions of retail shelf position-induced power match vs. mismatch, in the case of a low, rather than high, power prime, we ran a follow-up study, described next. We eliminated the baseline, eye-level condition for the sake of simplicity.

Ninety two undergraduate students (69% women; height: M = 66.7, SD = 3.11 inches) from an east coast university in the U.S. and a European business school followed the exact same procedure as that in study 4. We primed low personal power experientially (Galinsky et al. 2003) and an independent coder read the prime essays and indicated whether instructions had been followed and the priming procedure completed. Eight participants were dropped for either not following instructions or not completing the procedure. Next, participants were randomly assigned to one of two shelf positions that displayed their choice options: high (i.e., power mismatch) and low (i.e., power match). As in study 4, participants were asked to indicate their level of affective discomfort through explicit self-ratings of the items: Confined, Anxious and Inferior (7-point scale; 1= never 7=always). We also included in this study a direct measure of discomfort (0 = Very comfortable; 10 = Very uncomfortable). This measure was rescaled to a 7-point scale and averaged with the participants' ratings on the three specific measures (alpha=.80) to comprise the affective discomfort measure. All participants again chose between chocolate

cake/muffins (indulgent choice) and fruit/apples (prudent choice) using the same likelihood scale as in study 4.

Results using an ANCOVA with shelf position (power match vs. mismatch) as a predictor of choice likelihood (reversed coded; higher values = more indulgent choice), along with the date of data collection as a covariate, replicated the significant effect of shelf position ($F(2, 83) = 3.76$, $p = .05$). Repeating the pattern found for high personal power prime in study 4, participants in the power mismatch condition (i.e., in this case, choice options in high shelf position) indicated a higher likelihood of choosing the indulgent option ($M = .63$, $SD = 10.05$) compared to those in the power match condition (i.e., choice options in low shelf position) ($M = -3.41$, $SD = 9.86$). Similarly, an ANOVA of the respondents' affective discomfort ratings also replicated the significant effect of shelf position ($F(2, 83) = 9.39$, $p < .01$). Participants in the power match condition expressed less discomfort ($M = 3.83$, $SD = .94$) compared to those in the power mismatch condition ($M = 4.43$, $SD = .90$). To test for mediation by affective discomfort, we applied a mediated bootstrap procedure (Model 4 of the PROCESS SPSS macro; Hayes, 2013) to the affective discomfort measure. Upon specifying 10,000 bootstrap resamples, the analysis confirmed the indirect effect of power match/mismatch on likelihood of choice of the indulgent option through the ratings of affective discomfort ($\beta = .4823$, $SE = .3285$, 95% CI =.0187 to 1.4094).

General Discussion

Massive marketer resources are devoted to implementing optimal product displays in retail environments based on the belief that product display prominence, position and accessibility, all

influence choice. This research takes a psychological, power perspective (Rucker et al. 2012) to demonstrate that the vertical placement of choice options in a retail display interacts with the personal sense of power consumers bring to the retail context to drive indulgent choice: consumers choosing from an array located on a higher [lower] shelf, requiring the consumers to look up [down], are more likely to pick an indulgent choice over its prudent counterpart when they come to the retail context with a lower [higher] sense of personal power. As well, we provide some evidence for the process theorized to underlie this interaction: a mismatch between consumers' personal sense of power (e.g., high) and that triggered by the vertical shelf position of products in a retail environment (e.g., low) produces an increase in affective discomfort, steering them, consequently, towards indulgent choice.

Six studies provide support for the proposed hypotheses: The first study tests the predicted effect of shelf-placement induced vertical head movements on the implicit activation of power (H1). Studies 2a, 2b and 2c support our basic outcome prediction (H2) with different manipulations of product shelf position. Study 3 primes (high/low) sense of personal power (Galinsky et al., 2003) to strengthen the internal validity of our outcome prediction test. Finally, study 4 delves into the power mismatch-based affective discomfort process hypothesized to underlie our basic outcome effect (H3).

Conceptual Implications

This paper advances our understanding of consumer responses to retail product displays in three fundamental ways. First, and most basically, our research is the first, to the best of our knowledge, to bring a motivational perspective to consumer responses to product placement on

the retail shelf (i.e., retail shelf position). The burgeoning research in this domain (see Valenzuela and Raghubir 2015 for a recent review) has thus far taken a perceptual or cognitive perspective, focused on the attentional and inferential effects of retail shelf position. These effects are rooted, in turn, in consumers' meta-beliefs (e.g., higher is better) and/or a broader host of biological, cultural, contextual, and learned factors (e.g., right is better than left) (Valenzuela et al. 2013). Most recently, Deng et al. (2016) demonstrate, for instance, that processing fluency borne of the match between the human binocular vision field and the dominant direction of eye movements increases variety seeking, and attendant decision confidence and satisfaction, from horizontal (vs. vertical) product displays. In contrast, by locating the preference-altering effects of shelf position in a power mismatch-based aversive affective state, rather than merely the perceptions of or inferences regarding the choice options, this paper comprises a novel, motivational complement to extant conceptualizations of retail shelf position effects. Consumers' retail experiences are characterized, no doubt, by a complex configuration of motivational states, and this paper represents a small but important step in elucidating the role of these motivations in product preferences. More specifically, our research implicates vertical shelf position as a driver of these motivational states, pointing to fruitful future investigations regarding the motivational, as opposed to the perceptual or cognitive, dimensions of retail displays.

Second, while virtually all prior research on the effects of retail product displays locates these in the position or, more broadly, arrangement, of the choice options on the shelf (i.e., the retail environment per se), this paper establishes the consumer herself as a crucial moderator of these display effects. In other words, in their focus on the determining the effects of the different

elements of shelf position (e.g., left versus right, and up versus down; Valenzuela et al. 2013; horizontal versus vertical; Deng et al. 2016) on consumer reactions, prior research has largely bypassed the possible role of consumer-specific factors in such reactions. For instance, even though consumers may vary on the cultural, contextual, and learned factors (e.g., language) that guide the belief that "right is better than left," Valenzuela and Raghubir (2015) predict a main effect of horizontal shelf location on product inferences. In contrast, our research is premised on the plausible likelihood that not all consumers will react in the same manner to these focal elements of retail displays; instead, the traits/dispositions they bring to the retail context are likely to interact with these display elements in driving choice. Specifically, we show that consumers' likelihood of making indulgent choices from high versus low shelf positions hinges critically on the personal sense of power they bring to the retail context, resulting in opposite choice patterns for the high personal power consumers as opposed to low personal power ones.

Our explicit consideration of the consumer-contingent effects of retail product displays opens up natural pathways for future research, aimed at establishing a more nuanced, consumer-specific understanding of retail display effects. These can range from individual differences in perceptual and cognitive skills/expertise to more socially/culturally determined traits such the one examined in this paper. For instance, recent work (e.g. Zhang, Winterich and Mittal, 2010) documents a link between consumers' cultural orientation (e.g. power distance) and their impulsive purchases, especially for vice products. Data collection in both Southeast Asia and the U.S. allowed us to replicate findings in countries with disparate power orientations/distances. However, how these cultural traits might interact with environmentally induced sources of power found in any given consumption context would certainly be worth examining. As well, the

relationship of power to status, defined as the extent to which an individual or group is respected or admired by others (Magee and Galinsky 2008), is likely to vary across cultures, and disentangling the nature of these two related constructs and their roles in consumer reactions to retail product displays would be an important future research step.

More specifically, the retail display effects documented in this paper are anchored on the theoretical notion of a match (versus mismatch) between the personal sense of power consumers bring to the retail context and that triggered by the retail environment itself. Notably, while our focus, in terms of the latter source of power, was on vertical shelf position because it is a defining dimension of retail displays, it would be very interesting to examine other dimensions on which a (match versus mismatch) can have preference-altering effects. For instance, it is plausible that other body movements that are incongruent with the norm (i.e., a mismatch), such as reaching for something on the shelf with one's left [right] hand when one is right [left] handed, or even having to read product information in small print when one is nearsighted, may engender affective discomfort, either directly or through changes in felt powerfulness. Should these mismatches produce similar effects on indulgent, or for that matter other kinds of, choice, it would help establish the broader validity of our person-environment fit account of retail display effects.

Third, this paper is the first, to the best of our knowledge, to implicate affective mechanisms to underlie retail display effects. Specifically, while prior research has focused primarily on the information processing changes wrought by different types of shelf positions/configurations (e.g., see Figure 5, Deng et al. 2016), our findings underscore the driving role of a power mismatch-based increase in affective discomfort in the vertical shelf

position – indulgent choice relationship; the effect of power on indulgent choices in the retail context seems to be located not as much in the vertical shelf position-based ergonomics of power as on the fit consumers experience between this ergonomically-induced power and their more enduring, personal sense of it. In this, our findings align with the broader and considerable literature on fluency or fit (see Schwarz 2006 for recent review), higher levels of which are associated with more positive affect. Accordingly, it would be interesting for future research to examine more explicitly the role of fluency, if any, in choices between prudent and indulgent options, both in a retail setting and beyond. At the same time, it would be important to unearth the possibly culture-contingent role, if any, of specific types of social emotions (e.g., pride, primarily in Western cultures; embarrassment, primarily in Eastern cultures) in the power-based effects documented in this paper.

Aside from the contributions of this research to our understanding of consumer reactions to retail displays, it also advances our understanding of "how power shapes…what consumers value" (Rucker, Galinsky, and Dubois, 2012, page 352). At the most basic level, while a majority of prior research on power in the consumer domain has focused on its influence on the demand for goods that either reinforce or restore status, our research implicates power as a driver of indulgent choices. To the extent that certain status products can also be viewed by consumers as indulgences, it would be interesting for future research to examine the role of power at the nexus of status and indulgence. More specifically, our research goes beyond the standard power-consumption link to shed light on how different sources of power interact to influence product choices. However, further research is needed to verify the extent to which the documented effects generalize to different contexts. For instance, what if the product packages on display

have human faces on them (e.g., that of a famous and powerful athlete on a Wheaties box)? Will our documented effects hold in such cases, or might having to "look up" symbolically to another person or "looking down" on someone reverse our basic prediction since looking up to someone signals subservience whereas looking down on another signals dominance? Similarly, might our effects hold if instead of looking up or down, consumers stand on their tip toes or crouch, keeping the products at eye level? Clearly, this would depend on the extent to which such movements are also tied to the implicit activation of power.

Practical Implications

In general, our findings point to the need for marketers looking to capitalize on the FMOT opportunity to understand not just the environmental triggers of product-relevant thoughts and feelings (e.g., Levav and Zhu, 2009; Meyers-Levy and Zhu, 2007), but also how these interact with the innate dispositions of their target markets, no doubt a more challenging task. First of all, our research indicates that product displays may favor physical movements, which have been found to be connected to individual's sense of power and self-esteem (e.g., Carney, Cuddy, and Yap, 2010; Huang et al., 2011). Furthermore, it implies, more specifically, that marketers and policy makers looking to encourage prudent, as opposed to indulgent consumption, particularly in the food domain (Moss, 2013), need to ensure, among other things, that their retail atmospherics and more specifically, product displays, induce experiences and potentially, embodied cognitions, of power and other similar constructs, that match those that are naturally tied to their consumers' dispositions. In the case, specifically, of how product displays contribute to consumers' directed physical movements, triggering implicitly their sense of high versus low

power, effective in-store management could possibly take the form of adapting food shelf placements in different socio-demographic neighborhoods in ways that discourage both socially advantaged (i.e., high status) and disadvantaged (i.e., low status) consumers from making indulgent food choices.

Relatedly, prior research suggests that consumers make price inferences based on products' vertical shelf space position (i.e., higher equals better and more expensive; Valenzuela and Raghubir, 2009; Nelson and Simmons, 2009) and, thus, examining the interplay between shelf location-triggered power and product-specific quality inferences cued by shelf height comprises an interesting avenue for future investigation. As well, power can be triggered not just by where products are displayed on retail shelves but also other elements of the retailing context (e.g., the salesperson, the physical environment, including layout, as well as the other customers comprising the social environment). Clearer implications for how both retailers and public policy makers might harness the overall dynamics of power in the retail context to their advantage hinge on a more comprehensive understanding of how these disparate retail elements come together to influence, among other things, a consumer's affective state.

References

Anderson, Cameron and Jennifer L. Berdahl (2002), "The Experience of Power: Examining the Effects of Power on Approach and Inhibition Tendencies," *Journal of Personality and Social Psychology*, 83(6), 1362-1377.

Anderson, Cameron and Adam D. Galinsky (2006), "Power, Optimism, and Risk-Taking," *European Journal of Social Psychology*, 36(4), 511-536.

Andrade, Eduardo B. (2005), "Behavioral Consequences of Affect: Combining Evaluative and Regulatory Mechanisms," *Journal of Consumer Research*, *32*(3), 355-362.

Andrade, Eduardo B. and Joel B. Cohen (2007), "On the Consumption of Negative Feelings," *Journal of Consumer Research*, *34*(3), 283-300.

Atalay, A. Selin, H. Onur Bodur, and Dina Rasolofoarison (2012), "Shining in the Center: Central Gaze Cascade Effect on Product Choice," *Journal of Consumer Research*, 39(4), 848-866.

Bargh, John A., Paula Raymond, John B. Pryor, and Fritz Strack (1995), "Attractiveness of the Underling: An Automatic Power→ Sex Association and Its Consequences for Sexual Harassment and Aggression," *Journal of Personality and Social Psychology, 68*(5), 768-781.

Beck, Aryel, Lola Cañamero, and Kim A. Bard (2010), "Towards an affect space for robots to display emotional body language," *Ro-man*, IEEE.

Bodner, Ronit, and Drazen Prelec (2003), "Self-signaling and Diagnostic Utility in Everyday Decision Making," *The Psychology of Economic Decisions*, 1, 105-26.

Briñol, Pablo, Richard E. Petty, and Benjamin Wagner (2009), "Body Posture Effects on Self-Evaluation: A Self-Validation Approach," *European Journal of Social Psychology*, 39, 1053-1064.

Carney, Dana R., Amy JC Cuddy, and Andy J. Yap (2010), "Power Posing: Brief Nonverbal Displays Affect Neuroendocrine Levels and Risk Tolerance," *Psychological Science*, 21(10), 1363-1368.

Chandon, Pierre, J. Wesley Hutchinson, Eric T. Bradlow, and Scott H. Young (2009), "Does In-Store Marketing Work? Effects of the Number and Position of Shelf Facings on Brand Attention and Evaluation at the Point of Purchase," *Journal of Marketing*, 73 (6), 1-17.

Chatman, Jennifer A. (1989), "Improving Interactional Organizational Research: A Model of Person-Organization Fit," *Academy of Management Review*, 14(3), 333–349.

Chen, Serena, Annette Y. Lee-Chai, and John A. Bargh (2001), "Relationship Orientation as a Moderator of the Effects of Social Power," *Journal of Personality and Social Psychology*, 80(2), 173–187.

Chen, Serena, Carrie A. Langner, and Rodolfo Mendoza-Denton (2009), "When Personal and Role Power Fit: Implications for Self-Expression and Self–Other Congruence," *Journal of Personality and Social Psychology*, 96(3), 710-727.

Chiu, Chi-yue, Michael W. Morris, Ying-yi Hong, and Tanya Menon (2000), "Motivated Cultural Cognition: The Impact of Implicit Cultural Theories on Personal Attribution Varies as a Function of Need for Closure," *Journal of Personality and Social Psychology*, 78(2), 247-259.

Deng, Xiaoyan, Barbara E. Kahn, H. Rao Unnava, and Hyojin Lee (2016), "A "Wide" Variety: Effects of Horizontal Versus Vertical Display on Assortment Processing, Perceived Variety, and Choice," *Journal of Marketing Research*, 53(5), 682-698.

Dubois, David, Derek D. Rucker, and Adam D. Galinsky (2012), "Super Size Me: Product Size as a Signal of Status," *Journal of Consumer Research*, 38(6), 1047-1062.

Elliot, Andrew J. and Patricia G. Devine (1994), "On the motivational nature of cognitive dissonance: Dissonance as psychological discomfort," *Journal of Personality and Social Psychology*, 67(3), 382-394.

Fedorikhin, Alexander and Vanessa M. Patrick (2010), "Positive Mood and Resistance to Temptation: The Interfering Influence of Elevated Arousal," *Journal of Consumer Research*, 37(4), 698-711.

Fishbach, Ayalet and Aparna A. Labroo (2007), "Be Better Or Be Merry: How Mood Affects Self-Control," *Journal of Personality and Social Psychology*, 93(2), 158-173.

Freedman, Daniel G. (1979), *Human Sociobiology*, New York: Free Press.

Fry, Prem S. (1975), "Affect and Resistance to Temptation," *Developmental Psychology*, 11(4), 466-472.

Galinsky, Adam D., Deborah H. Gruenfeld, and Joe C. Magee (2003), "From Power to Action," *Journal of Personality and Social Psychology*, 85(3), 453-460.

Garbarino, Ellen C. and Julie A. Edell (1997), "Cognitive Effort, Affect, and Choice," *Journal of Consumer Research*, 24(2), 147-158.

Garg, Nitika, Brian Wansink, and J. Jeffrey Inman (2007), "The Influence of Incidental Affect on Consumers' Food Intake," *Journal of Marketing*, 71(1), 194-206.

Hall, Judith A., Erik J. Coats, and Lavonia Smith LeBeau (2005), "Nonverbal Behavior and the Vertical Dimension of Social Relations: A Meta-Analysis," *Psychological Bulletin*, 131(6), 898-924.

Hayes, Andrew F. (2013), *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*, New York: Guilford Press.

Higgins, E. Tory (1987), "Self-Discrepancy: A Theory Relating Self and Affect," *Psychological Review*, 94(3), 319-340.

Huang, Li and Adam D. Galinsky (2011), "Mind–Body Dissonance Conflict between the Senses Expands the Mind's Horizons," *Social Psychological and Personality Science*, *2*(4), 351-359.

Huang, Li, Adam D. Galinsky, Deborah H. Gruenfeld, and Lucia E. Guillory (2011), "Powerful Postures versus Powerful Roles. Which is the Proximate Correlate of Thought and Behavior?" *Psychological Science*, 22(1), 95-102.

Iacobucci, Dawn (2008). Mediation analysis (No. 156). Sage: Thousand Oaks, CA.

Inesi, M. Ena, Simona Botti, David Dubois, Derek D. Rucker, and Adam D. Galinsky (2011), "Power and Choice Their Dynamic Interplay in Quenching the Thirst for Personal Control," *Psychological Science*, 22(8), 1042-1048.

Izard, Carroll E. (1993), "Four Systems for Emotion Activation: Cognitive and Noncognitive Processes," *Psychological Review*, 100(1), 68.

Josephs, Robert A., Jennifer Guinn Sellers, Matthew L. Newman, and Pranjal H. Mehta (2006), "The Mismatch Effect: When Testosterone And Status Are At Odds," *Journal of Personality and Social Psychology*, 90(6), 999-1013.

Judge, Timothy A. and Daniel M. Cable (2004), "The Effect of Physical Height on Workplace Success and Income: Preliminary Test of a Theoretical Model," *Journal of Applied Psychology*, *89*(3), 428-441.

Keltner, Dacher, Deborah H. Gruenfeld, and Cameron Anderson (2003), "Power, Approach, and Inhibition," *Psychological Review*, 110(2), 265-284.

Khan, Uzma, Ravi Dhar, and Klaus Wertenbroch (2005), "A Behavioral Decision Theory Perspective on Hedonic and Utilitarian Choice," in S. Ratneshwar and David Glen Mick (eds.), *Inside Consumption: Frontiers of Research on Consumer Motives, Goals, and Desires* (pp. 144-165). London: Routledge.

Koo, Minkyung, Mina Kwon, and Sharon Shavitt (2012), "A Weight on Your Shoulders Makes You Pull Your Weight," in *NA - Advances in Consumer Research*, 40, Zeynep Gürhan-Canli, Cele Otnes, and Rui (Juliet) Zhu (eds.), Duluth, MN: Association for Consumer Research, 1051-1051.

Labroo, Aparna A. and Vanessa M. Patrick (2009), “Psychological Distancing: Why Happiness Helps You See the Big Picture,” *Journal of Consumer Research, 35*(5), 800-809.

Laird, James D. (1974), "Self-Attribution of Emotion: The Effects of Expressive Behavior on the Quality of Emotional Experience," *Journal of Personality and Social Psychology*, 29(4), 475.

Lalwani, Ashok K. and Sharon Shavitt (2013), “You Get What You Pay For? Self-Construal Influences Price-Quality Judgments,” *Journal of Consumer Research*, 40(2), 255-267

Lance, Brent, and Stacy C. Marsella (2007), "Emotionally Expressive Head and Body Movement during Gaze Shifts," *International Workshop on Intelligent Virtual Agents*. Springer Berlin Heidelberg.

Larsen, Randy J. and Zvjezdana Prizmic (2004), “Affect regulation,” in Roy F. Baumeister and Kathleen D. Vohs (eds.), *Handbook of Self-Regulation: Research, Theory and Applications*, New York: Guilford Press.

Leith, Karen P. and Roy F. Baumeister (1996), “Why Do Bad Moods Increase Self-Defeating Behavior? Emotion, Risk Tasking, and Self-Regulation,” *Journal of Personality and Social Psychology, 71*(6), 1250-1267.

Levav, Jonathan and A. Peter McGraw (2009), “Emotional Accounting: How feelings about Money Influence Consumer Choice,” *Journal of Marketing Research*, *46*(1), 66-80.

Levav, Jonathan and Rui (Juliet) Zhu (2009), “Seeking Freedom through Variety, “*Journal of Consumer Researc*h, 36, 600-610.

Liu, Wendy and Jennifer Aaker (2007), “Do you look to the future or focus on today? The impact of life experience on intertemporal decisions,” Organizational Behavior and Human Decision Processes, 102(2), 212-225.

Magee, J. C. and Galinsky, A. D. (2008), “Social Hierarchy: The Self-Reinforcing Nature of Power and Status,” *The Academy of Management Annals*, 2(1), 351-398.

Mehrabian, Albert and James A. Russell (1974), *An Approach to Environmental Psychology*. The MIT Press.

Meyers-Levy, Joan and Rui Zhu (2007), “The Influence of Ceiling Height: The Effect of Priming on the Type of Processing that People Use,” *Journal of Consumer Research*, *34*(2), 174-186.

Mignault, Alain and Avi Chaudhuri (2003), "The Many Faces of a Neutral Face: Head Tilt and Perception of Dominance and Emotion," *Journal of nonverbal behavior*, 27(2), 111-132.

Moss, Michael (2013), “The Extraordinary Science of Addictive Junk Food,” *The New York Times Sunday Magazine*, February 24, MM34.

Nelson, Leif D. and Joseph P. Simmons (2009), “On Southbound Ease and Northbound Fees: Literal Consequences of the Metaphoric Link between Vertical Position and Cardinal Direction,” *Journal of Marketing Research*, 46(6), 715-724.

Operario, Don and Susan T. Fiske (2001), “Effects of Trait Dominance on Powerholders' Judgments of Subordinates,” *Social Cognition*, 19(2), 161-180

Ostinelli, Massimilano, Torsten Ringberg, and David Luna (2013), “Driving Symbolic Consumption through Imagined Vertical Movements,” in *E-European Advances in Consumer Research, 10, Gert* Cornelissen, Elena Reutskaja, and Ana Valenzuela (eds.), Duluth, MN: Association for Consumer Research, 320-321.

Riskind, John H. and Carolyn C. Gotay (1982), "Physical Posture: Could it Have Regulatory or Feedback Effects on Motivation and Emotion?" *Motivation and Emotion*, 6(3), 273-298.

Roberts, Brent W. and Eileen M. Donahue (1994), “One Personality, Multiple Selves: Integrating Personality and Social Roles,” Journal *of Personality*, 62(2), 199–218.

Ramseyer, Fabian and Wolfgang Tschacher (2014), "Nonverbal Synchrony of Head-and Body-movement in Psychotherapy: Different Signals have Different Associations with Outcome." *Frontiers in Psychology*, 5(979), 1-9.

Rucker, Derek D. and Adam D. Galinsky (2008), “Desire to Acquire: Powerlessness and Compensatory Consumption,” Journal *of Consumer Research*, *35*(2), 257-267.

Rucker, Derek D. and Adam D. Galinsky (2009), “Conspicuous Consumption Versus Utilitarian Ideals: How Different Levels Of Power Shape Consumer Behavior,” Journal *of Experimental Social Psychology*, 45(3), 549-555.

Rucker, Derek D., Adam D. Galinsky, and David Dubois (2012), “Power and Consumer Behavior: How Power Shapes Who and What Consumers Value,” Journal *of Consumer Psychology*, 22(3), 352–368.

Russell, Bertrand (1938), *Power: A New Social Analysis*, London: George Allen & Unwin.

Schubert, Thomas W. (2005), “Your Highness: Vertical Positions as Perceptual Symbols of Power,” *Journal of Personality and Social Psychology*, 89(1), 1-21.

Schubert, Thomas W. and Sander L. Koole (2009), “The Embodied Self: Making a Fist Enhances Men's Power-Related Self-Conceptions,” *Journal of Experimental Social Psychology, 45(4)*, 828-834.

Schwarz, Norbert (2006), “Feelings, fit, and funny effects: A situated cognition perspective,” *Journal of Marketing Research*, 43(1), 20-23.

Schultheiss, Oliver C. (2007), “A Biobehavioral Model of Implicit Power Motivation Arousal, Reward and Frustration,” in *Harmon-Jones, E*. and *Winkielman, P*. (Eds.), *Social Neuroscience: Integrating Biological and Psychological Explanations of Social Behavior*, New York: Guilford.

Sen, Sankar and Lauren G. Block (2009), “Why My Mother Never Threw Anything Out: The Effect of Product Freshness on Consumption,” *Journal of Consumer Research, 36*(1), 47-55.

Shafir, Tal, Rachelle P. Tsachor, and Kathleen B. Welch. (2016), "Emotion Regulation through Movement: Unique Sets of Movement Characteristics are Associated with and Enhance basic emotions," *Frontiers in Psychology*, 6, 2030.

Shiv, Baba and Alexander Fedorikhin (1999), “Heart and Mind in Conflict: The Interplay of Affect and Cognition in Consumer Decision Making,” *Journal of Consumer Research*, 26, 278-292.

Smith, Pamela K. and Yaacov Trope (2006), "You Focus on the Forest When you're in Charge of the Trees: Power Priming and Abstract Information Processing," *Journal of Personality and Social Psychology*, 90(4), 578–596.

Tice, Dianne M. and Ellen Bratslavsky (2000), "Giving in to Feel Good: The Place of Emotion Regulation in the Context of General Self-Control," *Psychological Inquiry*, 11(3), 149-159.

Tice, Dianne M., Ellen Bratslavsky, and Roy F. Baumeister (2001), "Emotional Distress Regulation Takes Precedence over Impulse Control: If You Feel Bad, Do It!" *Journal of Personality and Social Psychology*, 80(1), 53-67.

Timmers, Monique, Agneta H. Fische, and Antony SR Manstead (1998), "Gender Differences in Motives for Regulating Emotions," *Personality and Social Psychology Bulletin*, 24(9), 974-985.

Valenzuela, Ana and Priya Raghubir (2009), "Position-Based Beliefs: The Center-Stage Effect," *Journal of Consumer Psychology*, 19(2), 185-196.

Valenzuela, Ana and Priya Raghubir (2015), "Are Consumers Aware of Top-Bottom but Not of Left-Right Inferences? Implications for Shelf Space Positions," *Journal of Experimental Psychology: Applied*, 21(3), 224-241.

Valenzuela, Ana, Priya Raghubir, and Chrissy Mitakakis (2013), "Shelf Space Schemas: Myth or Reality?" *Journal of Business Research*, *66*(7), 881-888.

Van Kerckhove, Anneleen, Maggie Geuens, and Iris Vermeir (2015), “The Floor is nearer than the Sky: How Looking Up or Down Affects Construal Level,” *Journal of Consumer Research*, 41(6), 1358-1371.

Wilson, Vietta E. and Erik Peper (2004), "The Effects of Upright and Slumped Postures on the Recall of Positive and Negative Thoughts," *Applied Psychophysiology and Biofeedback*, 29(3), 189-195.

Wirth, Michelle M., Kathryn M. Welsh, and Oliver C. Schultheiss (2006), “Salivary Cortisol Changes in Humans after Winning or Losing a Dominance Contest Depend on Implicit Power Motivation,” *Hormones and Behavior*, 49(3), 346-352.

Yap, Andy J., Abbie S. Wazlawek, Brian J. Lucas, Amy J.C. Cuddy, and Dana R. Carney (2013), “The Ergonomics of Dishonesty: The Effect of Incidental Posture on Stealing, Cheating, and Traffic Violations,” *Psychological Science*, 24(11), 2281-228.

Yu, Kang Yang Trevor (2009), “Affective Influences in Person–Environment Fit Theory: Exploring the Role of Affect as both Cause and Outcome of PE Fit,” *Journal of Applied Psychology*, *94*(5), 1210-1226.

Zhang, Yinlong, Karen Page Winterich, and Vikas Mittal (2010), “Power Distance Belief and Impulsive Buying,” *Journal of Marketing Research*, 47(5), 945-954.

Figure 1a: Study 2A: Indulgent choice as a function of shelf position and personal power

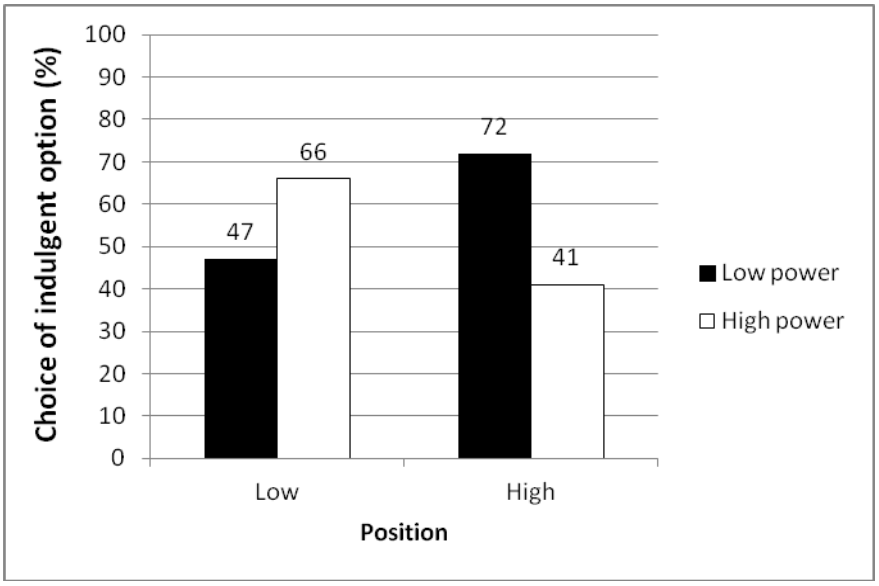


Figure 1b: Study 2B: Indulgent choice as a function of shelf position and personal power

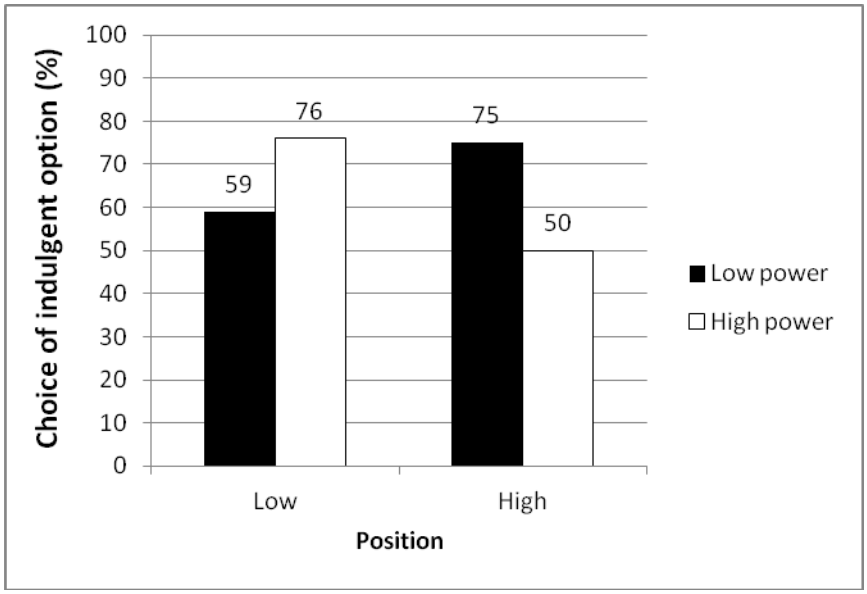


Figure 1c: Study 2C: Indulgent choice likelihood as a function of shelf position and personal power

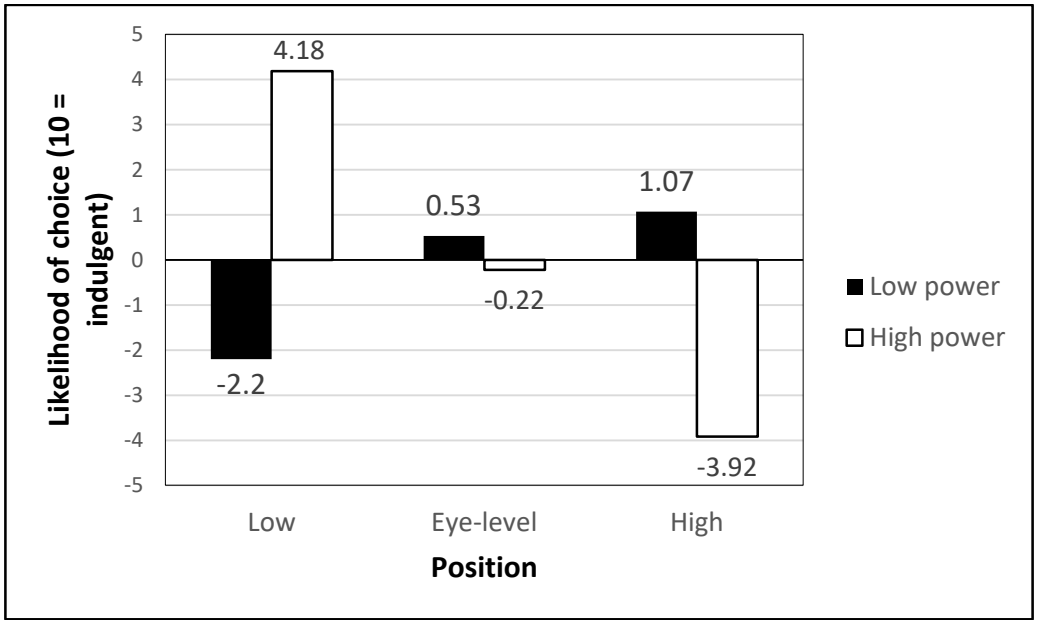
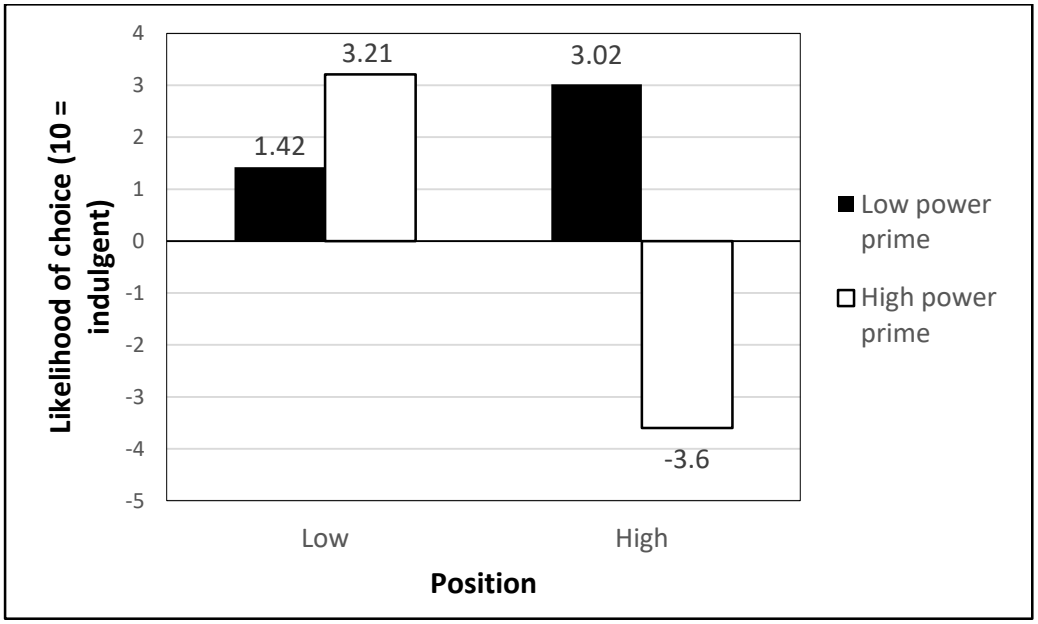


Figure 2: Study 3: Indulgent choice likelihood as a function of shelf position and primed personal power



Appendix

Table 1: Summary of stimuli characteristics and other control measures **(Study 2)**

	Study 2A				**Study 2B**				**Study 2C**					
Position / Measures	**Low**		**High**		**Low**		**High**		**Low**		**High**		**Eye**	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Stimuli evaluation														
Good (choc)									4.36	2.04	4.43	2.20	4.66	2.14
Good (fruit)									4.91	2.05	5.66	1.95	5.62	1.78
Like (choc)									6.21	1.02	6.00	1.58	5.72	1.43
Like (fruit)									5.30	1.53	5.38	1.68	5.14	1.92
Appealing (choc)	4.92	1.76	4.39	1.77	4.50	1.67	4.82	1.41	5.33	1.90	6.24	1.33	6.10	1.59
Appealing (fruit)	3.83	1.60	3.76	1.87	3.67	1.60	4.03	1.75	4.27	2.00	4.83	2.11	4.55	1.99
Nutritious (choc)	3.17	1.23	2.88	1.41	2.93	1.35	3.37	1.34	2.24	1.66	2.24	1.75	2.14	1.62
Nutritious (fruit)	6.15	1.08	6.06	1.11	6.10	.96	6.21	1.19	6.48	1.03	6.38	1.43	6.59	1.18
Fattening (choc)	5.6	1.44	5.12	1.73	5.52	1.36	5.16	1.60	5.82	1.65	5.93	1.81	6.14	1.62
Fattening (fruit)	1.64	1.14	1.94	1.16	1.90	1.0	1.66	1.32	2.33	1.69	1.97	1.70	1.59	1.32
Expensive (choc)	4.92	1.19	4.70	1.26	5.05	.91	4.89	.98	4.75	1.57	3.76	2.05	4.86	1.53
Expensive (fruit)	3.45	1.29	3.03	1.16	3.33	1.18	3.39	1.15	2.48	1.48	1.90	1.54	2.45	1.48
Tasty (choc)	5.32	1.55	5.36	1.36	5.62	1.45	5.53	1.33	4.88	1.83	5.41	1.84	5.45	1.53
Tasty (fruit)	4.98	1.35	4.85	1.42	5.02	1.07	4.89	1.52	4.97	1.40	4.83	1.85	4.86	1.87
Eating habits														
Guilt	4.08	1.76	4.09	1.48	3.31	1.76	3.92	1.75	1.70	.46	1.72	.45	1.83	.38
Health conscious	4.42	1.59	4.55	1.39	4.31	1.47	4.92	1.36	4.21	2.21	4.34	1.96	4.28	2.22
Diet	2.45	1.25	2.55	1.03	2.12	1.08	2.61	1.28	4.09	1.57	4.59	2.10	4.17	1.73
Impulsive	5.11	1.82	4.82	1.84	4.81	1.79	4.89	1.66						
Chocolate fanatic	4.40	2.26	4.45	2.11	4.6	2.29	4.71	1.93						
Fruit fanatic	5.13	1.37	5.24	1.56	5.33	4.49	5.26	1.50						

Shelf evaluation														
Design	3.62	1.63	3.39	1.67	3.95	1.44	3.87	1.63	4.12	1.59	3.48	1.98	4.14	1.74
High	3.87	.85	4.67	1.61	4.05	1.15	5.05	1.18	2.94	1.56	5.83	1.20	4.90	1.42
Big	3.74	.90	3.39	1.45	3.79	1.24	4.05	1.16	4.15	1.56	4.50	1.29	4.17	1.67
Wide	3.79	1.10	3.18	1.36	3.83	1.27	3.97	1.17	4.27	1.32	4.10	1.26	4.17	1.47
Dark	4.02	1.59	4.58	1.80	3.86	1.60	3.58	1.48	3.76	1.64	3.48	1.53	2.79	1.52
Strong	4.32	1.51	4.76	1.80	4.64	1.30	4.84	1.70	4.39	1.35	3.93	1.62	4.62	1.45
Stable	4.08	1.55	4.48	1.54	4.36	1.41	4.32	1.36	5.21	1.11	4.41	1.78	5.45	1.68
Reach	4.60	1.83	4.64	2.04	4.43	1.82	4.42	1.84	5.06	1.44	5.10	1.57	5.86	1.51
Process														
Emotional driven					5.05	1.27	4.89	1.50						
Feeling based					5.40	1.38	5.00	1.47						

Table 2: Summary of stimuli characteristics and other control measures **(Study 3)**

Position / Measures	**Low**		**High**	
	Mean	SD	Mean	SD
Stimuli evaluation				
Appealing (choc)	5.77	1.49	5.45	1.68
Appealing (fruit)	4.92	1.72	5.02	1.56
Nutritious (choc)	2.41	1.43	2.22	1.25
Nutritious (fruit)	6.36	1.08	6.43	0.85
Fattening (choc)	5.74	1.44	5.74	1.59
Fattening (fruit)	1.80	1.22	1.76	1.17
Expensive (choc)	3.94	1.66	3.52	1.64
Expensive (fruit)	3.16	1.76	2.74	1.67
Tasty (choc)	5.36	1.43	5.09	1.63
Tasty (fruit)	4.98	1.60	5.06	1.57
Eating habits				
Health conscious	4.43	1.65	4.69	1.57
Chocolate fanatic	4.35	1.93	4.09	2.02
Fruit fanatic	4.44	1.67	4.53	1.68
Diet	1.36	0.82	1.38	0.84
Shelf evaluation				
Design	3.66	1.79	3.24	1.71
High	3.02	1.86	5.97	1.35
Wide	4.23	1.35	4.46	1.80
Dark	3.65	1.64	3.70	1.60
Strong	4.17	1.65	4.36	1.41
Stable	4.98	1.55	4.89	1.52
Reach	4.89	1.74	3.94	1.85

Table 3: Summary of stimuli characteristics and other control measures **(Study 4)**

Position / Measures	**Mismatch**		**Match**		**Eye-level**	
	Mean	SD	Mean	SD	Mean	SD
Stimuli evaluation						
Good (choc)	4.62	1.98	4.30	1.98	4.84	1.80
Good (fruit)	5.34	2.08	4.70	1.97	5.31	1.86
Like (choc)	6.28	1.06	5.89	1.24	5.91	1.42
Like (fruit)	5.66	1.66	5.1	1.73	5.84	1.37
Appealing (choc)	5.24	2.16	5.11	2.09	5.44	2.03
Appealing (fruit)	5.36	1.63	4.70	1.59	5.31	1.49
Nutritious (choc)	1.94	1.34	1.57	1.09	1.78	1.18
Nutritious (fruit)	6.77	.56	6.33	1.17	6.72	.46
Fattening (choc)	6.13	1.68	6.44	1.13	6.25	1.22
Fattening (fruit)	1.45	1.08	1.62	1.90	1.47	1.02
Expensive (choc)	3.85	1.76	3.97	1.82	4.00	1.88
Expensive (fruit)	2.40	1.64	2.46	1.46	2.78	1.47
Tasty (choc)	5.06	2.11	4.73	1.75	5.10	1.44
Tasty (fruit)	5.62	1.54	4.76	1.64	5.19	1.18
Eating habits						
Guilt	4.26	2.12	5.22	1.58	4.09	1.89
Health conscious	4.96	1.84	4.70	1.52	4.97	1.57
Diet	1.70	.465	1.69	.47	1.77	.42
Shelf evaluation						
Design	3.91	1.79	3.81	1.69	4.13	1.66
High	2.45	1.33	5.92	1.12	5.31	1.12
Wide	4.17	1.32	4.57	1.46	4.56	1.48
Deep	3.91	1.38	4.65	1.38	4.19	1.53

Dark	3.68	1.57	3.70	1.56	3.47	1.68
Strong	4.06	1.45	4.70	1.39	4.84	1.39
Stable	4.87	1.68	5.14	1.46	5.44	1.27
Reach	5.13	1.59	4.16	1.89	5.56	1.61
Process						
Confined	4.09	1.92	3.38	1.83	3.84	1.71
Uneasy	4.32	1.66	3.49	1.77	3.61	1.91
Anxious	4.17	2.09	3.62	1.91	3.63	1.77