

## ABSTRACT

Title: CONSUMPTION AND THE DYNAMICS  
OF CONSUMER CHOICE

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Doctor of Philosophy, 2012

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This dissertation includes three essays that investigate how aspects of the choice process influence consumption, attitudes and motivation. The first essay explores how the stage of consumption of the chosen alternative influences the attractiveness of a forgone alternative. Dozens of studies over the past fifty years have consistently shown that after making a choice between two attractive alternatives the forgone alternative decreases in attractiveness. However previous research has only compared the value of the forgone alternative before and after making a choice. This essay demonstrates that this devaluation effect only lasts until the chosen alternative has been consumed, at which point it rebounds in attractiveness. We show that this devaluation provides a way to avoid distraction while pursuing the chosen alternative, supporting recent views on cognitive

dissonance theory. The second essay demonstrates the importance of measuring the dual processes by which consumers make consumption decisions. Although most firms measure customer satisfaction, this metric only reflects an explicit decision-making process. The implicit process can be captured by measuring the impulsiveness with which consumers make decisions. Impulsiveness metrics are just as strongly related to firm value and customer behavior as satisfaction metrics, and in combination they provide a more comprehensive prediction. The third essay explores substitution effectiveness. Consumers often consume replacement products as substitutes for an unattained product. This research investigates how the similarity between the products influences how effectively products substitute for each other. Consumers tend to believe that replacement products become more effective substitutes for an unattained product as they increase in similarity. However in contrast to this belief, this research shows that moderately similar replacements are more effective than highly similar products at satisfying the desire for the unattained product. This relationship reverses at low levels of similarity where moderate similarity replacements are more effective substitutes than low similarity replacements.

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CONSUMER CHOICE

by

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Dissertation submitted to the Faculty of the Graduate School of the  
University of Maryland, College Park in partial fulfillment  
of the requirements for the degree of  
Doctor of Philosophy  
2012

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## Acknowledgements

So many people helped me write this dissertation and I wish to acknowledge their support. In particular I wish to thank my advisors, Rebecca Hamilton and Roland Rust for their dedication and patience during the process. I am indebted to my committee members: Amna Kirmani, Rebecca Ratner and Kent Norman for helping to shape my thinking and improve this research.

I am also grateful to so many of my fellow students for their feedback, advice and friendship including Yu-Jen Chen, Jordan Etkin, Brad Greenwood, Heather Johnson, James Kim, Tom Kim, Ted Matherly, and Savannah Shi. A special thanks to Ajay Abraham for spending his Independence Day helping me collect data.

Finally I owe so much to my parents for their love and support, and to my wonderful wife, Sara for always believing in me.

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## Chapter I: Introduction

Choices and consumption are intimately related. Individuals must continually decide which products and services to purchase. However some aspects of the choice process can influence the consumption process in surprising ways. Often consumers are unable to obtain the product that they really want. For instance they may have to choose one product and forgo another, or the desired product may be unavailable. In three essays this dissertation explores the interesting relationships between aspects of the choice process and its influence on consumption, motivation and behavior.

Chapter II examines how the stage of consumption of a chosen alternative influences the value of the alternative that was not chosen. When a consumer struggles to choose between two alternatives – debating between two books, for example – does the consumer become more likely or less likely to choose the forgone alternative in the future? Fifty years of cognitive dissonance research indicates that when consumers make a difficult choice, the alternative they forgo is devalued for an extended period of time, making it less likely to be chosen in the future (Brehm 1956). However, we show that consuming the chosen alternative moderates this effect: the value of the forgone alternative rebounds in attractiveness after the chosen alternative has been consumed. Forgoing an attractive alternative can lead to doubt and hesitation, which can distract from the pursuit of the chosen alternative. Therefore the forgone alternative is automatically devalued until the chosen alternative has been consumed, at which point it rebounds. This devaluation and rebound effect is more commonly exhibited by the forgone alternative than alternatives omitted from the choice.

Chapter III explores the managerial issues regarding how two different aspects of consumer choices relate to shareholder value. Although dual-process theories in psychology and neuroscience consistently indicate that decisions can be made through two separate processes (Stanovich and West 2000), most firms rely on a single customer metric: satisfaction (Morgan, Anderson, and Mittal 2005). The other process can be captured using metrics which measure the impulsiveness with which consumers make their decisions (Strack, Werth, and Deutsch 2006). This research demonstrates that impulsiveness metrics are just as effective as customer satisfaction in predicting product choice and firm shareholder value. This relationship is particularly true for low involvement product situations. Based on this research, we encourage firms to collect metrics on both satisfaction and impulsiveness.

Finally, chapter IV explores how consumers can effectively substitute one product for another. Consumers frequently substitute for products that are too expensive (Bucklin and Srinivasan 1991), out-of-stock (Emmelhainz, Stock, and Emmelhainz 1991) or unavailable. We show that consumers believe that a replacement becomes a better substitute as it becomes increasingly similar to the unattained product. However in contrast to this belief, we show that a replacement product which is moderately similar to the unattained product is a more effective substitute than one which is highly similar. We theorize that a moderately similar replacement encourages consumers to think about their motivation for consumption abstractly, thereby reducing the details required for fulfilling the goal and making it a more effective substitute. This effect is moderated at low levels of similarity – when the replacement is too dissimilar the common goal becomes overly general and has a weak connection with the unattained product. This research implies that

firms can better satisfy their customers and compete with other firms by making their products moderately similar to leading brands; it also implies that consumers should consider moderately similar products when they are unable to consume the products that they originally wanted.

## Chapter II: The Rebound of the Forgone Alternative<sup>1</sup>

Consider the experience of Robert, who is looking for a book to read during his summer vacation. He browses the selection at Amazon.com for a while before narrowing his choice down to two books. One option is *Guns, Germs, and Steel* by Jared Diamond, a non-fiction history book. The other book is *The Girl with the Dragon Tattoo*, a Swedish crime novel by Stieg Larsson. Robert finds these books equally appealing but he knows that he will only have time to read one during his vacation, so after a difficult deliberation he buys *The Girl with the Dragon Tattoo* and forgoes *Guns, Germs, and Steel*.

This paper addresses how forgoing *Guns, Germs, and Steel* this time influences the likelihood that Robert will buy it in the future. The current view is that he is unlikely to buy the forgone alternative *Guns, Germs, and Steel* in the future. This view is based on 50 years of cognitive dissonance research which has repeatedly demonstrated that the forgone alternative becomes less valuable following a difficult choice (Brehm 1956; Festinger 1957) and remains devalued for the long-term, even years after making the choice (Lawler et al. 1975; Vroom and Deci 1971).

However, it is not clear how consumption of the chosen alternative affects the desirability of the forgone alternative. Although past research has compared the attractiveness of the forgone alternative before and after choice, it has not measured ratings of the forgone alternative after the chosen alternative has been consumed. None of the 78 cognitive dissonance studies we reviewed report the value of the forgone

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<sup>1</sup> This research was conducted with Rebecca Hamilton, and is reported in a 2012 working paper by Zachary G. Arens and Rebecca W. Hamilton titled “The Rebound of the Forgone Alternative.”

alternative *after* participants had consumed the chosen alternative (see Appendix A). In most studies, participants never actually received their chosen alternative or they received it at the end of the study. A few studies collected ratings during consumption; for instance, graduates rated forgone employment opportunities while still employed in their chosen job (Lawler et al. 1975; Vroom and Deci 1971) and in some studies participants tasted small samples of each alternative (Cohen and Goldberg 1970; Deutsch, Krauss, and Rosenau 1962). However, consumption was incomplete at the time of the rating. The few studies that did collect data after consumption report only ratings of the chosen alternative (Koller and Salzberger 2007; Ritov 2006). Thus, extant research seems to have overlooked how consumption of the chosen alternative influences the value of the forgone alternative.

In this research, we propose that the attractiveness of the forgone alternative systematically rebounds soon after consumption of the chosen alternative. Recent work on cognitive dissonance suggests that the forgone alternative is devalued after a choice as a way to ensure effective pursuit of the chosen alternative (Harmon-Jones and Harmon-Jones 2002; Harmon-Jones et al. 2008). The doubt and uncertainty created by a choice is a source of distraction that can interfere with actions taken to obtain and consume the chosen alternative. To avoid this distraction, individuals devalue the forgone alternative, reducing their level of uncertainty. Once the chosen alternative has been consumed, distraction from pursuing it becomes irrelevant, allowing the value of the forgone alternative to return to normal. Thus, over the stages of consumption, we propose that the forgone alternative should exhibit a U-shaped pattern of attractiveness, decreasing in value after the choice but rebounding after the chosen alternative has been consumed.

This research is similar to, but distinct from research on competing goals such as goal shielding (Shah, Friedman, and Kruglanski 2002), passive goal guidance (Laran and Janiszewski 2009), and the devaluation effect (Brendl, Markman, and Messner 2003). In contrast to these competing goal models which are based on competition among goals for limited resources, our model is concerned with choice among means to the same (single) goal. As such, our model proposes that devaluation of the forgone alternative is a mechanism to avoid distraction. This difference holds different implications for managers: unlike competing goal models in which all non-focal goals are devalued, our model predicts that only the forgone alternative will be devalued; alternatives omitted from the choice will be unaffected by consumption of the chosen alternative. In addition, our model proposes that a difficult choice is required for devaluation to occur whereas the act of choice is irrelevant for competing goal models.

Our research offers theoretical contributions as well as important implications for firms and consumers. This research extends cognitive dissonance theory by showing that the stage of consumption moderates the effect as a result of distraction, providing support for the action-based model of cognitive dissonance (Harmon-Jones and Harmon-Jones 2002). From a managerial perspective, these findings have important implications for retailers like Amazon.com who regularly recommend products to their customers. Online retailing allows firms to observe which products their customers viewed but did not purchase, potentially allowing them to predict which products are forgone. Our research suggests that firms should not recommend these forgone products immediately but wait until they expect that the chosen product has been consumed.

The next sections briefly review cognitive dissonance theory and develop our model for changes in the attractiveness of the forgone alternative over time. We test our hypotheses in a series of four studies.

### The Effect of Choice and Consumption on the Forgone Alternative

#### Consumption as a Moderator of Cognitive Dissonance

Dozens of studies have shown that after a difficult decision, the forgone alternative is devalued (see Appendix A). In Brehm's (1956) original free-choice study, participants rated the attractiveness of eight gift items (e.g., an art book, a toaster oven, a painting) and then chose between two of them. After choosing between two attractive alternatives (a high-dissonance choice), the attractiveness of the forgone alternative declined relative to the attractiveness of the chosen alternative, whereas after choosing between an attractive and an unattractive alternative (a low-dissonance choice), the attractiveness of the forgone alternative did not decline (Brehm 1956). This devaluation effect has been shown to be long-lasting, persisting for a week (Losciuto and Perloff 1967) and even for years after a choice (Lawler et al. 1975; Vroom and Deci 1971).

While traditional cognitive dissonance theory explains devaluation of the forgone alternative as a result of inconsistent cognitions – the attractive aspects of the forgone alternative are inconsistent with the act of forgoing it (Festinger 1957), more recent research on cognitive dissonance suggests a different explanation for these findings.

According to the action-based model (Harmon-Jones and Harmon-Jones 2002), attitudes are altered to support the chosen course of action. After making a choice, individuals move from a deliberative mindset, in which they are open to new information about the alternatives, to an implemental one, in which their attention focuses on the chosen alternative (Gollwitzer 1990; Heckhausen 1991). In the implemental stage, doubt about one's choice distracts consumers, which can impede their progress towards obtaining the chosen alternative (Lipshitz and Strauss 1997). To reduce distraction, the forgone alternative is devalued to allow effective action towards the chosen alternative (Harmon-Jones and Harmon-Jones 2002; Harmon-Jones et al. 2008).

Although research has shown that the devaluation effect can last for weeks or even years (Lawler et al. 1975; Vroom and Deci 1971), we propose that the threat of distraction created by the forgone alternative may at times be relatively short-lived. After the chosen alternative has been consumed the action has been completed and distraction becomes irrelevant. There is no longer a need to devalue the forgone alternative and its value can return to its original level. An overview of our predictions is displayed in figure 1.

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Insert figure 1 here

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We hypothesize:

H1: Consumption of the chosen alternative will trigger a rebound in the value of a forgone alternative that has been devalued.



H2: The devaluation and rebound effect will be mediated by the degree to which the forgone alternative is perceived to distract from the chosen alternative.

#### Moderation of the Devaluation and Rebound Effect

The forgone alternative is devalued when uncertainty about the choice threatens to distract from the pursuit of the chosen alternative (Harmon-Jones and Harmon-Jones 2002; Harmon-Jones et al. 2008). The amount of uncertainty created by a choice varies. Cognitive dissonance research has manipulated uncertainty by varying choice difficulty: participants either choose between two highly attractive alternatives or they choose between a highly attractive and an unattractive alternative (Brehm 1956). If the mechanism for the devaluation and rebound effect is the desire to reduce the distraction created by the forgone alternative, choice difficulty should moderate the devaluation and rebound effect. We hypothesize:

H3: The devaluation and rebound effect will be stronger for an alternative forgone in a high dissonance choice than a low dissonance choice.

The choice-based model we propose differs from competing goal models. Competing goal models propose that pursuing one goal draws resources from other goals because all goals compete for the same resources (Laran and Janiszewski 2009; Shah et al. 2002). As a result, pursuit of one goal inhibits unrelated goals (an effect labeled goal shielding) and all alternatives that are unrelated to the goal are devalued (Laran and

Janiszewski 2009; Shah, Friedman, and Kruglanski 2002). For example, individuals who had a strong need to eat rated a variety of products such as DVD players and sneakers as less attractive than those who had a weak need to eat (Brendl et al. 2003). Similarly, individuals pursuing the goal of resisting the temptation of eating a tasty chocolate devalued an array of products such as an expensive watch, a cruise and a big-screen TV (Laran and Janiszewski 2009). In contrast, our model predicts that the devaluation and rebound will be unique to the forgone alternative because this alternative is the source of uncertainty and distraction. Alternatives that are omitted from the choice set should be unaffected by the difficulty of the choice or by consuming the chosen alternative. Support for this view comes from previous cognitive dissonance research demonstrating that forgone alternatives are not devalued when participants do not make an explicit choice between alternatives (Shultz, Léveillé, and Lepper 1999). Thus:

H4: The devaluation and rebound effect will be stronger for alternatives explicitly forgone as part of a choice than for alternatives that are omitted from the choice set.

Next, we describe four studies testing our predictions. Our studies extend the free-choice paradigm comparing predecision and postdecision ratings of the forgone alternative (as in the studies listed in Appendix A) by also measuring postconsumption ratings. Study 1 provides evidence for the rebound effect (H1) and rules out the duration of consumption and regret as alternative explanations. Study 2 demonstrates that the amount of dissonance created by the choice moderates the effect (H3). Study 3 shows

that distraction mediates the effect (H2) and that the devaluation and rebound effect has behavioral implications. Finally, study 4 demonstrates that explicitly making a choice triggers the devaluation and rebound effect (H4).

### Study 1: Does Consumption Trigger a Rebound?

One purpose of this study is to demonstrate that when a forgone alternative is devalued before consuming the chosen alternative, consumption of the chosen alternative will trigger a rebound in the forgone alternative's value. Following the free-choice paradigm (Brehm 1956), participants rated seven kinds of candy and then chose between two of them. Unlike past free-choice studies in which alternatives were not consumed during the study, participants consumed a serving of their chosen candy. To make the choice more important participants were told that their decision would determine which candies would soon be introduced by a leading candy company in their area (Petty, Cacioppo, and Schumann 1983). Half of the participants re-rated the candies before consuming their chosen flavor and half re-rated them afterwards. Thus all participants rated the candies twice: the first rating was provided prior to making a choice, and the timing of the second rating varied by condition.

The second purpose of the candy study was to rule out two alternative explanations for changes in the ratings of the forgone alternative over time: passage of time and regret. First, consuming the candy requires a couple of minutes and therefore the duration of consumption rather than the act of consumption may explain the rebound in value. Therefore, we included a delayed preconsumption condition in which ratings were

re-measured prior to consumption after a consumption-length delay. If the duration of consumption is responsible for the effect, there should be no difference between the attractiveness of the forgone alternative after a delay versus after consumption. In contrast, if consuming the chosen alternative triggers the rebound effect, ratings of the forgone alternative should be higher after consumption than in the delayed preconsumption stage.

This study was also designed to rule out regret as an explanation for the rebound effect. Whereas regret is based on a comparison between the outcome and a counterfactual associated with the forgone alternative (Connolly and Zeelenberg 2002; Tsiros and Mittal 2000), the rebound effect depends on the stage of consumption rather than the outcome of consumption. Thus, a regret-based explanation suggests that the rebound effect should be related to satisfaction with the chosen alternative, whereas our distraction-based explanation suggests that it should not. To examine regret as an explanation for the rebound effect, we had participants rate how much they regretted their choice and how satisfied they were with their chosen candy.

## Method

Seventy-nine individuals participated in exchange for a small payment and the opportunity to sample candy. Eight participants were removed for failing to follow instructions (e.g., not eating the candy at the instructed time or discussing the candy with other participants). The study used a 2 (rating: first vs. second) x 3 (timing of second rating: preconsumption vs. delayed preconsumption vs. postconsumption) mixed design

in which rating was manipulated within subjects and the timing of the second rating was manipulated between subjects. All participants provided their ratings of seven candy flavors (caramel cubes, chocolate covered coffee beans, cinnamon beans, gummy drops, milk chocolate pretzels, mint blasts and peach bites) using a nine-point scale: “The next time you want to eat candy, how much would you like to eat...” (1 = “Not at all” to 9 = “Very much”). Next, to create a high dissonance choice (Brehm 1956), participants were presented with their second and third ranked alternatives and they were asked to choose between them.

Consistent with the free-choice paradigm (Brehm 1956), those in the preconsumption condition completed a delay task, which involved listing as many words that included the letter e that they could think of for two minutes (Laran, Janiszewski, and Cunha 2008). Next they re-rated the attractiveness of all seven flavors. The second rating was justified using a statement adapted from Harmon-Jones and Harmon-Jones (2002): “Sometimes people’s opinions change, but sometimes they stay the same. Therefore, please rate each candy flavor again.” They then ate a small bag of their chosen candy (approximately 0.5 ounces). The postconsumption condition was identical except that participants consumed their chosen candy before completing the delay task and re-rating the candies. The delayed preconsumption condition was identical to the preconsumption condition except that the delay task was extended to four minutes, which matched the time required in the postconsumption condition (two minutes to consume the candy plus two minute delay task).

At the conclusion of the study all participants rated their satisfaction with the candy (“How satisfied are you with the [chosen] candy?” 1 = “Very dissatisfied” to 7 = “Very satisfied”) and their regret (Inman and Zeelenberg 2002).

## Results

*Devaluation and rebound of the forgone alternative.* To examine the attractiveness of the forgone alternative over time we conducted a 2 (rating: first vs. second) x 3 (timing of second rating: preconsumption vs. delayed preconsumption vs. postconsumption) repeated-measures ANOVA. There was a significant main effect of rating such that the first rating of the forgone alternative was higher ( $M = 5.91$ ) than the second rating ( $M = 5.47$ ;  $F(1, 68) = 5.71, p < .05$ ). This effect was qualified by a significant interaction ( $F(2, 68) = 3.37, p < .05$ ). Consistent with findings from the free-choice paradigm, the attractiveness of the forgone alternative was devalued between the first rating ( $M = 5.89$ ) and the second rating in the preconsumption condition ( $M = 5.14$ ;  $F(1, 27) = 4.87, p < .05$ ). Likewise, in the delayed preconsumption condition, the forgone alternative was also devalued between the first rating ( $M = 5.88$ ) and the second rating ( $M = 5.04$ ;  $F(1, 27) = 9.76, p < .01$ ), indicating that duration alone does not produce a rebound in ratings of the forgone alternative. In contrast, for those in the postconsumption condition, the forgone alternative was just as attractive when they provided their second rating after consumption ( $M = 6.22$ ) as it was when they provided their first rating ( $M = 5.94$ ;  $F(1, 17) = .92, p = .35$ ), suggesting that the attractiveness of

the forgone alternative rebounds in value after the chosen alternative has been consumed. These findings support H1.

The fact that ratings of the forgone alternative were devalued in the delayed preconsumption stage but returned to normal after consumption suggests that the duration between the choice and the rating is not a viable alternative explanation for the effect. The results, shown in figure 2, support our first hypothesis. The ratings for all of the alternatives are displayed in table 1.

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Insert figure 2 here

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Insert table 1 here

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*Ruling out regret as an alternative explanation.* To rule out regret as an alternative explanation for the rebound effect, we conducted two separate analyses. First, we conducted a 3 (timing of second rating) ANOVA on an index of the three items in the regret scale ( $\alpha = .82$ ). The effect of timing of the second rating on regret was not significant ( $p > .22$ ), suggesting that regret does not explain the rebound effect. Second, we evaluated whether satisfaction with the consumption experience rather than timing may be responsible for the rebound effect by including satisfaction with the chosen candy as a covariate in our analysis of the forgone alternative. A 3 (timing of second rating) x 2 (rating) repeated-measures ANCOVA on the forgone alternative yielded a non-significant effect of satisfaction ( $F(1, 67) = .02, p = .89$ ). More importantly, the interaction between

timing and rating remained significant ( $F(2, 67) = 3.23, p < .05$ ). Thus, the rebound effect does not appear to be explained by regret.

*Contrasting the forgone with omitted alternatives.* Although our predictions concern the forgone candy, for comparison purposes we also examined the ratings of the candies omitted from the choice to see if any of these alternatives exhibited a rebound effect. Because the omitted alternatives are not part of the choice set, we predicted that they are not a source of distraction and should be less likely to exhibit the devaluation and rebound effect. We conducted a (first vs. second rating) x 3 (preconsumption vs. delayed preconsumption vs. postconsumption) repeated measures ANOVA on the first, fourth, fifth, sixth and seventh ranked alternatives. None of these alternatives exhibited an interaction showing a devaluation and rebound effect. The three-way interactions were insignificant for the first ranked alternative ( $F(2, 68) = 1.96, p = .15$ ), fourth ranked alternative ( $F(2, 68) = 1.43, p = .25$ ), fifth ranked alternative ( $F(2, 68) = .15, p = .86$ ), and sixth ranked alternative ( $F(2, 68) = .62, p = .54$ ). The interaction was significant for the seventh ranked alternative ( $F(2, 68) = 3.27, p = .04$ ). However, there was no evidence of a devaluation effect in the preconsumption condition ( $M_{\text{first}} = 1.75$  vs.  $M_{\text{second}} = 1.79$ ;  $F(1, 27) = .14, p = .71$ ) or the delayed preconsumption condition ( $M_{\text{first}} = 1.52$  vs.  $M_{\text{second}} = 1.40$ ;  $F(1, 24) = 1.86, p = .19$ ). Instead, the effect was driven by a marginally significant increase in value after consumption ( $M_{\text{first}} = 1.33$  vs.  $M_{\text{second}} = 1.61$ ;  $F(1, 17) = 4.21, p = .06$ ) which appears to be a result of a relatively low value in the first rating rather than an increase in value in the post-consumption condition. Overall, these results suggest that the devaluation and rebound effect is more common for the forgone than the omitted



alternatives, consistent with the argument that the forgone alternative creates more distraction.

## Discussion

These results support our prediction that consumption of the chosen alternative triggers a rebound in the value of the forgone alternative. We replicate the results of free-choice studies by demonstrating that the forgone alternative is devalued following a difficult choice between two attractive alternatives, and that this effect is relatively enduring, lasting several minutes in the delayed preconsumption condition. We extend the results of previous research by showing that consumption of the chosen alternative triggers a rebound in the ratings of the forgone alternative. This change in attractiveness of the forgone alternative cannot be explained by satisfaction with the chosen alternative, regret or simply the passage of time. Moreover, we show that unlike the forgone alternative, the omitted alternatives do not exhibit this devaluation and rebound effect.

### Study 2: Does Dissonance Moderate the Rebound Effect?

Study 1 shows evidence of the devaluation and rebound effect for a choice between two attractive alternatives. Study 2 offers more evidence for the underlying mechanism and suggests that this effect is driven by the desire to avoid distraction. Specifically, we compared the devaluation and rebound effect for a high dissonance

choice between two attractive alternatives with a low dissonance choice between an attractive and relatively unattractive alternative. We predicted that the devaluation and rebound effect would be greater for alternatives forgone in a high dissonance choice – which should create more distraction – than for alternatives forgone in a low dissonance choice.

## Method

This study was conducted on Amazon Mturk, an online forum where workers can earn small payments for completing short tasks. One hundred fifty three Mturk workers (average age 34, 60% female) in the United States completed the study in exchange for a small payment. The study used a 2 (first vs. second rating) x 2 (timing of second rating: preconsumption vs. postconsumption) x 2 (dissonance: low vs. high) mixed design in which rating was manipulated within subjects and timing and dissonance were manipulated between subjects.

Mturk workers are often required to pass a qualification test before they can complete related tasks, so workers chose between four qualification tests (data entry, image tagging, survey, and video transcription) that would allow them to complete related tasks in the future. As the study began, all participants rated how much they wanted to take each qualification test (1 = “Not at all” to 9 = “Very much”). Participants in the high dissonance condition chose between their second and third highest ranked tests, while participants in the low dissonance condition chose between their second a

fourth ranked tests. As a check of the dissonance manipulation, participants rated the difficulty of the choice (1 = “Not difficult at all” to 7 = “Very difficult”).

After the initial rating and choice, participants in the preconsumption condition completed a two-minute word-listing delay task (Laran, Janiszewski, and Cunha 2008), rated the tests a second time, and then completed the chosen test. The postconsumption condition used an identical procedure except for the order: participants completed their chosen test before the delay task and second rating.

## Results

*Manipulation check.* The manipulation of dissonance was successful. Participants in the high dissonance condition rated the choice as more difficult ( $M = 2.64$ ) than those in the low dissonance condition ( $M = 1.90$ ;  $F(1, 131) = 7.86, p < .01$ ).

*Moderation by dissonance.* We conducted a 2 x 2 x 2 repeated measures ANOVA on the rating of the forgone alternative. There was a main effect of rating such that the first rating was higher ( $M = 5.65$ ) than the second rating ( $M = 4.70$ ;  $F(1, 149) = 16.61, p < .01$ ). This effect was qualified by an interaction between rating and timing of the second rating ( $F(1, 149) = 4.44, p < .05$ ) such that the forgone alternative was devalued before consumption ( $M_{\text{first}} = 5.48$  vs.  $M_{\text{second}} = 4.03$ ;  $F(1, 74) = 14.20, p < .01$ ) but rebounded after consumption ( $M_{\text{first}} = 5.82$  vs.  $M_{\text{second}} = 5.36$ ;  $F(1, 77) = 1.87, p = .18$ ). The effect of rating was also qualified by an interaction with dissonance ( $F(1, 149) = 14.88, p < .01$ ) such that devaluation occurred for high dissonance choices ( $M_{\text{first}} = 6.84$

vs.  $M_{\text{second}} = 4.98$ ;  $F(1, 73) = 24.34, p < .01$ ) but not for low dissonance choices ( $M_{\text{first}} = 4.47$  vs.  $M_{\text{second}} = 4.42$ ;  $F(1, 78) = .03, p = .87$ ).

As predicted by H3, these effects were qualified by a three-way interaction ( $F(1, 149) = 4.43, p < .05$ ). As shown in figures 3a and 3b, the two-way interaction between rating and timing is driven by the devaluation of the forgone alternative in the high dissonance preconsumption condition ( $M_{\text{first}} = 6.72$  vs.  $M_{\text{second}} = 3.89$ ;  $F(1, 35) = 31.91, p < .01$ ). In the postconsumption condition, the value of the forgone alternative rebounded ( $M_{\text{first}} = 6.95$  vs.  $M_{\text{second}} = 6.08$ ;  $F(1, 37) = 3.03, p = .09$ ). In contrast, the forgone alternative in the low dissonance choice showed no change in value regardless of whether it was rated for a second time before consumption ( $M_{\text{first}} = 4.23$  vs.  $M_{\text{second}} = 4.18$ ;  $F(1, 38) = .01, p = .91$ ), or after consumption ( $M_{\text{first}} = 4.70$  vs.  $M_{\text{second}} = 4.65$ ;  $F(1, 39) = .01, p = .91$ ).

As in the previous study, our manipulations did not have a significant effect on regret ( $ps > .66$ ). For comparison we also tested whether each of the omitted alternative exhibited by the forgone alternative. None of the omitted alternatives showed the predicted interaction effects ( $ps > .14$ ), suggesting that the devaluation and rebound effect is stronger for the forgone alternative.

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Insert figures 3a and 3b here

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## Discussion

These results connect our research with previous work on cognitive dissonance by replicating the finding that the devaluation of the forgone alternative is greater for a high dissonance choice than a low dissonance choice. Moreover we extend this effect to show that the devalued forgone alternative will rebound after consumption of the chosen. However this study focuses on ratings of the forgone alternative, rather than behavioral intentions which are of importance to managers, therefore study 3 examines choices as well as ratings.

### Study 3: Does the Rebound Effect Influence Behaviors?

The previous studies examined how the stage of consumption influences the attractiveness of the forgone alternative but have not examined behavioral intentions. Study 3 seeks to show the practical relevance of the rebound effect by comparing behavioral intentions towards the forgone alternative before and after consumption. This study also offers evidence that the devaluation and rebound effect is created by distraction. To investigate this we used the same MTurk field study design as in study 2.

## Method

Sixty Mturk workers in the United States (average age 34, 70% female) completed the study in exchange for a small payment. The study used a 2 (first vs. second rating) x 2 (timing of second rating: preconsumption vs. postconsumption) mixed design in which rating was manipulated within subjects and timing was manipulated between subjects.

The procedure was the same as the high dissonance condition used in study 2 with an additional indicator of behavioral intent: At the time of the second rating participants indicated whether they wished to take the forgone qualification test, interrupting their progress toward completing their chosen test, or continue with the next step. We measured the degree to which participants were distracted by the forgone alternative and their efforts to avoid this distraction using three items: “Taking the [forgone] qualification test right now would be a distraction” (1 = “Strongly disagree” to 7 = “Strongly agree”); “Currently, how focused are you on taking the [forgone] qualification test?” (1 = “Not at all focused on the [forgone] qualification test” to 7 = “Completely focused on the [forgone] qualification test,” reverse coded; and “Which of these are you focused on right now?” (1 = “Focused on the [forgone] qualification test” to 7 = “Focused on the [chosen] qualification test”).

## Results

*The rebound of the forgone alternative.* First we analyzed the attractiveness of the forgone alternative across the stages of consuming the chosen alternative. We conducted a 2 x 2 repeated-measures ANOVA on the value of the forgone alternative. There was a significant effect of rating such that the alternative was more attractive at the first rating ( $M = 7.09$ ) than the second rating ( $M = 6.21$ ;  $F(1, 58) = 5.47, p < .05$ ). More importantly, the effect of rating was qualified by a significant interaction with timing of the second rating ( $F(1, 58) = 5.47, p < .05$ ). The forgone qualification test was devalued when the second rating was made prior to consumption ( $M_{\text{first}} = 6.79$  vs.  $M_{\text{second}} = 5.03$ ;  $F(1, 28) = 9.76, p < .01$ ), but not when the rating was made after consumption ( $M_{\text{first}} = 7.39$  vs.  $M_{\text{second}} = 7.39$ ;  $F(1, 30) = 0, p = 1.00$ ). This result replicates the findings of our previous studies and further supports H1.

Notably, the rebound also influenced the participants' willingness to interrupt their consumption of the chosen task to take the forgone qualification test. Workers were significantly more likely to agree to take the forgone test when it was offered after they had completed their chosen test (71%) rather than before they had completed their chosen test (28%;  $\chi^2(1) = 11.28, p < .01$ ). The fact that agreement more than doubled after consumption relative to before consumption – even though the question was asked only two minutes later – strongly suggests that the forgone is devalued to avoid distraction from pursuit of the chosen alternative. It also suggests that changes in ratings of the forgone alternative across stages of consumption have practical relevance.

As in our previous studies, our manipulations did not have a significant effect on regret ( $ps > .27$ ). We also analyzed the ratings of the omitted alternatives. The first ranked alternative showed no indication of a rebound effect ( $p > .41$ ). However the fourth alternative did exhibit a significant interaction between rating and the timing of the second rating  $F(1, 58) = 8.70, p < .01$ ). There was a significant devaluation of the fourth ranked alternative before consumption ( $M_{\text{first}} = 4.66$  vs.  $M_{\text{second}} = 2.66$ ;  $F(1, 28) = 11.77, p < .01$ ) followed by a rebound after consumption ( $M_{\text{first}} = 3.19$  vs.  $M_{\text{second}} = 3.16$ ;  $F(1, 30) = .01, p = .93$ ). Thus, alternatives that are omitted may occasionally create a distraction and exhibit this effect. However across the studies we find that the devaluation and rebound effect is much stronger for the forgone alternative.

*Distraction.* As predicted, the timing of the rating had a significant effect on the distraction created by the forgone alternative. An average of the three distraction items ( $\alpha = .76$ ) indicates that distraction was greater before consumption ( $M = 5.20$ ) than after consumption ( $M = 3.81$ ;  $F(1, 58) = 10.61, p < .01$ ). Moreover distraction mediated the effect of the stage of consumption on the value of the forgone alternative. We conducted a bias-corrected mediation analysis with 5,000 bootstrap samples (Preacher and Hayes 2004) with timing of the second rating (0 = preconsumption, 1 = postconsumption) as the independent variable, change in value of the forgone alternative (second rating – first rating) as the dependent measure and distraction as the mediator. The direct effect of timing on the change in value of the forgone was not significant ( $b = .67, t(58) = .90, p = .37$ ). However the indirect effect through distraction was significant ( $b = 1.09$ ) with a 95% confidence interval from .43 to 2.28 suggesting that the distraction created by the



forgone alternative mediates the effect of timing on ratings of the forgone alternative, supporting H2.

We conducted a similar mediation test using the choice to take the forgone test as the dependent variable (1 = yes, 0 = no). A binary logistic regression mediation analysis with 5,000 bootstrap samples indicated a significant direct effect of timing on the decision to take the forgone test ( $b = 1.34$ ,  $Z = 2.05$ ,  $p < .05$ ), as well as an indirect effect through distraction ( $b = 1.04$ ) with a 95% confidence interval from .31 to 2.32, indicating a partial mediation. These results provide additional evidence that distraction mediates the effect of timing on the attractiveness of the forgone alternative.

## Discussion

Study 3 provides additional evidence that a devalued forgone alternative rebounds after consumption of the chosen alternative. This devaluation and rebound influences behavioral intention as well as attitudes towards the forgone alternative. Moreover we show that distraction created by the forgone alternative is responsible for this effect.

### Study 4: Does Choice Moderate Devaluation and Rebound?

The previous studies show evidence for a devaluation and rebound in the attractiveness of a forgone alternative. An alternative explanation for these results comes from work on competing goals, which propose that pursuit of one goal draws resources

from other goals causing a decline in attractiveness of the nonfocal goal (Laran and Janiszewski 2009; Shah, Friedman, and Kruglanski 2002). This study rules out this explanation by testing our fourth hypothesis, which predicts that the devaluation and rebound effect will be stronger when the forgone alternative is explicitly forgone as part of a choice than when it is omitted from the choice set. We propose that the devaluation and rebound effect results from distraction created by the forgone alternative. Thus, an equally attractive alternative that is not explicitly forgone will not be devalued because it is not a source of distraction. In contrast, the competing goal model suggests that choice is irrelevant; all nonfocal alternatives should be devalued and rebound regardless of whether they are forgone or omitted from the choice.

In this study, participants chose a species of wildlife to help. Participants were told that if they watched a slideshow of wildlife animal photographs (e.g., gorillas, penguins or polar bears) a donation would be made to help conservation efforts to protect those specific animals (e.g., if they watched a gorilla slideshow, a donation would be made to a gorilla conservation organization).

## Method

The study used a 2 (rating: first vs. second) x 2 (timing of second rating: preconsumption vs. postconsumption) x 2 (choice vs. no choice) mixed design in which rating was manipulated within-subjects and timing of second rating and choice were manipulated between subjects. Data were collected online from 125 adults (average age 34, 70% female) across the United States in exchange for a small payment. Participants

rated how much they wanted to watch slideshows of six different animals in order to make a donation to help protect them (bison, gorillas, kangaroos, koala bears, penguins and polar bears). “All you have to do is watch a short slideshow of one of these animals and a donation will be made to help them. How much do you want to watch a slideshow of these animals in order to help them?” (1 = “Not at all” to 9 = “Very much”).

Those in the choice condition were told that their second and third ranked animal were available to receive their help and were offered a choice. Those in the no-choice condition were told that their second ranked animal was available to receive their help and were asked if they wanted to watch a slideshow in order to help them. In the no-choice condition one participant said no, and in the choice condition four participants chose the third-ranked instead of the second-ranked alternative, but excluding these participants had no effect on the results and therefore they are included in the analyses.

After choosing or agreeing to watch a slideshow, participants in the preconsumption condition completed a two-minute word-listing delay task (Laran, Janiszewski, and Cunha 2008), rated each animal again and then watched a two minute slideshow of 20 photographs of their chosen animal. The postconsumption condition was identical except that participants watched the slideshow of their animal before the delay task and second rating.

## Results

*Effect of choice.* To test whether choice was necessary for the devaluation and rebound effect we conducted a 2 (first vs. second rating) x 2 (preconsumption vs.

postconsumption) x 2 (choice vs. no choice) repeated-measures ANOVA on ratings of the forgone/third-ranked animal. There was a marginally significant main effect of rating such that helping the forgone/third-ranked animal was more attractive on the first rating ( $M = 7.24$ ) than the second rating ( $M = 7.08$ ;  $F(1, 121) = 3.86, p = .05$ ). More importantly, in line with our prediction, this main effect was qualified by a significant three-way interaction among the factors ( $F(1, 121) = 5.40, p < .05$ ). Participants in the choice condition significantly devalued the attractiveness of donating to the forgone/third-ranked animal when the second rating was made prior to consumption ( $M_{\text{first}} = 7.21$  vs.  $M_{\text{second}} = 6.79$ ;  $F(1, 28) = 6.04, p < .05$ ), but the attractiveness of donating to their forgone/third-ranked animal rebounded when the second rating was made after consumption ( $M_{\text{first}} = 7.09$  vs.  $M_{\text{second}} = 7.14$ ;  $F(1, 34) = .09, p = .76$ ). This pattern replicates the previous studies. In contrast, for participants in the no choice condition, the attractiveness of donating to the forgone/third-ranked animal was not devalued when the second rating was made prior to consumption ( $M_{\text{first}} = 7.42$  vs.  $M_{\text{second}} = 7.42$ ;  $F(1, 30) = 0, p = 1.0$ ) and marginally decreased when the second rating was after consumption ( $M_{\text{first}} = 7.23$  vs.  $M_{\text{second}} = 6.97$ ;  $F(1, 29) = 3.11, p = .09$ ). Thus, we do not observe either devaluation or rebound in the no-choice condition. These results, displayed in figures 4a and 4b, support our fourth hypothesis that choice moderates the devaluation and rebound effect. Clearly, ratings of the third-ranked alternative differed systematically based on whether it was forgone as part of a choice or omitted from the choice set.

We also analyzed the omitted alternatives by conducting the same analysis on the first, fourth, fifth and sixth ranked alternatives. None of these omitted alternatives showed the three-way interaction pattern exhibited by the forgone alternative ( $ps > .24$ ).

The ratings of all of the alternatives are displayed in table 2. As in the prior studies, our manipulations had no effect on regret ( $p > .24$ ).

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Insert figures 4a and 4b here

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Insert table 2 here

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## Discussion

Study 4 demonstrates that when consumers make an explicit choice to forgo an attractive alternative, the forgone alternative is devalued prior to consumption of the chosen alternative but rebounds afterwards. In contrast, when consumers do not make a choice, we do not observe a significant devaluation and rebound effect. Likewise, the alternatives omitted from the choice set do not show evidence of a devaluation and rebound effect, suggesting that this pattern is stronger for an explicitly forgone alternative. These results are consistent with the explanation that the value of the forgone alternative is altered to avoid distraction. They also offer evidence against a competing goals explanation, which predicts that all non-chosen alternatives would be devalued and rebound regardless of whether they were forgone or omitted from the choice.

## General Discussion

Consumers frequently forgo alternatives but then have opportunities to choose them on subsequent occasions. We believe that our research is the first to examine how evaluations of forgone alternatives change after the chosen alternative has been consumed. Over the past 50 years, dozens of studies have consistently demonstrated that the forgone alternative is devalued, often for years at a time, implying that devaluation is very long-lasting. However, these studies have overlooked the significant role of consumption. We show that devaluation may last only until the chosen alternative has been consumed, at which point the value of the forgone alternative rebounds.

Our findings provide support for the action based model of cognitive dissonance, which argues that attitudes are altered to support actions and behavior (Harmon-Jones and Harmon-Jones 2002). Rather than contradicting cognitive dissonance theory, this model describes the underlying mechanism for why dissonance leads to a change in the value of the alternatives (Harmon-Jones and Harmon-Jones 2002). We extend the action-based model by showing that that the change in attractiveness only lasts until the action (i.e., consumption) is complete.

Our four studies also rule out alternative explanations for the rebound effect such as the duration of consumption and regret. Study 1 demonstrates that the attractiveness of the forgone alternative was unaffected by the duration of consumption. All four studies rule out regret as an explanation by showing that regret was unrelated to the attractiveness of the forgone alternative.

Moreover, a competing goals model cannot explain these results. Our studies involve choice among means to the same goal; including a choice among candies (study 1), tasks to earn money (studies 2 and 3), and helping animals (study 4). These alternatives are means to a single goal, unlike the tasks examined in competing goals research. Second, our model differs from the goal-based model in terms of which alternatives are affected. We observe the devaluation and rebound effect for the forgone alternative but not for omitted alternatives. Likewise, study 4 showed that an alternative is more likely to be devalued and rebound when it is explicitly forgone rather than omitted from a choice. In contrast, the competing goal models predicts a general effect where the devaluation occurs for all alternatives regardless of choice (Brendl et al. 2003; Laran and Janiszewski 2009; Shah et al. 2002) which is inconsistent with our findings.

The rebound effect may be compared with variety seeking using the argument that after consumption individuals are satiated with the chosen alternative and therefore the forgone alternative appears more attractive because it provides variety. However, variety seeking cannot explain the full pattern of results. First, variety seeking applies to the postconsumption stage but cannot explain devaluation of the forgone alternative prior to consumption. Although it is possible that the devaluation and rebound effects are created by two separate processes, we find that the two effects usually co-occur, suggesting that a single process may be responsible for both. Second, variety seeking predicts an equivalent rebound effect for the forgone alternative and omitted alternatives, presuming that they offer similar variety. In contrast, we show a stronger rebound effect for the forgone alternative than the omitted alternatives.

Our findings might also be compared with Litt and Tormala's (2010) recent work on cognitive dissonance. Whereas the focus of our research is the forgone alternative, Litt and Tormala examined changes in the attractiveness of the chosen alternative over time, demonstrating that the postdecision increase in attractiveness that comes from making a difficult choice wilts in the face of minor attacks such as a negative product review. Interesting future research could examine whether changes in the attractiveness of the forgone alternative react analogously to positive information.

Finally, while we have focused on cases where the forgone alternative is devalued, there is some evidence that the attractiveness of the forgone alternative may increase momentarily immediately following a choice, before the individual has had the opportunity to resolve the dissonance (Festinger 1964; Walster 1964). For example, Carmon, Wertenbroch and Zeelenberg (2003) showed that the attractiveness of the forgone alternative can increase when consumers become attached to alternatives during deliberation. In our studies, we focus on the less immediate decrease in the attractiveness of the forgone alternative by including a delay task after choice and prior to measuring the attractiveness of the forgone alternative again.

### Managerial Implications

For managers, a key contribution of this research is the insight that consumers' devaluation of a forgone alternative may be a temporary rather than a lasting process, so the forgone alternative should not be considered a lost cause. These findings have important implications for firms that rely on customer relationship management systems



and recommendation engines. For instance, under Amazon.com's current system Robert would receive a recommendation for *Guns, Germs, and Steel* because it was a recently viewed item (Jacobi, Benson, and Linden 2006). However these recommendations will only occur shortly after choosing *The Girl with the Dragon Tattoo* since this information automatically expires after a time (Amazon.com 2012). However, our research suggests he will be unlikely to purchase *Guns, Germs, and Steel* until he has finished *The Girl with the Dragon Tattoo*. Instead, Amazon.com would be more successful recommending *Guns, Germs, and Steel* once they expect that Robert has finished *The Girl with the Dragon Tattoo* or recommending a different book that was not explicitly forgone. Firms using customer relationship management systems can incorporate appropriate consumption-length delays to improve the success rate of their recommendations.

Although our focus here was on consumer goods, we believe that the rebound effect may apply to other domains where choice is involved. Examples of the rebound effect seem to be common in many life choices. For instance, as part of a recent trend, retirees often embark on their "dream job" that they always wanted but had to forgo (Galt 2006). After a relationship ends, lovers often rekindle their romance with the "one who got away" (Kalish 1997). These examples suggest that the attractiveness of many different types of forgone alternatives may eventually rebound.

Choice forms the basis for much of consumer behavior and with almost every choice comes a forgone alternative. However, consumer research has tended to focus on the attractiveness of the chosen alternative. Our research suggests that forgone alternatives deserve more attention because they rebound in attractiveness after the chosen alternative has been consumed. By understanding how consumers value the

alternatives that they do not choose as well as those they choose, we can develop a richer understanding of their dynamic choice processes.

Table 1. Ratings of the Alternatives (Study 1)

		First Rating (Predecision)	Second Rating	Interaction <i>F</i> (2, 68)
First Ranked	Preconsumption	8.04 (1.20)	8.04 (1.20)	1.96
	Delayed Preconsumption	7.76 (1.85)	7.68 (1.89)	
	Postconsumption	7.83 (1.20)	7.06 (1.86)	
Chosen	Preconsumption	6.43 (1.79)	6.75 (1.64)	1.96
	Delayed Preconsumption	6.68 (1.89)	6.96 (1.74)	
	Postconsumption	6.89 (1.41)	6.11 (2.72)	
Forgone	Preconsumption	5.89 (1.85)	5.14 (2.22)	3.37*
	Delayed Preconsumption	5.88 (1.96)	5.04 (2.09)	
	Postconsumption	5.94 (1.98)	6.22 (1.70)	
Fourth Ranked	Preconsumption	4.25 (1.67)	3.82 (1.56)	1.43
	Delayed Preconsumption	4.76 (1.81)	4.08 (1.73)	
	Postconsumption	4.56 (1.89)	4.50 (2.17)	
Fifth Ranked	Preconsumption	3.39 (1.71)	2.92 (1.68)	0.15
	Delayed Preconsumption	3.16 (1.62)	2.80 (1.53)	
	Postconsumption	3.11 (1.28)	2.83 (1.50)	
Sixth Ranked	Preconsumption	2.46 (1.57)	2.21 (1.45)	0.62
	Delayed Preconsumption	2.08 (1.32)	2.08 (1.50)	
	Postconsumption	2.33 (1.03)	2.06 (0.94)	
Seventh Ranked	Preconsumption	1.75 (1.17)	1.79 (1.03)	3.27*
	Delayed Preconsumption	1.52 (0.96)	1.40 (0.65)	
	Postconsumption	1.33 (0.97)	1.61 (0.70)	

Table 2. Ratings of the Alternatives (Study 2)

		Choice Condition		No-Choice Condition		3-way Interaction <i>F</i> (1, 121)
		First Rating (Predecision)	Second Rating	First Rating (Predecision)	Second Rating	
First Ranked	Preconsumption	8.03 (1.78)	7.90 (1.86)	8.23 (1.91)	8.03 (2.06)	1.42
	Postconsumption	7.94 (1.76)	7.77 (1.91)	8.43 (1.04)	7.83 (1.68)	
Chosen/ Second Ranked	Preconsumption	7.45 (1.99)	7.69 (1.93)	7.97 (1.99)	7.94 (2.06)	4.50*
	Postconsumption	7.40 (2.02)	7.83 (1.77)	8.07 (1.05)	7.43 (1.91)	
Forgone/ Third Ranked	Preconsumption	7.21 (2.29)	6.79 (2.35)	7.42 (2.19)	7.42 (2.26)	5.40*
	Postconsumption	7.09 (2.08)	7.14 (2.30)	7.23 (1.74)	6.97 (1.99)	
Fourth Ranked	Preconsumption	6.66 (2.48)	6.86 (2.49)	6.74 (2.45)	6.68 (2.60)	0.07
	Postconsumption	6.23 (2.61)	6.74 (2.47)	6.50 (2.00)	6.63 (1.97)	
Fifth Ranked	Preconsumption	6.00 (2.69)	6.14 (2.80)	6.32 (2.68)	6.45 (2.63)	1.17
	Postconsumption	5.43 (2.91)	5.69 (2.94)	5.63 (2.54)	5.50 (2.61)	
Sixth Ranked	Preconsumption	5.14 (3.09)	5.55 (3.05)	5.77 (2.88)	6.03 (2.95)	0.05
	Postconsumption	5.00 (2.96)	5.51 (3.18)	4.93 (2.72)	5.20 (2.76)	

Figure 1. Stage of Consumption and the Attractiveness of the Forgone Alternative

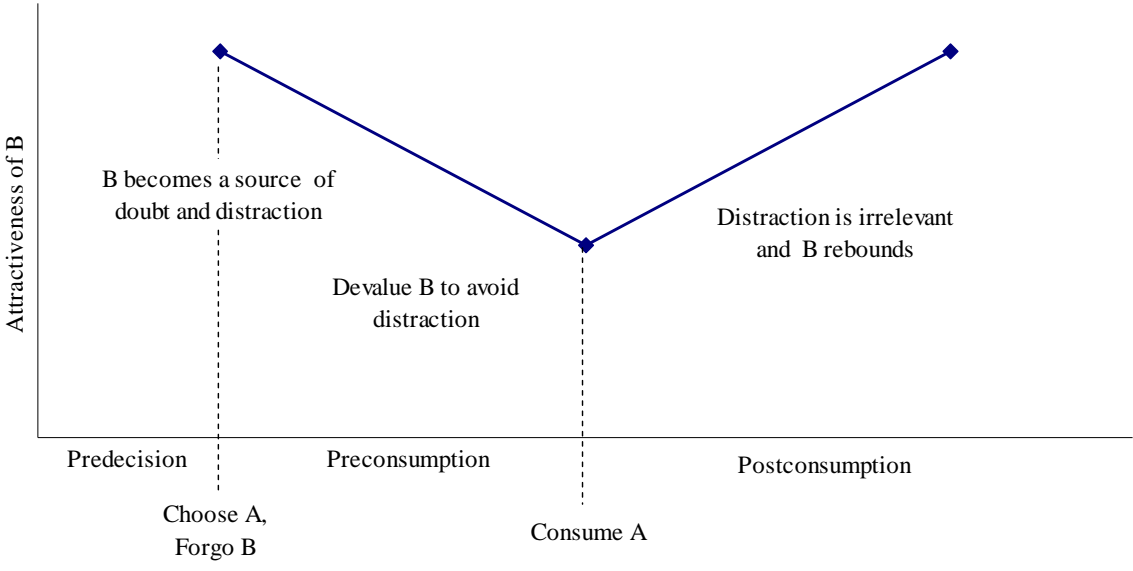


Figure 2. Attractiveness of the Forgone Alternative Across the Stages of Consumption

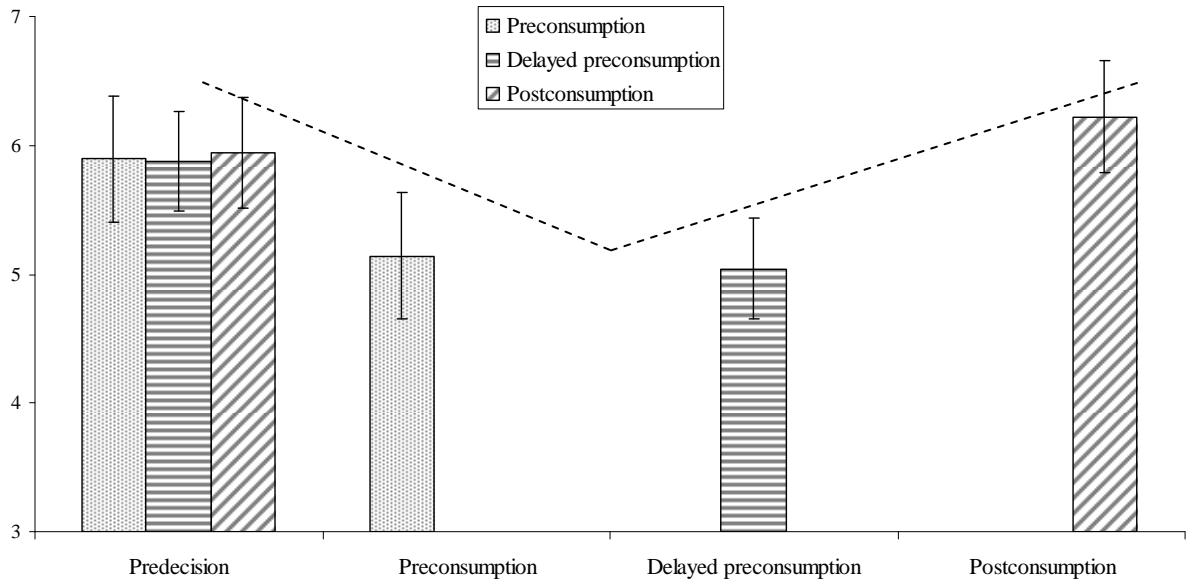


Figure 3a. Attractiveness of the Alternative Forgone in a High Dissonance Choice

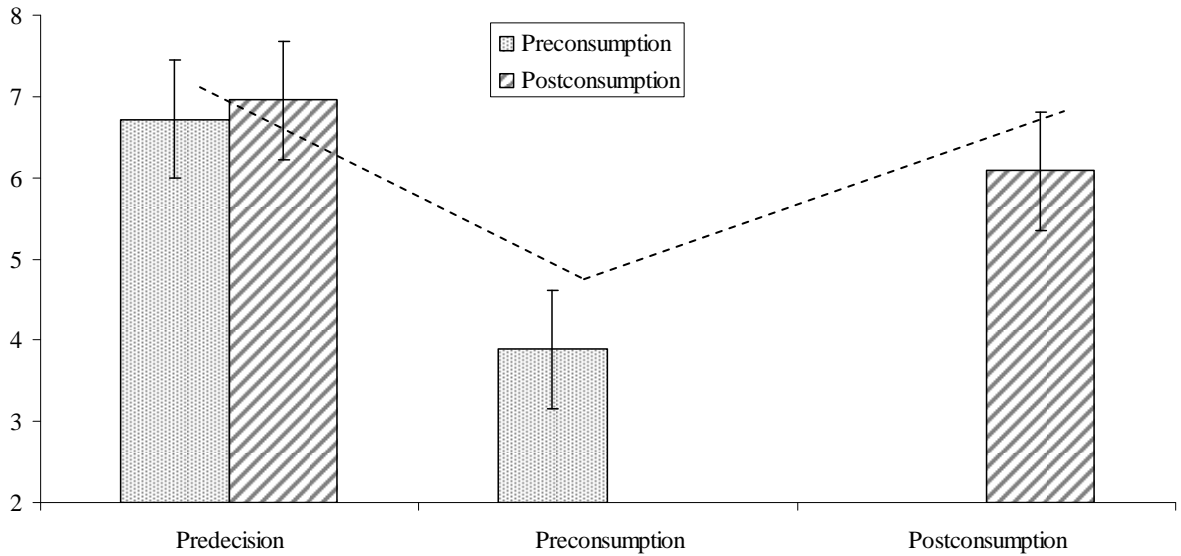


Figure 3b. Attractiveness of the Alternative Forgone in a Low Dissonance Choice

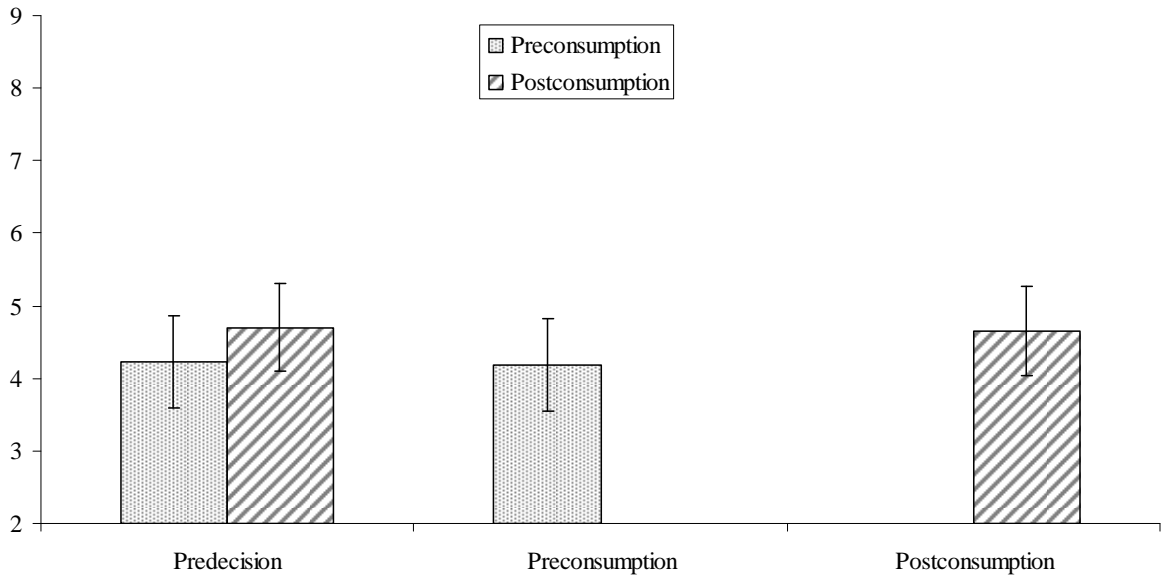


Figure 4a. Attractiveness of the Alternatives in a Choice Situation\*

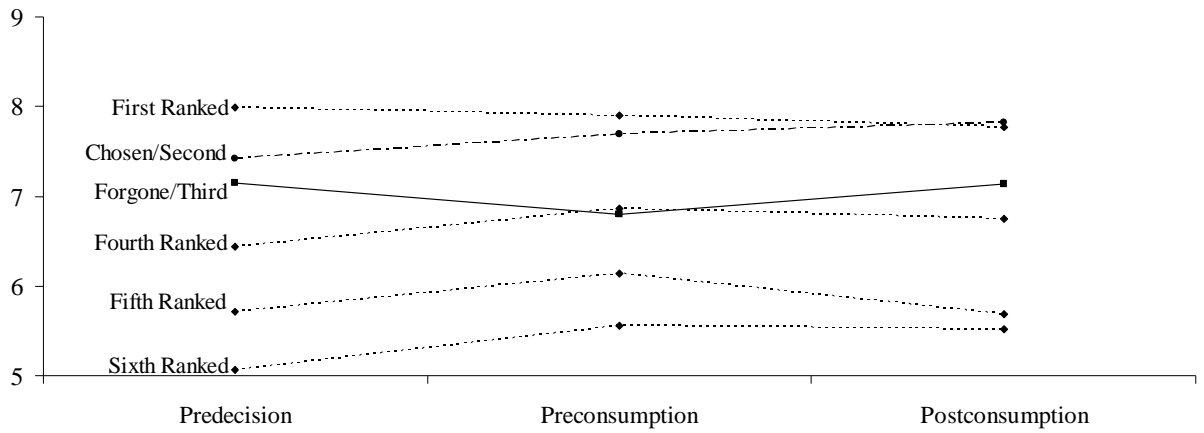
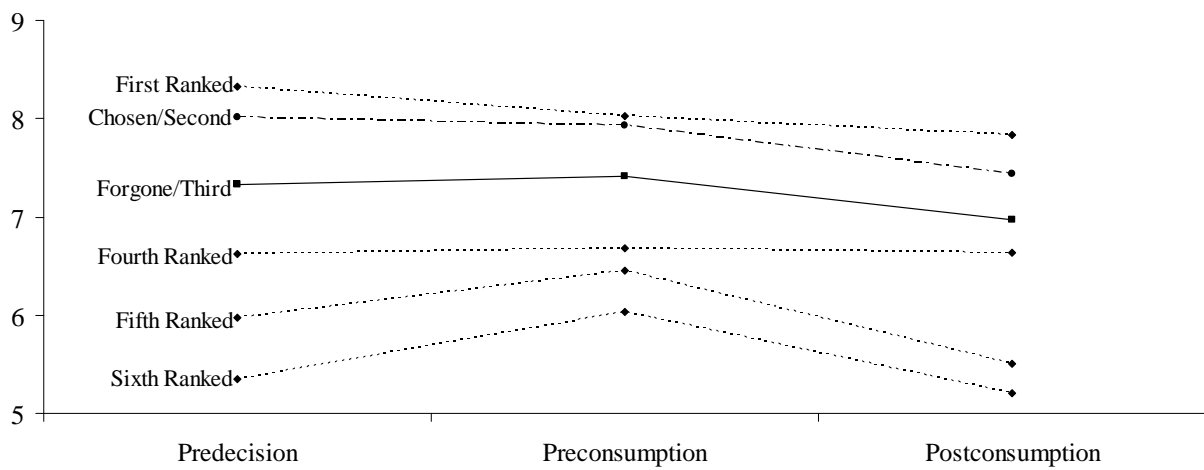


Figure 4b. Attractiveness of the Alternatives in a No-Choice Situation\*



\*Note: for the sake of clarity these figures display the average predecision ratings for each alternative. None of the predecision ratings were significantly different.



### Chapter III: The Duality of Decisions and the Case for Impulsiveness Metrics<sup>2</sup>

Customer metrics provide a critical tool for firms to manage their performance and predict future outcomes (Gupta and Zeithaml 2006), and management techniques put customer metrics as the first step towards shareholder value (Heskett et al. 1994). Most firms focus on customer satisfaction, which is measured by almost 75% of firms, many on a daily basis (Morgan, Anderson, and Mittal 2005). Its popularity is supported by decades of research demonstrating its ability to predict financial outcomes (Anderson, Fornell, and Lehmann 1994; Morgan and Rego 2006).

However, satisfaction metrics reflect only one aspect of consumer decision-making, whereas many decision theories hold that two processes are involved. In psychological theories, decisions can be made based on a slow, explicit process or a fast, intuitive process (Stanovich and West 2000; Strack and Deutsch 2004; Strack, Werth, and Deutsch 2006). Similarly in neuroscience theories, consumption behavior is a result of 'liking' something, a hedonic reaction of enjoyment and 'wanting' it, a motivational force to obtain it (Berridge 2004). Although there are differences between these theories, it is clear that decisions involve two separate aspects.

These dual-process theories suggest that metrics which measure the impulsiveness with which consumers purchase a product can complement customer satisfaction to provide a better understanding of consumer behavior and consequently shareholder value.

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<sup>2</sup> This research was conducted with Roland Rust and was published in 2011 in the *Journal of the Academy of Marketing Science*

Customer satisfaction metrics tend to reflect how much consumers ‘like’ a product, and the reflective, explicit decision process. In contrast, impulsiveness metrics reflect the fast, automatic process (Strack, Werth, and Deutsch 2006), and the purely motivational ‘wanting’ for the product (Berridge 2004).

This dual-process view of customer metrics raises a number of key questions for firms. First, what is the relative importance of satisfaction and impulsiveness metrics in their association with the consumer decision process and, ultimately, firms’ shareholder value? Although previous studies have indicated that impulse purchases represent a substantial proportion of all purchases (Kollat and Willett 1967), no research has yet to directly compare impulsiveness metrics with satisfaction metrics. Second, under what conditions are impulsiveness metrics more important than satisfaction metrics and vice versa? Finally, what marketing tools influence impulsiveness? Although much is known about how to drive customer satisfaction (Churchill and Surprenant 1982; Zeithaml, Berry, and Parasuraman 1996), relatively little is known about ways to influence impulsiveness.

The following section briefly reviews how dual-process theories indicate that satisfaction and impulsiveness metrics reflect unique aspects of consumer decisions and develops predictions about the metrics. Next we test these predictions with a pair of laboratory studies and a field study. Study 1 demonstrates that impulsiveness has a strong relationship with consumer decisions; indeed it is comparable to customer satisfaction. Furthermore study 1 shows that advertising influences impulsiveness but not satisfaction. Study 2 demonstrates that product involvement moderates the importance of impulsiveness. Finally, we generalize these results to shareholder value at the firm-level.

In a field study, 750 consumer ratings collected online were matched with stock market valuation for 101 firms. The advantage of the field study is that both firms and consumers were randomly sampled, allowing generalization to other firms. The results show the importance of both satisfaction and impulsiveness metrics as predictors of shareholder value.

### Conceptual Development

#### The Distinction between Satisfaction and Impulsiveness

Recent dual-process theories suggest that impulsiveness and satisfaction metrics reflect separate aspects of the decision-making process. In neuroscience, ‘liking’ and ‘wanting’ a product represent distinct neural processes regulated by different neural systems (Berridge 2004). ‘Wanting’ is defined as the urge to consume and the willingness to exert effort to obtain it, whereas ‘liking’ is defined as the experience of satisfaction and pleasure that comes from consuming it – the hedonic impact. Based on this model, impulsiveness metrics, which measure the “tendency to buy spontaneously, unreflectively, immediately and kinetically” (Rook and Fisher 1995, p. 306) largely reflect how much consumers ‘want’ a product (Ramanathan and Menon 2006; Vohs and Faber 2007). Moreover, dopamine, the key driver of ‘wanting,’ regulates impulsive behavior (Pine et al. 2010). In contrast, satisfaction, which is defined as a “pleasurable level of consumption-related fulfillment” (Oliver 1997, p. 13) corresponds with how much a consumer ‘likes’ a product (Blood and Zatorre 2001).

Second, psychological theories also suggest that decisions based on satisfaction are distinct from those based on impulse (Shiv and Fedorikhin 1999). Numerous theories have proposed that decisions can be arrived at through a fast, implicit and intuitive process or a slow, explicit and deliberative process (Kahneman 2003; Stanovich and West 2000). According to Strack and Deutsch (2004), the former corresponds with impulsiveness, and is characterized by decisions which are arrived at automatically based on reactions to objects in the environment. The latter process, termed the reflective system (Strack and Deutsch 2004), corresponds with satisfaction. Just as satisfaction is incorporated into loyalty intentions and expected product outcomes, in the reflective system “knowledge about the value and the probability of potential consequences is weighted and integrated to reach a preference” (Strack and Deutsch 2004, p. 222). One consequence of this distinction is that satisfaction and impulsiveness metrics should both be strongly related to consumers’ decisions to purchase products and consequently firm value.

Our purpose here is not to differentiate or reconcile the neuroscientific and psychological theories, but merely to draw on them to demonstrate that satisfaction and impulsiveness metrics represent separate underlying processes. Despite this, we do not claim that impulsiveness is wholly separate from satisfaction; indeed, dual-process theories argue that the processes are related (Berridge 2004; Strack, Werth, and Deutsch 2006). Yet these two factors reflect distinct, albeit related, mental processes that have different antecedents and consequences that are important to managers.

## Loyalty Intent Mediation

One implication of dual-processes is that they should influence consumer choice in different ways. Customer satisfaction is associated with future loyalty intentions toward the product (Boulding et al. 1993), such as plans to repurchase it and recommend it to others (Johnson, Herrmann, and Huber 2006). Therefore, loyalty intent should mediate the relationship between satisfaction metrics and product choice. Such mediation has already been demonstrated in the marketing literature (Hallowell 1996), and we simply replicate the results here. In contrast, impulsiveness is a short-lived, transient reaction to exposure to products or advertisements. By definition, impulse purchases are spontaneous, lacking planned behavior (Rook and Fisher 1995; Rook and Hoch 1985). Therefore, we hypothesize that the impulsiveness-choice path will not be mediated by loyalty intentions. Since impulsive decisions may be construed as a type of loyal behavior we should emphasize the difference between loyal behaviors, which involve action but not necessarily planning, and loyalty intent, which is merely planned action (Oliver 1999).

## Involvement Moderator

Although satisfaction and impulsiveness should both predict consumer decisions, the relative importance of those constructs will vary. We predict that consumers' involvement with the product will moderate the importance of impulsiveness. Product involvement represents the relevance (Zaichkowsky 1985) and importance (Mittal 1995)

of the product or the purchase task to the consumer. As consumers' level of involvement increases, they put more time and effort into their choice (Beatty and Smith 1987).

Because impulsiveness is unplanned, sudden and spontaneous (Rook and Hoch 1985), impulsiveness should offer better predictions in low- versus high-involvement situations (Strack, Werth, and Deutsch 2006).

### Advertising Intensity

Because satisfaction and impulsiveness represent distinct decision-processes, it is important to understand the drivers of each. While the drivers of customer satisfaction have been studied extensively (Churchill and Surprenant 1982; Oliver 1997), less is known about the drivers of impulsiveness (but see Madhavaram and Laverie 2004; Peck and Childers 2006). One possible driver of impulsiveness is advertising intensity.

Advertisements create positive associations with the brand (Aaker 1991) and these associations become automatically activated when presented with a purchase opportunity thereby prompting impulsiveness (Strack, Werth, and Deutsch 2006). In other words, advertisements may develop the mental associations that encourage impulsiveness. These associations may also act as a cue for the reward associated with the product, creating a 'wanting' reaction leading to impulsiveness (Berridge 2007). Therefore we predict that advertising will have a positive relationship with impulsiveness.

In contrast advertising's relationship with satisfaction is unclear. Some theories, such as attitude theories, suggest that information from advertisements influences beliefs which in turn influence attitudes such as satisfaction (Fishbein and Ajzen 1975).

However, the effect of direct experience with a product on attitudes often overwhelms most effects of advertising (Smith and Swinyard 1983), reducing its effect (e.g., Danaher and Rust 1996). Therefore, we predict no relationship between advertising and customer satisfaction.

Although the direct path between advertising and key outcomes such as consumer decisions and shareholder value is not the focus of this research, it is necessary to control for it. While this relationship has been investigated extensively (Conchar, Crask, and Zinkhan 2005), disputes about it remain (Vakratsas and Ambler 1999). It is difficult to distinguish whether increased advertisement causes firm performance, advertising budgets are determined based on firm performance, or some combination of the two. Yet many agree that advertisements build awareness and brand loyalty, leading to shareholder value (Wang, Zhang, and Ouyang 2009), so following previous research on this topic we predict that advertising will influence consumer decisions and shareholder value (Erickson and Jacobson 1992).

### Study 1

The purpose of study 1 was to demonstrate that impulsiveness and satisfaction represent important aspects of decision making. In this study we determine how satisfaction with a fictitious band (Woodbury) and impulsiveness predict the decision to download one of their songs. Satisfaction was manipulated via the quality of the songs and impulsiveness was manipulated via advertising for the band.

## Method

The study used a 2 (quality: high vs. low) x 2 (advertising: target vs. non-target ads) between-subjects design. Data were collected online from 65 adults in the United States in exchange for a small payment. Participants listened to two songs, one high quality and one low quality. The quality was determined by a pretest of participants from the same population ( $n = 46$ ) who rated the high-quality song ( $M = 5.15$ ) as better quality than the low-quality song ( $M = 3.26$ ;  $t_{\text{paired}}(45) = 8.11, p < .01$ ) on a seven-point scale (1 = “Very poor quality” to 7 = “Very high quality”). In the high-quality condition, the high-quality song was attributed to the target band, Woodbury and the low-quality song to the non-target band. In the low-quality condition the attribution was reversed. None of the participants had heard these songs before. Next participants viewed three print advertisements for one band (see example in Appendix B). In the target ads condition, the advertisements were for the target band, Woodbury, while in the non-target ad condition the advertisements were identical except for the non-target band, named The North Stars. Next, participants were offered the option of downloading a new song by Woodbury.

After making their choice, they rated the impulsiveness of their decision to download the song using a scale adapted from Jones et al.’s (2003) nine-item product-specific impulsiveness scale ( $\alpha = .84$ ). Next they rated their satisfaction with Woodbury using an adapted version of Oliver and Swan’s (1989) scale ( $\alpha = .95$ ). The item asking whether the decision was a good or bad choice was dropped because it did not apply. Loyalty intent was measured using the loyalty sub-scale from Zeithaml, Berry and Parasuraman’s (1996) behavioral intentions scale ( $\alpha = .96$ ). All items were measured using a 7-point rating scale (see Appendix C).



## Results and Discussion

*Impulsiveness and satisfaction manipulation checks.* To test the predictions that advertising influenced impulsiveness while quality influenced satisfaction we conducted a 2 (advertisement) x 2 (quality) MANOVA on impulsiveness of the decision to download a song and satisfaction with the band. As predicted advertising had a significant effect on impulsiveness ( $F(1, 61) = 4.72, p < .05$ ) such that impulsiveness was greater after viewing advertisements for the target band ( $M = 3.89$ ) than viewing advertisements for the non-target band ( $M = 3.28$ ). However, quality had no significant main effect on impulsiveness nor did its interaction with advertising have an effect. A different pattern of effects was observed for satisfaction. Quality had a marginally significant effect on satisfaction ( $F(1, 61) = 3.81, p = .06$ ), such that satisfaction with the band was greater when the high quality song was attributed to them ( $M = 4.61$ ) than the low quality song ( $M = 3.99$ ). However, advertising had no main effect on satisfaction, nor did its interaction with quality have an effect. These results indicate that advertising influences impulsiveness but not satisfaction, whereas quality influences satisfaction but not impulsiveness.

*Impulsiveness and satisfaction's relationship with choice.* Next we tested impulsiveness' and satisfaction's relationship with the decision to download the song. Because the focus of our research is ultimately related to metrics, the satisfaction and impulsiveness scales were used as the independent variables along with advertisements (0 = nontarget, 1 = target). We conducted a logistic regression on decision to download a new song (1 = yes, 0 = no) using advertising, impulsiveness and satisfaction. There was a

significant main effect of advertising ( $\beta = 1.37, p < .05$ ) such that participants were more likely to download the song after seeing advertisements for the target band rather than the competing band. Satisfaction had a marginally significant relationship with choice ( $\beta = .52, p = .07$ ). More importantly, impulsiveness had a significant relationship with choice ( $\beta = 1.08, p < .01$ ), indicating that impulsiveness represents a strong predictor of choice.

*Loyalty intent mediation.* Next, we tested whether loyalty intentions mediate the satisfaction-choice path but not the impulsiveness-choice path. We first regressed loyalty on both satisfaction and impulsiveness. Satisfaction had a significant positive relationship with loyalty intention ( $\beta = .97, p < .001$ ), whereas impulsiveness did not. Next we included loyalty intent in the logistic regression on choice as described above. Loyalty intention was significant ( $\beta = .88, p < .05$ ), but satisfaction was no longer significant ( $\beta = -.37, p = .49$ ). These results indicate that loyalty intent mediates the relationship between satisfaction metrics and choice, but not the relationship between impulsiveness and choice.

In accordance with dual-process theories, these results indicate that both customer satisfaction and impulsiveness are related to consumers' decisions. However these aspects are related to decisions in different ways. While satisfaction is associated with choice through loyalty intentions, impulsiveness is associated with choice directly.

## Study 2

The purpose of study 2 was to demonstrate that the relationship between impulsiveness and choice is moderated by involvement with the product. The procedure was similar to study 1 where participants listened to two songs and viewed advertisements. Unlike study 1, impulsiveness and satisfaction were not manipulated but rather were measured.

### Method

This study used a 2 (involvement: high vs. low) design. Seventy-one responses were collected from an online survey (average age 31; 62% female). Eight participants were excluded for failure to follow directions and technical difficulties playing the songs. For all participants, the high-quality song was attributed to Woodbury and the advertisements were for Woodbury. In the high-involvement condition, participants wrote a statement about how music was important to them. In the low-involvement condition, participants wrote a statement about how friendship was important to them. This manipulation was validated in a pretest ( $n = 19$ ). Three items: 1) “How relevant is music to you?” (1 = “Not at all relevant,” 7 = “Very relevant”); 2) “How much does music matter to you?” (1 = “Does not matter at all,” 7 = “Matters a lot”); and 3) “How affected are you by music?” (1 = “Not at all affected,” 7 = “Very affected”) were averaged together to create a music involvement scale ( $\alpha = .95$ ). An ANOVA found that

those who wrote about music ( $M = 6.63$ ) were more involved than those who wrote about friendship ( $M = 5.58$ ;  $F(1, 17) = 5.78, p < .05$ ).

## Results and Discussion

Reliability was high for the impulsiveness scale ( $\alpha = .89$ ) and the satisfaction scale ( $\alpha = .96$ ). To test whether involvement moderated the relationship between impulsiveness and choice, we conducted a logistic regression on decision to download the song with impulsiveness, satisfaction, involvement (0 = low, 1 = high), as well as the impulsiveness x involvement and satisfaction x involvement interactions as predictors. As confirmation of study 1, impulsiveness had a significant relationship with choice ( $\beta = 2.01, p < .01$ ), although in contrast to study 1 customer satisfaction was not significant ( $\beta = .33, p = .50$ ). More importantly, involvement moderated the path between impulsiveness and choice. There was a marginally significant negative interaction ( $\beta = -1.41, p < .10$ ), such that for the low-involvement condition, impulsiveness had a significant relationship with choice ( $\beta = 2.01, p < .01$ ), but for the high-involvement condition the relationship was only marginally significant ( $\beta = .60, p = .09$ ). These results indicate that impulsiveness has a greater relationship with purchase decisions for low-involvement situations than for high-involvement situations.

## Field Study

The first two studies demonstrate that customer satisfaction and impulsiveness relate to choice and that the relative importance of this relationship is moderated by involvement. The purpose of the field study is to apply the individual-level findings to shareholder value at the firm-level. Although analyzing a longitudinal data series would be ideal, such data do not currently exist, and would take years to collect. For this reason we do the best we can given the practical constraints of data collection under the rationale that it is better to explore an important topic imperfectly than to abandon any attempt to explore it. Therefore we collected cross-sectional data for the purposes of this research. Publicly traded firms were randomly sampled and consumer ratings of these firms were collected from an online panel. Dual-process theories predict that satisfaction and impulsiveness metrics should both predict firm shareholder value as measured by market valuation.

## Method

Consumer ratings were collected by contacting a sample of adults to determine if they had recently been a customer of any of the firms, and if so, their responses were aggregated by firm and related to the shareholder value measures for the subsequent quarter. We used a structural equation model to perform the analysis. All variables were standardized to have a mean of zero and a standard deviation of one prior to analysis.

The base model M1 tests the direct path between impulsiveness and market valuation, and the indirect path between satisfaction and shareholder value, mediated by loyalty intent. It also includes a direct path from advertising intensity to market valuation as well as controlling for other theoretically important variables including age and market concentration. We also consider four alternative models (M2 – M5) that extend the base model M1 in different ways. The model M2 includes a direct path between satisfaction and market valuation. The model M3 tests whether the impulsiveness-market valuation path is mediated by loyalty intent by including a direct path from impulsiveness to loyalty intent. Finally, models M4 and M5 include paths from advertising intensity to satisfaction and impulsiveness, respectively.

## Data

*Firm selection.* To allow generalization to the population of U.S. firms, 105 firms were randomly sampled from the population of all public U.S. firms using a stratified, probability sample. The sampling frame was compiled from all firms listed on AMEX, NASDAQ, and NYSE stock exchanges. Firms were required to meet four criteria to be included in the sampling frame. First, firms were required to be publicly traded companies with available financial records that could be used to create dependent measures. Second, the sampling frame only included firms which offered a predominant brand or a limited number of brands so that market valuation could be linked with ratings at the brand level. Firms offering multiple brands rarely report financial results of each brand separately and thus were excluded. Third, because this research is about consumer

reactions, only business-to-consumer firms were included. Fourth, for the sake of feasibility, only U.S. firms operating nationwide (in at least 18 states) were included. Local firms would have required a targeted survey, greatly complicating the analysis.

Because of a link between novelty and impulsiveness (Hausman 2000), it was important that the sample contain sufficient variability of firms offering novel products. As a proxy for novelty, the age of the firm, which was readily available from the stock exchange listing date, was used to stratify the sample. Old firms, defined as those listed prior to 2003, were selected with a probability of .46. Young firms, defined as those listed in 2003 or later, were selected with certainty (probability of 1) because there were so few that fulfilled the screening criteria. Data were weighted by the inverse of the strata selection probabilities to correct for this probability of selection. Within each stratum, firms were selected with a probability proportional to their market capitalization. This method created a greater chance of selection for large firms than for small firms, offering a better representation the U.S. economy. Of the 105 sampled firms, four were excluded because financial data were unavailable due to acquisition or bankruptcy during the study (FTD, Northwest Airlines, thinkorswim, and Eddie Bauer). The final sample included 101 firms (listed in Appendix D) which included 55 old firms and 46 young firms.

*Consumer selection.* Consumers' ratings were collected from a national online sample of 750 adult respondents. The sample and survey were conducted by a professional survey research company using a panel of volunteer survey participants who received points redeemable for gifts in exchange for their participation. The consumer sample was created to represent the U.S. adult population in terms of age and gender.

Each respondent rated one firm. At the start of the survey respondents indicated which of the firms they had purchased from in the past year. From that subset, one firm was selected as the target for the remainder of the survey. The firm that had the smallest sample size in the subset was selected as the target, which ensured that all firms received a sufficient number of ratings. For instance, one participant indicated making purchases from UPS, Sprint-Nextel, McDonald's, Burger King and Domino's Pizza within the past year. Because Domino's Pizza had the fewest ratings, the computer assigned Domino's Pizza as the subject of his survey, which this participant rated in terms of satisfaction, impulsiveness and loyalty intent. This participant's ratings were averaged with the other seven participants who rated Domino's Pizza to create a firm-level file to which financial results were appended. Each firm was rated by an average of 7.5 consumers.

*Dependent variable and covariates.* The outcome of interest for this study was a firm's shareholder value. Market valuation represents the total value of a firm's common shares and provides a commonly used indicator of overall value of a firm (Conchar, Crask, and Zinkhan 2005). Market valuation was collected from COMPUSTAT and was normalized by total assets to facilitate comparison and log-transformed to reduce skewness. In addition, the model controlled for a number of theoretically important covariates. First, it controlled for market concentration by including the Herfindahl-Hirschman Index, computed as the sum total of the squared market shares (Curry and George 1983) such that larger values indicated a greater concentration of firms. Market concentration is often included in models predicting firm performance (Anderson, Fornell, and Mazvancheryl 2004; Morgan and Rego 2006). Second, the model included



advertising intensity, which represents the amount spent on advertising and promotion during the year. Previous studies have shown that it has a positive relationship with market valuation (Anderson, Fornell, and Mazvancheryl 2004; Conchar, Crask, and Zinkhan 2005; Morgan and Rego 2006). Prior to analysis, advertising intensity was normalized by total assets to facilitate comparisons across industries and log-transformed to reduce skewness. Finally, the model controlled for the age of the firm, which represented the firm's level of experience and has been an important covariate in prior studies (Rao, Agarwal, and Dahlhoff 2004). All covariates were collected from COMPUSTAT.

## Results

Across all firms reliability was high for satisfaction ( $\alpha = .98$ ), loyalty intent ( $\alpha = .95$ ), and impulsiveness ( $\alpha = .88$ ). Likewise, within the 101 firms, reliability was high for satisfaction ( $\alpha_M = .97$ ,  $\alpha_{SD} = .03$ ), loyalty intent ( $\alpha_M = .90$ ,  $\alpha_{SD} = .15$ ), and impulse purchasing ( $\alpha_M = .83$ ,  $\alpha_{SD} = .13$ ) indicating reliable indicators. The correlations and descriptive statistics are presented in table 3.

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Insert table 3 here

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We first computed the base model M1, which fit the data adequately ( $\chi^2_{M1} (15, n = 101) = 35.7$ ; RMSEA = .12, AGFI = .84, NFI = .86, CFI = .91), but fell short of

recommended cutoff values, indicating that the model could be improved. As expected, the control variable, advertising intensity, had a strong positive relationship with market valuation ( $\beta = .55, p < .01$ ), replicating past research on this topic (Conchar, Crask, and Zinkhan 2005; Erickson and Jacobson 1992). Although theoretically important, the other covariates, market concentration ( $\beta = .01, p = .93$ ) and firm's age ( $\beta = .09, p = .20$ ), did not have a significant relationship with market valuation.

The model M1 confirmed the expected relationships (see table 4). Loyalty intent had a significant relationship with market valuation ( $\beta = .26, p < .01$ ) and satisfaction had a strong relationship with loyalty intent ( $\beta = .87, p < .01$ ). Therefore the total path between satisfaction and market valuation was significant ( $\beta = .22, p < .01$ ). More important for this research, the impulsiveness of a purchase had a sizable and significant relationship with market valuation ( $\beta = .23, p < .01$ )<sup>3</sup>.

We tested for mediation of the satisfaction- market valuation path using the nested model M2 which included a path from satisfaction to market valuation ( $\chi^2_{M2} (14, n = 101) = 35.7$ ). However this direct path was not significant ( $\beta = -.01, p = .96$ ) and including it did not significantly improve model fit ( $\chi^2_{\text{difference}} (1, n = 101) = 0, p = 1.00$ ), supporting the hypothesis that loyalty intent fully mediates the satisfaction- market valuation path, and confirming prior investigations of this effect (Hallowell 1996).

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<sup>3</sup> A potential threat to the validity of this model is a customer's ability to accurately recall the impulsiveness with which they made their purchase decision. To test this we compared the results for those who recalled a purchase made less than a month previously with those who recalled a purchase made a month or more previously. The results were unchanged by this duration, indicating that recall did not impact these results.

In contrast, loyalty intent did not mediate the impulsiveness- market valuation path. We created a nested model M3 which included the path from impulsiveness to loyalty intent. However this path was not significant ( $\beta = -.01, p = .85$ ) and including it did not significantly improve model fit ( $\chi^2_{\text{difference}} (1, n = 101) = 0, p = 1.00$ ), indicating that loyalty intentions do not mediate the impulsiveness- market valuation path.

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Insert table 4 about here

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We also tested advertising intensity's relationship with satisfaction and impulsiveness. Model M4 ( $\chi^2_{\text{M4}} (14, n = 101) = 34.4$ ) included a path from advertising to satisfaction. In support of the predictions, it was not significant ( $\beta = .11, p = .26$ ) and model M4 did not significantly improve the model fit.

Finally, we tested the path between advertising intensity and impulsiveness in model M5 ( $\chi^2_{\text{M5}} (14, n = 101) = 23.8$ ). As predicted there was a strong, positive relationship with impulsiveness ( $\beta = .34, p < .01$ ). Moreover, model M5 represented a significant improvement of model fit compared to the base model M1 ( $\chi^2_{\text{difference}} (1, n = 101) = 11.9, p < .01$ ). Compared to the other models, model M5 offered the best fit and overall fit the data well (RMSEA = .08, AGFI = .88, NFI = .91, CFI = .96). The final model M5 is presented in figure 5.

Although model M5 demonstrated a strong advertising-impulsiveness path, impulsiveness did not fully mediate the advertising-market valuation path. The direct path from advertising to market valuation remained significant and unchanged from

model M1 ( $\beta = .55, p < .01$ ). Rather, impulsiveness was an additional way for advertising to relate to market valuation. This impulsiveness path represented 12% of the total relationship between advertising and market valuation.

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Insert figure 5 about here

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*Involvement moderator.* Next we tested whether involvement mediated the relationship between impulsiveness metrics and market valuation. Three coders independently rated how involved the average consumer is with each firm's product (1 = "Uninvolving" to 7 = "Involving"). The ratings were averaged together ( $\alpha = .72$ ) and the data were split by the median into firms offering low-involvement products ( $n = 55$  firms) and high-involvement products ( $n = 46$ ). We conducted a multi-group structural equation model using a version of M5 which excluded loyalty so as to compare market valuation's direct paths with satisfaction and impulsiveness. As predicted, impulsiveness and satisfaction metrics performed differently for different levels of involvement. Customer satisfaction's relationship with market valuation was insignificant for firms offering low-involvement products ( $\beta = .09, p = .34$ ), but significant and positive for firms offering high-involvement products ( $\beta = .29, p < .01$ ). Conversely, impulsiveness metric's showed the opposite pattern. Its relationship with market valuation was significant and positive for firms offering low-involvement products ( $\beta = .21, p < .05$ ) but insignificant for firms offering high-involvement products ( $\beta = -.00, p = .99$ ). These results suggest that firms offering low-involvement products should pay more attention to impulsiveness metrics

than satisfaction metrics, whereas those firms offering high-involvement products should do the opposite. Additionally, the relationship between advertising and impulsiveness metrics varies with involvement. While advertising has a significant, positive relationship with impulsiveness for low-involvement products ( $\beta = .39, p < .01$ ), that relationship is not significant for high-involvement products ( $\beta = -.12, p = .45$ ).

### General Discussion

As suggested by dual-process theories of decision making, we find that customer satisfaction and impulsiveness metrics are both important indicators of firm outcomes. Customer satisfaction metrics represent the deliberative and ‘liking’ aspects of consumer decisions, whereas impulsiveness metrics represent the implicit and ‘wanting’ aspects. In a pair of studies and a field study, we show that these metrics are related to consumer choice at an individual level as well as shareholder value at the firm level. Moreover, the importance of these two metrics depends on the consumer’s level of involvement with the product. Impulsiveness metrics are relatively more important than satisfaction metrics for low-involvement products but not for high-involvement products. Moreover, these metrics are influenced by different marketing tactics. Advertising has a positive effect on impulsiveness but not on satisfaction.

Although both types of metrics provide useful associations with shareholder value, currently most firms measure only satisfaction. The Marketing Research Association’s *Blue Book (Blue Book: Research Services Directory 2009)* lists 105 research companies that specialize in customer satisfaction, but none that specialize in

impulse purchasing or impulsiveness. Yet, while most firms do not collect impulsiveness metrics, they frequently employ marketing tactics that influence impulsiveness such as advertising, product displays (Stern 1962), promotions (Kacen 2003), and encouraging consumers to handle products (Peck and Childers 2006). By measuring impulsiveness metrics firms can more effectively manage these tactics and determine their efficacy.

### Limitations

Some limitations of our research should be noted. First, the field study data are limited to cross-sectional measures, preventing strong inferences of causality. Because a longitudinal series requires substantial resources and many years to collect, this research uses a cross-sectional design. Despite these data limitations, this research provides a thorough exploration of these issues, which is preferable to leaving it unexplored.

### Conclusion

This research suggests that firms can improve their performance by focusing on key customer metrics. The impulsiveness with which consumers make their purchase decisions and customer satisfaction complement each other to provide a richer understanding of consumer behavior. Future research can build on these findings to explore these two aspects of consumer behavior in more depth.

Table 3. Descriptive Statistics and Correlations

	Means	SD	1	2	3	4	5	6	7
Market valuation <sup>ab</sup>	15,921.86	30,426.16	1.00						
Satisfaction	5.56	.79	.32	1.00					
Impulsiveness	3.25	.68	.45	.16	1.00				
Loyalty intent	5.10	.87	.38	.87	.13	1.00			
Market concentration	.20	.15	.15	.18	.03	.23	1.00		
Advertising intensity <sup>ab</sup>	357.68	528.79	.66	.11	.34	.18	.10	1.00	
Firm's age	19.49	18.69	-.01	.02	.03	-.02	.23	-.17	1.00

<sup>a</sup>Log-transformed for correlations

<sup>b</sup>Normalized by total assets for correlations

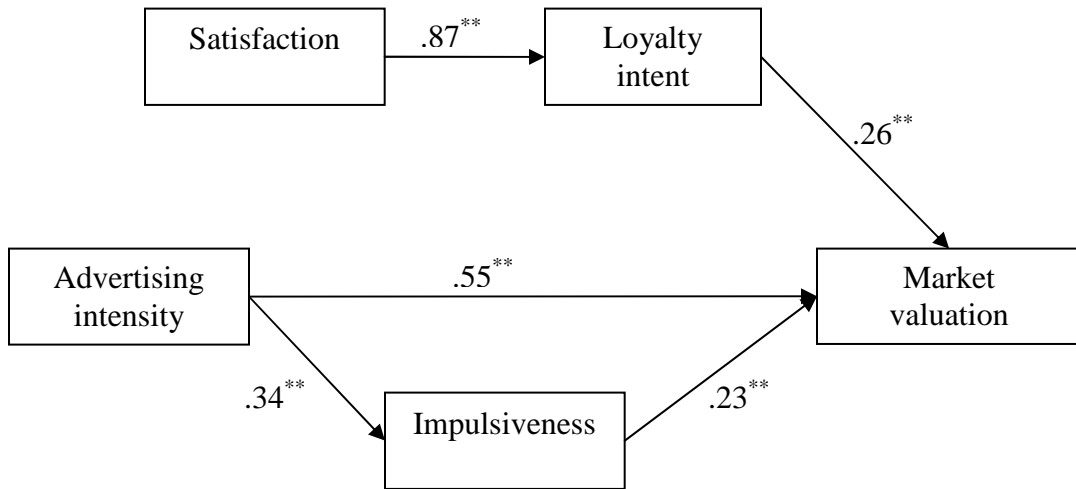
Table 4. Path Coefficients for Models M1 – M5

	M1	M2	M3	M4	M5
Impulsiveness → Market valuation	.23**	.23**	.23**	.23**	.23**
Loyalty intent → Market valuation	.26**	.26**	.26**	.26**	.26**
Market concentration → Market valuation	.01	.01	.01	.01	.01
Advertising intensity → Market valuation	.55**	.55**	.55**	.55**	.55**
Firm's age → Market valuation	.09	.09	.09	.09	.09
Satisfaction → Loyalty intent	.87**	.87**	.87**	.87**	.87**
Satisfaction → Market valuation	--	-.01	--	--	--
Impulsiveness → Loyalty intent	--	--	-.01	--	--
Advertising intensity → Satisfaction	--	--	--	.11	--
Advertising intensity → Impulsiveness	--	--	--	--	.34**

\*\* p < .01



Figure 5. Estimates for Final Model



\*\* p < .01

Note: Some covariates included in the model are not shown in the figure

## Chapter IV: Effective Substitution and the Drawback of High Similarity<sup>4</sup>

Substitution is a common part of the consumer experience. Consumers frequently make substitutions for products that are out-of-stock (Emmelhainz, Stock, and Emmelhainz 1991; Peckham 1963), too expensive (Bucklin and Srinivasan 1991), too unhealthy (Tuorila, Kramer, and Cardello 1997), or otherwise unavailable. Despite the prevalence of substitution, there is surprisingly little research on what makes a replacement product an effective substitute. By an effective substitute, we mean a replacement product's ability to satisfy the consumer's desire for the unattained product. For example, if a consumer is looking forward to drinking a Coke but finds it unavailable, will another brand of cola be a more or less effective substitute than a lemon-lime soda? Our research shows that consumers often have incorrect beliefs about substitution effectiveness, meaning that their predictions about which products will provide the best substitutes differ from their post-experience evaluations.

One factor that is often discussed in relation to substitution is similarity between products. It is widely believed that product similarity is synonymous with substitutability (Ratneshwar and Shocker 1991; Srivastava, Leone, and Shocker 1981). For example, in discussing the substitution-in-use (SIU) methodology, Ratneshwar and Shocker (1991, p. 282) state "the SIU approach focuses on the instrumental consequences of products, and it implies that products should be perceived as similar whenever they are perceived as substitutable as means for the same ends or usages." This research shows that the

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<sup>4</sup> This research was conducted with Rebecca Hamilton, and is reported in a 2012 working paper by Zachary G. Arens and Rebecca W. Hamilton titled "Effective Substitution: Are Moderately Similar Replacements Better than Highly Similar Replacements?"

relationship between similarity and substitution is more complicated. We propose that moderately similar products may be more effective substitutes than highly similar products because they encourage consumers to think of their motivation for consumption more abstractly. A moderately similar replacement encourages consumers to think more broadly about the motivation for consumption (e.g., drinking a soda instead of drinking cola), thereby making the replacement seem better suited to fulfill the goal.

Our research complements previous work on the drawbacks of highly similar products. Recent work on copycat brands shows that when a new brand is highly similar to a leading brand, comparing the two brands activates consumers' persuasion knowledge, driving down the evaluation of the highly similar brand (van Horen and Pieters 2011). Our work complements this research because we examine consumers' post-consumption evaluations of substitutes rather than their pre-consumption evaluations. Additionally, work on schema congruity shows that new products that are moderately congruent with an existing schema are evaluated more positively than new products that are highly congruent (Meyers-Levy and Tybout 1989; Peracchio and Tybout 1996). Our research complements this work because we focus on consumers' desire for the unattained product and we show that this desire is moderated by the similarity between the chosen and substitute products.

Understanding the factors that influence substitution effectiveness is critically important to both consumers and firms. Substitution is a common aspect of consumer behavior and the ability to substitute effectively is related to quality of life. Substituting one product for another represents a form of adjustment, an important skill that factors into subjective well-being (Brandtstädter and Rothermund 2002). For firms, it is

important to offer products that satisfy customers as well as completely fulfill their motivation to purchase a competitor's products. In the next section, we discuss research on substitution, similarity and abstract thinking and develop hypotheses. Next, we report the results of four studies testing our hypotheses, discuss the findings, and suggest implications for both consumers and firms.

### Substitution Effectiveness

Substitution has been operationalized in various ways. One common way of operationalizing substitution is by measuring cross-price elasticity. This approach suggests that products A and B are substitutes if an increase (decrease) in the price of A is associated with an increase (decrease) in the quantity of B demanded (Hicks 1963; Slutsky 1960). Typically, this relationship is estimated using panel data examining the pairwise changes in price and quantity demanded among products to create market structure among competing brands (Blattberg and Wisniewski 1989; Kamakura and Russell 1989). However, panel data only reflect consumers' choices, indicating their *beliefs* that a product can substitute for another rather than its actual effectiveness as a substitute. For example, an increase in the price of Coke may prompt consumers to choose Pepsi instead, indicating that consumers expect that Pepsi will satisfy their desire for Coke. However, this relationship does not indicate whether Pepsi actually satisfied the consumer's desire for Coke. As we show in this research, consumers' beliefs about one product's ability to substitute for another often do not reflect its actual effectiveness as a substitute. In other words, the cross-price elasticity view of substitution focuses on

decision utility, whereas our view of effective substitution focuses on experienced utility, and these two forms of utility may differ (Kahneman, Wakker, and Sarin 1997). Effective substitution allows us to distinguish between a replacement product that effectively substitutes for a chosen product and one that was intended to substitute but fails to do so effectively.

A second way of operationalizing substitution is to measure the ability of a replacement product to satisfy the consumer's desire for the unattained product. Lattin and McAlister (1985) proposed measuring cross consumption response, which involves comparing the unconditional likelihood of consuming product B with the likelihood of consuming product B after consuming product A. The two products are considered to be substitutes if consuming A leads to a lower likelihood of consuming B in the future (Lattin and McAlister 1985). Cross consumption responses more closely approximate substitution effectiveness than cross-price elasticities, but this measure still characterizes substitution as a property of the relationship between products rather than as a process that may depend on consumer characteristics and context in addition to the relationship between products.

A third way substitution has been operationalized, particularly in the behavioral literature, is by defining substitutes as different products that fulfill the same goal (Kruglanski 1996). In early work on this topic, Lewin (1935) argued that adopting a goal creates a "tension system" and different tasks that can relieve the tension are considered substitutes for each other (Henle 1942; 1944). Recent work expanded on this idea, proposing that products can be viewed as a bundle of features that deliver benefits to satisfy consumers' goals (Huffman, Ratneshwar, and Mick 2000). When two different

products represents means to the same goal – also known as an equifinality arrangement – consuming one of the products satisfies the goal, satiating the consumer’s desire for both the consumed and unconsumed products (Kruglanski 1996). This third operationalization of substitution is the one that is closest to our construct of substitution effectiveness because it allows the outcome of substitution to vary based on consumer characteristics and context in addition to the relationship between products.

Building on past work, we propose that substitution effectiveness involves two elements. First, in accordance with goal theory, effective substitution involves fulfilling the motivation to consume the unattained product (Kruglanski 1996). Fulfillment is a relative concept because motivation is a dynamic process (Atkinson and Birch 1970). For instance, drinking a Coke fulfills a consumer’s desire for Coke temporarily, but at some time in the future motivation to drink a Coke may return. For the purposes of this research we limit our consideration of motivation to the time period immediately following consumption of the replacement. Second, derived from work on customer satisfaction, effective substitution involves a perception of effectiveness. An effective replacement product adequately meets the consumer’s expectations for the unattained product (Oliver 1997) such that the two products are largely interchangeable. The distinction between substitution effectiveness and the perception of effectiveness can lead to incorrect lay beliefs, not unlike other research distinguishing between product assortment and perceptions of product assortment (Broniarczyk, Hoyer, and McAlister 1998).

## Substitution Effectiveness and Similarity

When consumers are unable to obtain a product they planned to buy they often choose a replacement. One strategy for selecting a replacement is to choose another product that shares the unattained product's features. Products with many of the same features offer the same benefits, often fulfilling the same goal (Huffman et al. 2000). As the number of common features increases, so does the perceived similarity between products (Johnson 1986; Tversky 1977). According to Tversky's contrast model, the similarity between two objects is a function of the number of features that they have in common minus the number of unique features (Tversky 1977). If consumers' lay theories about substitutability are based on similarity, we expect consumers to predict that highly similar products will be more effective substitutes than moderately similar products. We hypothesize:

H1: Consumers believe a replacement product that is highly similar to an unattained product will be a more effective substitute than one that is moderately similar.

In contrast to consumers' lay theories we propose that moderately similar replacements may be more effective substitutes than highly similar ones. Substitutability is not a fixed property but can vary depending on situational goals (Ratneshwar, Pechmann, and Shocker 1996; Ratneshwar and Shocker 1991; Shocker, Bayus, and Kim 2004; Stefflre 1971) or personal chronic goals (Ratneshwar et al. 2001). For instance,

Ratneshwar and Shocker (1991) found that substitute products differ depending on the goal at hand. Products categorized as “snacks” differed from products categorized as “snacks you might eat at a Friday evening party while drinking a beer or other beverage” and from “snacks you might eat when you don’t have time for a regular breakfast” (Ratneshwar and Shocker 1991).

If two products satisfy the same goal, they serve as substitutes for one another (Kruglanski et al. 2002). Yet the common goal satisfied by two products can be viewed at different levels of abstraction (Huffman, Ratneshwar, and Mick 2000; Vallacher and Wegner 1987; Vallacher and Wegner 1989). This is critical because consumers can be prompted to think about their goals in more abstract or more concrete ways (Freitas, Gollwitzer, and Trope 2004). When consumers are prompted to think about their goal more abstractly, a greater variety of dissimilar products will be considered as substitutes (Kruglanski et al. 2002). In contrast, when consumers think more concretely, only highly similar products will be considered as substitutes.

We propose that the reverse will also be true: being asked to consider a moderately similar product as a substitute will prompt consumers to think about their consumption goal more abstractly than being asked to consider a highly similar product as a substitute. Two bodies of work suggest that as the similarity between products declines, substituting one product for the other prompts an increasingly abstract view of their common goal. First, Johnson (1988; 1989) found that choosing among noncomparable product leads to a more abstract view than choosing among comparable products. For instance, two toasters can be compared based on their number of slots, but comparing a toaster with a hair dryer requires thinking of the products more abstractly,



such as in terms of practicality (Johnson 1988). Although Johnson's work focuses on choice, his results are relevant because choice is closely related to the process of judging similarity (Medin, Goldstone, and Markman 1995). Second, Barsalou's (1983; 1991) research on categorization indicates a relationship between similarity and goals. Items that may otherwise seem unrelated can appear similar given a particular goal. For instance a raccoon and a snake are considered more similar when given the goal of identifying animals that make good pets (Barsalou 1982). Although Barsalou's work focuses on top-down processing (i.e., the effects of goals on similarity), a bottom-up process in which the similarity between two products influences their common goal also may occur. Thus we hypothesize:

H2a: As its perceived similarity with the unattained product decreases, a replacement product will invoke a more abstract view of the common goal.

As the common goal for the products becomes more abstract, we suggest that two processes occur. First, because abstract goals have fewer details than concrete goals (Liberman, Sagristano, and Trope 2002; Trope, Liberman, and Wakslak 2007) they have fewer criteria for fulfillment and thus an abstract goal is easier to fulfill than a concrete one. Second, as the common goal becomes more abstract it becomes further removed from the unattained product. More products are able to satisfy an abstract goal and as a result, the strength of the connection between the goal and each product is reduced, creating a dilution effect (Kruglanski et al. 2002; Zhang, Fishbach, and Kruglanski 2007). In other words, a highly abstract common goal is so broad that it becomes ineffective at

satisfying the desire for the specific product. These two processes have a countervailing influence on the relationship between the common goal and the consumer's desire for the unattained product. At moderate levels of abstractness, the common goal becomes more inclusive and easier to satisfy but remains undiluted and strongly connected to the specific product. Thus, a moderately similar product can satisfy this goal and effectively satisfy the consumer's desire for the unattained product. At higher levels of abstractness, the connection between the common goal and the unattained product becomes heavily diluted and so broad that satisfying the goal no longer reduces the consumer's desire for the unattained product.

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Insert figure 6 here

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To illustrate these processes, consider the example in figure 6 where Coke can be replaced with Pepsi, Sprite or orange juice. As these replacement products become less similar to Coke, the common goal becomes increasingly abstract. Thus, replacing Coke with Sprite (moderately similar) prompts a common goal of soda (carbonated, sweet, thirst quenching), which has fewer criteria for fulfillment than a common goal of cola (carbonated, sweet, brown, cola flavor, and thirst quenching) created by replacing it with Pepsi (highly similar). At this moderate level of abstraction, the connection between Coke and soda remains strong and Sprite should be a better substitute than Pepsi. More formally:

H2b: A replacement product that is perceived to be moderately similar to an unattained product will be a more effective substitute than one that is perceived to be highly similar.

However, when the replacement is too dissimilar, the common goal broadens and the connection with the specific goal is heavily diluted, weakening substitute effectiveness. In figure 6, substituting orange juice for Coke prompts the common goal of drinking a beverage. Although this common goal has few details (thirst quenching), it also has numerous means (water, iced tea, beer, etc.), making the strength of the connection with any particular means (specific desire for a Coke) weak. Satisfying the common goal may not reduce the consumer's desire for the specific unattained product. We hypothesize:

H2c: A replacement product that is perceived to be moderately similar to an unattained product will be a more effective substitute than one that is perceived to be low in similarity.

The next section describes four studies testing these hypotheses. A pilot study provides initial evidence that moderately similar products are perceived to be better substitutes after they have been consumed than highly similar products. Our first study shows that although consumers predict that highly similar products will be more effective substitutes than moderately similar ones, moderately similar products are actually perceived as more effective substitutes once they are consumed. The second study

explores a boundary condition created by low similarity replacement products and offers evidence suggesting that the level of abstraction of the common goal explains the effect. Finally, the third study offers some evidence that the superiority of moderately similar relative to highly similar replacements is moderated by prompting consumers to think more abstractly about their consumption goal.

#### Pilot Study: Is Lemon Lime a Better Substitute for Coke than Cola?

A pilot study provides initial evidence for the advantage of moderately similar replacements. As part of an ostensible taste test, participants chose between two colas (Coke or Pepsi) or two lemon lime soft drinks (Sprite or 7Up). After making their choice, participants were told that their chosen beverage was out of stock and they were given either a moderately similar or a highly similar replacement beverage. They rated their satisfaction with the replacement beverage and their motivation to consume the unattained chosen brand of soda.

#### Method

One hundred two undergraduate students took part in the study in exchange for course credit. One participant who did not drink the beverage was removed. The study used a 2 (type of unattained beverage: cola vs. lemon lime) x 2 (replacement beverage similarity: highly similar vs. moderately similar) design. To provide a sense of agency, participants were allowed to choose which beverage they would consume. When the

chosen beverage was cola, participants rated the attractiveness of drinking Coke and Pepsi and then chose one to consume. When the chosen beverage was lemon lime, they rated and chose between Sprite and 7Up.

After making their choice, all participants were told that their chosen beverage was out of stock and they were given approximately 4.5 ounces of a replacement beverage (store brand cola or store brand lemon lime). When the chosen beverage was cola (lemon lime), the high similarity replacement beverage was store brand cola (lemon lime) and the moderate similarity beverage was store brand lemon lime (cola). Next, participants rated the similarity of the chosen beverage and the replacement beverage (1 = Very dissimilar, 7 = Very similar), their satisfaction with the replacement beverage (“How much did you enjoy the [replacement beverage]?” and “How delicious was the [replacement beverage]?” (1 = Not at all, 7 = Very much)) and their motivation to drink their chosen beverage (“After drinking a cup of [replacement beverage] how much would you like to drink [chosen beverage] right now?” (1 = Do not want to drink it at all, 7 = Would like to drink it very much) and “After drinking a cup of [replacement beverage] would you say that you want to drink [chosen beverage] more or less?” (1 = Want it less, 7 = Want it more)).

## Results

*Manipulation check.* Our manipulation of similarity was successful. A 2 (type of beverage) x 2 (replacement similarity) ANOVA on the replacement beverage’s similarity to the chosen beverage indicated that the beverages were perceived to be more similar in

the high similarity ( $M = 4.02$ ) than in the moderate condition ( $M = 1.80$ ;  $F(1, 97) = 70.21$ ,  $p < .01$ ). The chosen beverage had no main effect or interaction with the similarity manipulation.

*Satisfaction and motivation.* To compare satisfaction with the replacement beverage across conditions, we averaged together the satisfaction items ( $\alpha = .95$ ) and conducted a 2 x 2 ANCOVA controlling for the initial attractiveness of the beverage. Participants were marginally more satisfied with the replacement beverage when it was moderately similar ( $M = 4.08$ ) than when it was highly similar ( $M = 3.53$ ;  $F(1, 96) = 3.41$ ,  $p = .07$ ). The type of beverage had no main or interaction effects ( $ps > .18$ ) on satisfaction.

Another measure of substitute effectiveness is motivation to drink the chosen beverage after consuming the substitute beverage. We averaged the two motivation items ( $\alpha = .82$ ) and conducted a 2 x 2 ANCOVA with initial attractiveness of the chosen beverage as a covariate. Not surprisingly, initial attractiveness had a significant effect on motivation to drink the chosen beverage after the substitute beverage ( $F(1, 96) = 27.29$ ,  $p < .01$ ). More importantly, motivation was marginally greater after consuming a highly similar replacement ( $M = 3.42$ ) than a moderately similar one ( $M = 2.88$ ;  $F(1, 96) = 3.75$ ,  $p = .06$ ). The chosen beverage had no main effect or interaction with the similarity manipulation ( $ps > .50$ ). This result suggests that the moderately similar beverage was a more effective substitute for the chosen beverage than the highly similar beverage.

## Discussion

Consistent with our predictions, this pilot study shows that participants who had planned to drink a lemon-lime beverage (Sprite/7up) were more satisfied with a cola replacement than a lemon-lime replacement, and those who planned to drink a cola (Coke/Pepsi) were more satisfied with a lemon-lime than a cola replacement.

Accordingly, consumers were more motivated to consume the unattained chosen product when the replacement product was highly similar to the chosen product than when it was moderately similar. In other words, participants were more motivated to drink the unattained lemon-lime beverage (Sprite/7up) after drinking a lemon-lime beverage than a cola, and they were more motivated to drink an unattained cola (Coke/Pepsi) after consuming a cola than a lemon-lime beverage.

One limitation of this pilot study is that participants in the moderate and high similarity replacement conditions consumed different products. Although we controlled for this by making the moderate similarity replacement beverage in one condition the highly similar replacement beverage in the other condition, we increase the control in study 2 by using the same replacement product in all conditions.

A second limitation of this study is that the similarity measures were lower than expected, appearing to reflect low and moderate similarity rather than moderate and high. This result may be a result of contrast with the very high similarity between the two beverages that were initially evaluated (either Coke and Pepsi or Sprite and 7Up). We believe that in the context of a more diverse set of beverages (e.g., juice, water, milk, soda) similarity ratings for the replacement beverages would have been higher. We will

compare the effectiveness of low and moderate similarity replacement products in study 2.

### Study 1: Comparing Consumer Beliefs with Substitution Experience

Study 1 compares consumers' beliefs about substitution with their actual experiences. In this study participants expected to eat Cheerios breakfast cereal, but instead were told that Cheerios was unavailable and that they would be eating and evaluating a fictitious store brand called Merry-Os instead. The similarity between Cheerios and Merry-Os was either high, such that they had similar packaging and shared a number of features (e.g., both were "A good source of fiber"), or moderate, such that they had dissimilar packaging and distinct features (e.g., Merry-Os was "A good source of vitamins and minerals" while Cheerios was "A good source of fiber"). Following procedures used by Nelson, Meyvis and Galak (2009) to distinguish lay theories from consumption experiences, participants either consumed or imagined consuming a highly similar or moderately similar cereal called Merry-Os and then they rated its ability to substitute for Cheerios.

#### Method

The study used a 2 (similarity: high vs. moderate) design with two different samples of participants – forecasters and experiencers (Nelson, Meyvis and Galak 2009).



In the experiencers sample, ninety-nine undergraduate students participated for course credit, but eight participants who did not wish to eat the cereal were excluded.

Participants were told that the study was a cereal taste test and that they would be eating a sample of cereal. Next, participants answered a series of questions on their opinion of Cheerios before being told that they would eat a new brand of cereal, Merry-Os instead. They viewed an image of a Merry-Os cereal box next to the Cheerios box with the features of each listed below (See Appendix E). In the high similarity condition the Merry-Os box was very similar to the Cheerios box, with the same color background, similar font and a red heart icon. Both boxes listed the same four features (Made from whole grain oats; A good source of fiber; Helps reduce the risk of heart disease; and Tastes delicious). In the moderate similarity condition, the Merry-Os package used a different background color, font and icons than the Cheerios box but was otherwise identical to the box in the high similarity condition, including a photo of a bowl of the cereal. Moreover, in the moderate similarity condition the features of the two cereals differed (Merry-Os: Made from wheat, oats and corn; A good source of vitamins and minerals; Excellent nutrition promotes energy; and Unique toasted flavor; Cheerios: Made from oats; A good source of fiber; Helps reduce the risk of heart disease; and Classic flavor). Participants rated the similarity between the cereals (“How similar do you think Merry-Os is to Cheerios?” (1 = Very dissimilar, 7 = Very similar) and “How much do Merry-Os and Cheerios have in common?” (1=Very little in common, 7 = A lot in common)). Next all of the experiencers ate a sample of approximately 3.5 tablespoons of Cheerios served in a cup without milk. Finally, participants rated their motivation to eat Cheerios and their perception of Merry-Os’ effectiveness as a substitute (see table 5).

A second group of participants ( $N = 50$ ) comprising the forecasters completed the study online (average age = 36, 64% female). Instead of consuming Merry-Os, this group imagined doing so and predicted its ability to substitute for Cheerios (Nelson, Meyvis, and Galak 2009). In all other respects, the study for the forecasters was identical.

## Results

*Forecasters.* First, we examined consumers' beliefs about substitution by analyzing the predictions made by the forecasters. The similarity manipulation was successful. An average of the similarity items ( $\alpha = .91$ ) shows that Merry-Os was perceived to be more similar to Cheerios in the highly similar ( $M = 6.16$ ) than in the moderately similar condition ( $M = 4.46$ ;  $F(1, 48) = 28.05, p < .01$ ). We verified that there were no differences in the initial attractiveness ratings of Merry-Os across similarity conditions ( $p > .58$ ). Next we examined the effect on two scales – motivation to eat Cheerios and Merry-Os' perceived effectiveness as a substitute for Cheerios (see table 5). We averaged the two motivation items ( $\alpha = .81$ ) and conducted a one-way ANOVA. The predicted motivation to eat Cheerios after eating Merry-Os did not differ between the highly similar version ( $M = 4.04$ ) and the moderately similar version ( $M = 4.34$ ;  $F(1, 48) = .49, p = .49$ ). We also examined the perceived substitution effectiveness scale ( $\alpha = .88$ ). Merry-Os was predicted to be a better substitute for Cheerios when it was highly similar ( $M = 4.78$ ) than when it was moderately similar ( $M = 3.82$ ;  $F(1, 48) = 5.24, p < .05$ ), supporting the first hypothesis.

*Experiencers.* For the participants who actually ate the cereal, the similarity manipulation was also successful. As expected, Merry-Os was perceived to be more similar to Cheerios in the highly similar condition ( $M = 6.03$ ) than in the moderately similar condition ( $M = 5.42$ ;  $F(1, 89) = 5.12, p < .05$ ), but there were no differences in the initial attractiveness ratings of Merry-Os across similarity conditions ( $p > .41$ ). In contrast to the forecasters, when participants actually consumed the replacement, similarity had the opposite effect. First we analyzed motivation to eat Cheerios after eating Merry-Os ( $\alpha = .67$ ). Motivation to eat Cheerios was higher after eating the highly similar version of Merry-Os ( $M = 3.56$ ) than the moderately similar version ( $M = 2.91$ ;  $F(1, 89) = 4.72, p < .05$ ), indicating that the moderately similar version was a better substitute. Next we analyzed the average of the perceived substitution effectiveness scale ( $\alpha = .73$ ). As shown in figure 7, the moderately similar version of Merry-Os was perceived to be a better substitute than ( $M = 5.43$ ) than the highly similar version ( $M = 4.84$ ;  $F(1, 89) = 5.15, p < .05$ ). These results supports hypothesis 2b.

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*Copycat alternative explanation.* An alternative explanation for these findings may be that consumers had a negative reaction to copycat brands (van Horen and Pieters 2011). In the high similarity condition, participants may have punished Merry-Os because it copied Cheerios and lacked originality. However, this explanation is unsupported by our results. First, both forecasters and experiencers should penalize Merry-Os for being a copycat brand. Second, we tested this explanation by including the item “Merry-Os is trying to copy Cheerios” (1 = Strongly disagree, 7 = Strongly agree) as a covariate in the analysis for the experiencers sample. The copycat item did not have any direct effect and, more importantly, this covariate did not weaken the effect of similarity on perceived substitution effectiveness or motivation – both remained significant ( $ps < .05$ ). Hence, copycat perceptions do not explain why the experiencers feel that a moderately similar product is a more effective substitute for Cheerios than a highly similar product.

## Discussion

There is a widely held belief that products’ ability to substitute for each other increase with similarity. The literature treats the two concepts interchangeably (Ratneshwar and Shocker 1991; Srivastava, Leone, and Shocker 1981). Our data shows that consumers hold this belief too. However, we show that this belief may be incorrect: for the experiencers who actually ate the cereal, the moderately similar version was a more effective substitute and did a better job satiating consumers’ motivation to consume

Cheerios than the highly similar one. These results cannot be explained by a negative reaction associated with a copycat characterization.

A limitation of this study is the relatively low reliability statistics for the motivation scale exhibited by the experiencers. Because this scale is highly reliable in the forecasters sample and in our other studies, we elected to use the same scales in this study to provide consistency across studies. Analyzing the two scale items separately suggests the same conclusion as when they are combined into a scale: the moderately similar replacement does a better job of satisfying motivation for Cheerios than the highly similar replacement. This difference is significant for one item (How much would you like to eat Cheerios right now?  $p < .05$ ) but does not reach significance for the other ( $p = .25$ ).

One advantage of this study relative to our pilot study is that the product experience was held constant across conditions. All of the participants who experienced the product actually ate Cheerios, and only the product expectations varied. This underscores the importance of thinking about substitution as a function of subjective expectations as much as objective outcomes.

Although this study indicates that consumers' beliefs about substitution are incorrect, it does not address the underlying reason for it. The next two studies suggest that the reason for the incorrect beliefs may be due to a shift in construal level across phases of the consumption process. We predict that a moderately similar replacement prompts an abstract view of the goal, making it easier to fulfill, but consumers may not anticipate this shift in construal or its consequences. Evidence suggests that consumers do a poor job anticipating how their construal levels will be affected by changes in their

situation (Hamilton and Thompson 2007; Liberman and Trope 1998; Thompson, Hamilton, and Rust 2005; Trope, Liberman, and Wakslak 2007). Thus, consumers may not realize how the similarity of a replacement product will influence their view of the common goal, leading to incorrect beliefs about substitution.

### Study 2: Low Similarity as a Boundary Condition

Our first two studies suggest a negative relationship between similarity and substitution effectiveness. However, we believe this relationship should be limited to moderate and high levels of similarity and should reverse at lower levels of similarity. Study 2 investigates the boundary condition created by low similarity substitutes. Participants rated how much they wanted to listen to sixteen different songs and they were led to believe that they would listen to their favorite song. However, instead of listening to their favorite, participants listened to a replacement song that varied in its similarity to the selected song.

In addition to showing a boundary condition for the effect, this study also provides some evidence suggesting that variations in the degree to which participants are thinking abstractly/concretely are responsible for increasing the substitution effectiveness of moderately similar products.

## Method

One-hundred eight participants completed the study online (average age: 32, 57% female) in exchange for a small payment. Participants were randomly assigned to one of three similarity conditions (similarity: low vs. moderate vs. high) and then rated how much they wanted to listen to 16 classic songs. They were told that they would get to listen to their top rated song after answering a few questions. Next, they rated the similarity of their top rated song to the remaining songs (1 = Very dissimilar; 7 = Very similar). Just before listening to their top rated song, they were told that the system was unable to play it and they were given a replacement song instead. The replacement song was selected so that it was also highly attractive but was rated as very dissimilar, moderately similar or highly similar to the top rated song (see Appendix F for details of the selection procedure). After listening to the replacement song participants wrote a brief description of the song they had listened to, rated their motivation to listen to their top rated song, and rated the perceived effectiveness of the replacement song in substituting for the top rated song (see table 5).

Finally, to measure the degree to which participants were thinking abstractly or concretely, we asked participants to categorize the sixteen songs into groups. The number of groups used to categorize a set of items provides a measure of abstract/concrete thinking (Liberman, Sagristano, and Trope 2002). Few groups indicates abstract thinking involving a focus on a few key, high-level features, whereas many groups indicates concrete thinking with a focus on many specific details (Trope, Liberman, and Wakslak 2007). Thus, the number of categories participants created provides a relatively

unobtrusive measure of the degree to which their thinking after using the substitute product was abstract or concrete. Using the categorization tool in Qualtrics, participants were able to create from one to sixteen groups (one per song) and sort songs into each one.

## Results

*Manipulation check.* Two different measures provide a check for the similarity manipulation. First, we examined the similarity ratings. As expected, a linear contrast shows that the replacement song decreased in perceived similarity across the similarity conditions ( $M_{high} = 5.06$  vs.  $M_{moderate} = 3.88$  vs.  $M_{low} = 1.56$ ;  $F(1, 105) = 107.45$ ,  $p < .01$ ). An additional check comes from the song categorization task. The replacement song and favorite song were more likely to be categorized into the same group in the high similarity condition (81%) than in the moderate similarity (70%) or low similarity conditions (26%;  $\chi^2(2, N = 108) = 26.02$ ,  $p < .01$ ).

We verified that there were no differences in the initial attractiveness ratings of the replacement songs across similarity conditions ( $p > .91$ ).

*Goal abstraction.* We also tested whether the similarity between the unattained product and the replacement influenced how abstractly participants were thinking. We analyzed the number of categories participants created across conditions using a linear contrast for the low, moderate and high similarity conditions. Our manipulation of similarity had a marginally significant linear effect on the number of categories created



( $M_{low} = 3.80$  vs.  $M_{moderate} = 4.03$  vs.  $M_{high} = 4.29$ ;  $F(1, 105) = 3.35, p = .07$ ), suggesting that substituting a product with a dissimilar replacement prompts a more abstract view of the goal than a similar replacement.

*Substitution effectiveness.* Next we analyzed substitution effectiveness. First we averaged the four perceived substitution effectiveness items ( $\alpha = .87$ ) and conducted a 3 (low vs. moderate vs. high) ANOVA, testing for a quadratic effect which would suggest that perceived similarity has an inverted-U shaped effect. As predicted there was a significant quadratic effect ( $F(1, 105) = 6.56, p < .05$ ). A moderate similarity replacement was a better substitute ( $M = 4.62$ ) than low similarity replacement ( $M = 3.84$ ;  $F(1, 70) = 3.35, p < .05$ ), and a moderate similarity replacement was also a better substitute than high similarity replacement ( $M = 3.68$   $F(1, 67) = 7.18, p < .01$ ). These results support H2b and H2a, respectively. See figure 8.

We also analyzed the three motivation items ( $\alpha = .81$ ). There was no significant quadratic effect ( $F(1, 105) = .62, p = .44$ ). However, consistent with the previous studies, motivation to listen to the chosen song was marginally lower after listening to the moderately similar replacement ( $M = 4.35$ ) than after listening to the highly similar replacement ( $M = 5.06$ ;  $F(1, 67) = 3.26, p = .08$ ), indicating that the moderately similar replacement was a better substitute. There was no difference in motivation after listening to the moderately similar replacement and the low similarity replacement ( $M = 4.19$ ;  $F(1, 70) = .15, p = .70$ ).

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Insert figure 8 here

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We can illustrate this effect more clearly using examples from our data showing the ability of the Johnny Cash song “I Walk the Line” to substitute for other songs. One participant found that “I Walk the Line” was a good substitute for ABBA’s “Waterloo” ( $M = 4.75$ ), two songs that he considered to be moderately similar to each other ( $M = 4.00$ ). In contrast, two other participants rated “I Walk the Line” as only a moderately effective substitute ( $M = 3.13$ ) for Johnny Cash’s “Ring of Fire,” which were rated as highly similar ( $M = 6.00$ ). For a fourth participant “I Walk the Line” was a poor substitute for The Beatles’ “Hey Jude” ( $M = 2.75$ ), probably because these songs were perceived to be quite dissimilar ( $M = 1.00$ ).

*Depth of processing as an alternative explanation.* We examined the possibility that these findings may be due to differences in depth of processing across conditions. The similarity of the replacement product may influence the degree of cognitive elaboration, which could influence substitution effectiveness. To investigate this possibility we analyzed the number of words used to describe the replacement song as an indicator of cognitive elaboration (McGill and Anand 1989). The number of words did not differ with the similarity of the replacement song ( $F(2, 105) = .79, p = .46$ ) nor was there a quadratic effect ( $F(1, 105) = .01, p = .93$ ), indicating that depth of processing cannot explain these results.

## Discussion

This study indicates a curvilinear relationship between similarity and substitution effectiveness. We replicated our previous studies showing that a replacement with a moderate degree of similarity with the unattained product is a better substitute than one with high degree of similarity. However, we also provide evidence for an important boundary condition, showing that a replacement with a low degree of similarity is less effective than one with a moderate degree of similarity. This effect is consistent with our suggestion that as the common goal becomes more abstract, its connection with the unattained song is diluted, making the low similarity replacement a less effective substitute.

This study also provides evidence that the consumers' level of abstraction in thinking may underlie this effect. The number of groups participants used to categorize songs decreased with similarity, suggesting that the advantage of a moderately similar replacement is created by viewing the goal for the two products abstractly. In our next study, we manipulate whether participants are thinking concretely or abstractly by manipulating the number of groups used to categorize the songs.

### Study 3: Moderation by Abstraction

Study 2 offers some evidence that the abstractness of the common goal underlies the effect of similarity on substitution effectiveness. Study 3 provides further evidence for this explanation by moderating the abstractness of the common goal. As with study 2, this study uses songs as the stimuli. Whereas study 2 used the number of categories as a measure of the level of abstraction (Liberman, Sagristano, and Trope 2002), study 3 manipulates abstraction by assigning participants to use either a small or large number of categories to group the songs. Participants categorized the songs into three groups (to promote abstract thinking) or eight groups (to promote concrete thinking) before listening to a replacement song that was either moderately or highly similar to the unattained song. We predict that the moderately similar replacement song will have an advantage over a highly similar replacement for participants thinking more concretely, but that this advantage will decrease for participants thinking more abstractly.

#### Method

One hundred twenty-nine participants completed this study online (average age 34, 62% female) in exchange for payment. The study used a 2 (similarity: moderate vs. high) x 2 (abstractness: abstract/three categories vs. concrete/eight categories). The procedures were the same as in study 2 except that participants completed the categorization task where they grouped songs into three or eight categories prior to consuming the replacement product. After listening to the replacement song, participants

rated their perception of its substitution effectiveness and their motivation to listen to the unattained song. The latter scale included an additional motivation item (see table 5).

## Results

*Manipulation checks.* The similarity manipulation was successful. The replacement was perceived to be more similar in the high similarity condition ( $M = 5.28$ ) than in the moderate similarity condition ( $M = 3.89$ ;  $F(1, 125) = 31.66, p < .01$ ). The categorization task did not have a main effect or interact with the similarity manipulation ( $ps > .15$ ), indicating that the effect of categorization cannot be explained by similarity.

We also verified that there were no differences in the initial attractiveness of the replacement songs across conditions ( $ps > .23$ ).

*Moderation by abstractness.* To examine moderation by abstractness of thought we conducted a 2 (similarity) x 2 (abstractness) ANOVA on the average of the three motivation items ( $\alpha = .76$ ). As predicted, there was a marginally significant interaction between similarity and abstractness ( $F(1, 125) = 2.84, p = .09$ ). When participants were encouraged to think concretely by categorizing the songs into eight groups, motivation to listen to the unattained song was marginally lower after listening to a moderately similar replacement ( $M = 4.76$ ) than a highly similar replacement ( $M = 5.47$ ;  $F(1, 62) = 3.41; p = .07$ ), indicating that the moderately similar replacement was a better substitute. However, when participants were encouraged to think abstractly by categorizing the songs into only three groups, there was no difference in motivation after listening to a highly similar ( $M =$

4.84) and a moderately similar replacement ( $M = 5.01$ ;  $F(1, 63) = .24, p = .63$ ), indicating that abstractness moderates the effect of similarity on motivation to listen to the unattained song. Moreover, in line with our predictions the highly similar replacement in the concrete condition showed greater motivation than the remaining three conditions in a contrast analysis ( $F(1, 127) = 4.01, p < .05$ ). Next we analyzed the perceived substitution effectiveness items ( $\alpha = .87$ ). However, despite our predictions, there was no interaction effect on the perceived substitution effectiveness scale ( $F(1, 125) = .45, p = .50$ ) nor was there any main effect of similarity ( $F(1, 125) = .33, p = .57$ ).

## Discussion

This study provides more evidence that thinking abstractly about the common goal underlies the ability of a moderately similar replacement to substitute more effectively than a highly similar replacement. In support of our proposal that the advantage of a moderately similar replacement is created by prompting consumers to think about the consumption goal more abstractly, we show that manipulating abstract thinking moderates the effect on motivation. When participants are prompted to think about the songs concretely by categorizing them into eight groups, we replicate the effect found in previous studies where motivation is greater after consuming a highly similar replacement than a moderately similar one. However when prompted to think about them abstractly by categorizing them into three groups, the effect is attenuated and the moderately similar replacement no longer has an advantage.

We found a different result using the perceived substitution effectiveness scale. This may be because the act of categorizing the songs prior to listening had unintended consequences on the way participants experienced them. Categorizing may draw attention to common features that interferes with the perceived substitution effectiveness. Additional research is necessary to better understand these effects.

### General Discussion and Conclusion

Consumers rarely get everything that they want. Products may be too expensive, out of stock or otherwise unavailable, and consumers often attempt to substitute these unavailable products with a replacement. The critical question we address in this research is how effectively these replacements satisfy the consumer's goal for the unattained product.

We show that consumers' lay theories about how to substitute one product for another seem to be incorrect. While consumers believe that a very similar replacement product will provide the best substitute, in actuality a moderately similar product may be a more effective substitute. We propose that this effect is triggered by the juxtaposition of the unattained product and the moderately similar product, prompting consumers to think more abstractly about their consumption goal. Moderately similar products prompt consumers to consider a consumption goal with fewer details that is easier to fulfill, increasing substitution effectiveness. However, as similarity decreases further, the common goal may become too general, and its connection with the specific unfulfilled product is diluted, making it a less effective substitute. As a result, the similarity of the

replacement product seems to have an inverted-U shaped relationship with substitution effectiveness.

Notably our research offers a more detailed account than early work on substitution using the task-interruption paradigm (Henle 1942). This research indicated that the degree of substitution between tasks increases with similarity (Child and Grosslight 1947; Lissner 1933). Child and Grosslight (1947) and Lissner (1933) compared tasks of low and moderate similarity, and our results show that moderate similarity products are more effective substitutes than low similarity products. Because consumers seem to believe that highly similar products are more effective substitutes than moderately similar products, our focus is on products of moderate and high similarity.

Our view that consuming a replacement product can prompt an abstract view of the consumer's goal is interesting in light of research suggesting that individuals tend to view products abstractly before consumption but concretely afterwards (Hamilton and Thompson 2007; Thompson, Hamilton, and Rust 2005). A key difference for the current research is that substitution involves two products – the unattained and the replacement – and it is their common goal that varies in abstraction. Future research can explore these interesting dynamics on level of construal created by the relationships between product and the stages of consumption.

This research complements existing work on schema congruity in that both predict a benefit for products of moderate similarity (Meyers-Levy and Tybout 1989; Peracchio and Tybout 1996). Both are based on cognitive hierarchies to understand consumer behavior (Kruglanski et al. 2002; Rosch et al. 1976), yet there are key differences. Whereas schema congruity examines the relationship between a product and



schema, our research examines the relationship between two products. Second, schema congruity is concerned with new products, whereas our research applies to both new and existing products. Most importantly, schema congruity focuses on evaluations of the consumed product, whereas we focus on evaluations of the unconsumed product.

This research also complements Lancaster's (1971) work on substitution among products. Lancaster proposed that consumers purchase products for the features that they possess rather than the product themselves. This implies that substitution is more likely among products that offer comparable features (Lancaster 1971), suggesting that consumers will replace an unattained product with a highly similar one. However, like previous economic theory on substitution (Hicks 1963; Slutsky 1960), Lancaster's model focuses on consumers' choices and therefore their beliefs about substitution rather than substitution effectiveness. Our work directly addresses this distinction between beliefs about substitution and the outcomes of substitution.

We note some limitations of this research. All of the studies measured the similarity between the replacement and unattained product before consumption. In an actual consumer situation, such judgments are rarely made explicitly, and the judgment process may have unintended consequences on substitution effectiveness. Future research should investigate this issue further by varying whether consumers are asked to judge the similarity of replacement products prior to substitution.

We also note some situations related to substitution which fall outside the scope of this research. We limit our scope to situations where consumers are unable to consume a preferred product and must consume a replacement instead. If a consumer is indifferent about which of two highly similar products is consumed (e.g., a consumer may be

indifferent between a can and a bottle of Coke), we do not expect to find that moderately similar replacements are more effective substitutes than one of these highly similar products. Similarly, if consumers make explicit tradeoffs between attributes (e.g., consumers may intentionally purchase counterfeit products because they are less expensive than name brand products (Tom et al. 1998) or they may trade off calories for taste when choosing a diet version of their favorite food), moderately similar alternatives may not be more effective substitutes than highly similar alternatives.

### Managerial Implications

This research holds important implications for brand managers. Store brands and value brands are often positioned so that they are similar to leading national brands, using an imitation strategy that mimics the features, packaging, prices and promotions of a leading brand (Foxman, Muehling, and Berger 1990). As a result, consumers increasingly perceive brands as being very similar to each other (Clancy and Trout 2002). Our research suggests that this may be a poor long-term strategy. A highly similar positioning may gain customers in the short term if consumers believe high similarity will make the replacement a more effective substitute, but this highly similar positioning may have a negative long-term effect. We suggest that firms interested in developing customer loyalty should instead strive for products that are moderately similar to leading brands. This recommendation coincides with other research arguing that new brands should avoid a “me-too” status by being too similar to established brands (Carpenter and Nakamoto 1989).

Of course, a brand's similarity to its competitors is partly out of a firm's control because similarity depends on customer perceptions as well as features of the competing products. There are a number of steps firms can take where they do have some control of the context. For instance, restaurants should instruct wait staff to recommend moderately similar items when a particular menu item is out of stock. Likewise, retailers can recommend moderately similar replacements for expensive or out-of-stock items. This approach may be particularly useful for online retailers with sophisticated recommendation systems such as Amazon.com, which can be programmed to suggest moderately similar replacement products in the event of stock-outs.

## Conclusion

Substitution is a common aspect of consumer behavior. It is important for consumers to understand how to choose products that will effectively satisfy their needs, and important for managers to offer products that provide effective substitutes. However there has been little research on what makes substitution effective from the consumer's perspective. We believe that this research offers a first step in filling a critical gap in our understanding of consumer behavior.

Table 5. Factor Analysis Results

	Study 1 Experiencers		Study 2 <sup>a</sup>		Study 3 <sup>a</sup>	
	Perceived Sub. Effectiveness	Motiv.	Perceived Sub. Effectiveness	Motiv	Perceived Sub. Effectiveness	Motiv.
How effectively did eating Merry-Os substitute for eating Cheerios? 1 = Very poor substitute, 7 = Very good substitute	0.87		0.90		0.89	
Eating Merry-Os is just as good as eating Cheerios. <sup>b</sup>	0.89		0.89		0.88	
I specifically wanted to eat Cheerios. <sup>b</sup> (reverse coded)	0.46		0.70		0.76	
I would much rather have had Cheerios than Merry-Os. <sup>b</sup> (reverse coded)	0.62		0.78		0.85	
After eating Merry-Os how much would you like to eat Cheerios right now? 1 = Do not want to eat it at all, 7 = Would like to eat it very much		0.81		0.89		0.89
After eating Merry-Os would you say that you want to eat Cheerios more or less? 1 = Want it less, 7 = Want it more		0.80		0.89		0.82
Please rate how much you would like to listen to each of these songs (unattained song). <sup>c</sup> 1 = Not at all, 7 = Very much	--	--	--	--		0.72

<sup>a</sup>For studies 2 and 3 the questions were adapted for particular songs.

<sup>b</sup>1= Strongly disagree, 7 = Strongly agree

<sup>c</sup>This question was included in the analysis for study 3.

A factor analysis using principal component analysis with varimax rotation typically indicated two scales: perceived substitution effectiveness and motivation for the unattained product. However, unlike the other samples, factor analysis on the forecasters sample in study 1 indicated a single factor for the items. This may be because the items represent predictions rather than experiences. For consistency across the studies we use two factors.

Figure 6. Substitution among Products Varying in Similarity

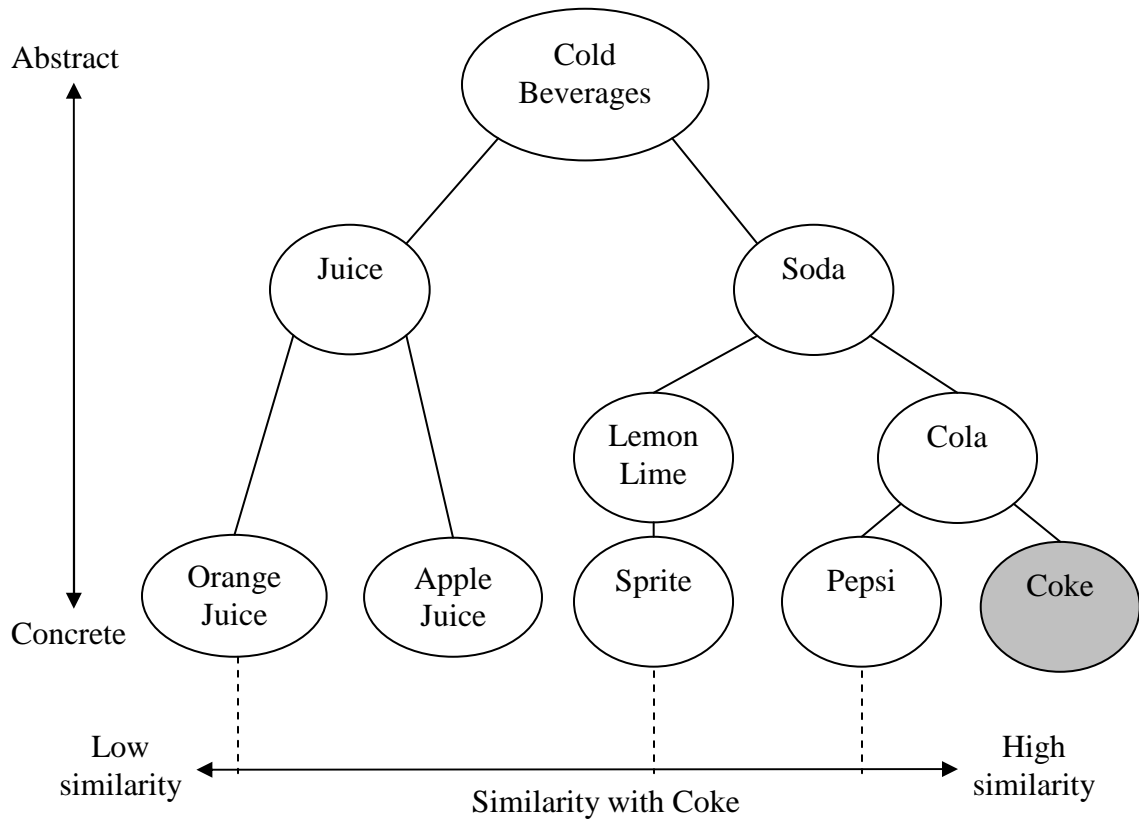


Figure 7. Perceived Substitution Effectiveness for Forecasters and Experiencers

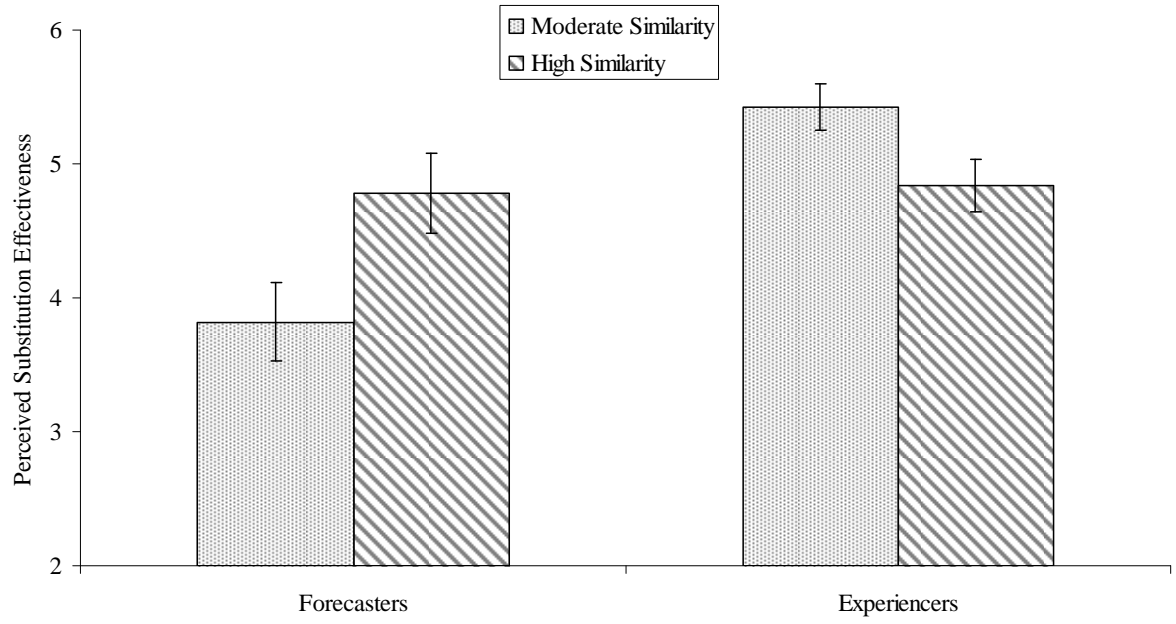
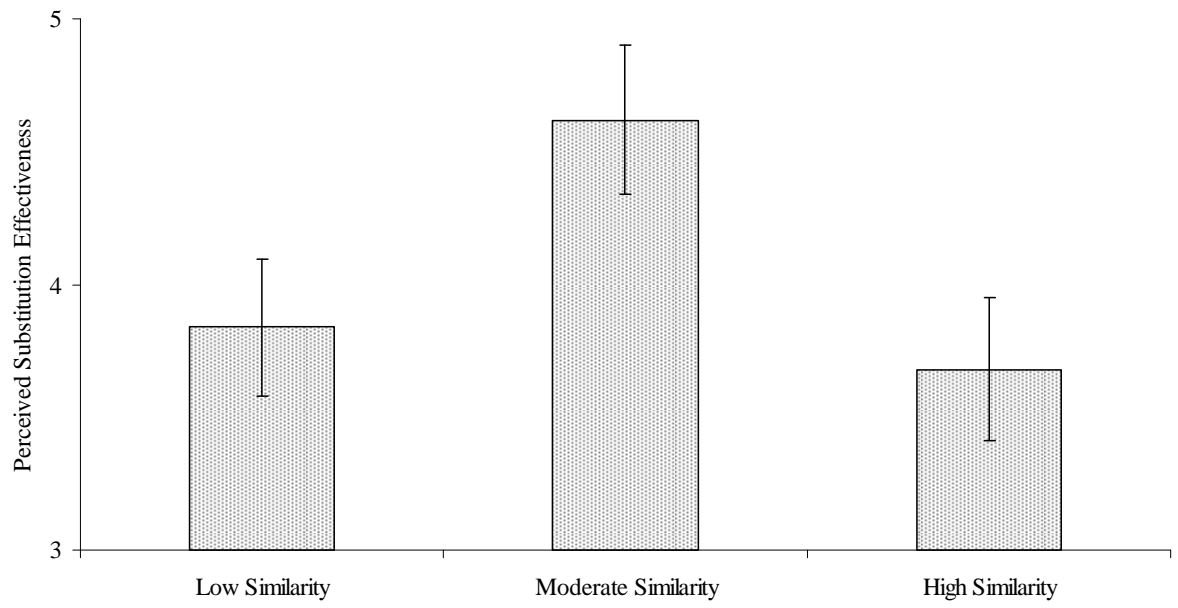


Figure 8. Low, Moderate and High Similarity on Perceived Substitution Effectiveness



Appendix A. Summary of the Free-Choice Literature (Chapter II)

<b>Study</b>	<b>Stimuli</b>	<b>Chosen item consumed item during the study?</b>
Brehm (1956)	8 various gifts	No
Brehm and Cohen (1959)	15 toys	No
Deutsch, Krauss and Rosenau (1962)	6 jams, jellies and peanut butter	Tasted a sample before choice
Brock (1963)	6 toys and crackers	No, offered at end
Allen (1965)	15 albums	No, offered at end
Davidson and Kiesler (1964)	2 vice president candidates	No
Festinger and Walster (1964)	12 hairstyles	No, offered at end
Gerard, Blevans and Malcom (1964)	15 paintings	No, offered at end
Jecker (1964)	15 albums	No, offered at end
Walster (1964)	10 job assignments in the army	No
Walster and Festinger (1964)	5 toys	No, offered at end
Allen (1965)	10 art prints	No
Anderson, Taylor and Holloway (1966)	16 various gifts	No
Hammock and Brehm (1966), study 1	9 brands of candy bars	No, offered at end
Hammock and Brehm (1966), study 2	10 toys	No, offered at end
Gerard (1967)	12 paintings	No



Holloway (1967)	12 brands of car batteries	No, offered at end
Losciuto and Perloff (1967)	9 albums	No, offered at end
Walster, Berscheid and Barclay (1967)	6 toys	No, offered at end
Knox and Inkster (1968)	Horse race bets	No
Sheth (1968)	11-12 toothpaste, cigars or shampoo	No, offered at end
Greenwald (1969)	2 singers	No
Greenwald (1969)	2 singers	No
Harris (1969)	19 record albums	No, offered at end
Mittelstaedt (1969)	9 men's bathing suits	No
Brehm and Wicklund (1970)	3 job applicants	No
Cohen and Goldberg (1970)	2 brands of coffee	Tasted samples of both
Walster and Walster (1970)	2 study tasks	No
Wicklund (1970)	9 various gifts	No
Vroom and Deci (1971)	Jobs	Yes, 1 and 3.5 years into employment
Misra and Kalro (1972), study 1	2 jobs	No
Misra and Kalro (1972), study 2	2 jobs	No
Cottrell, Rajecki and Smith (1974)	12 various gift items	No
Winter (1974)	4 brands of scouring pads	No, limited analysis to those who did not consume the item
Lawler et al. (1975)	Accounting jobs	Yes, 1 year into employment

Frey (1981)	14 books	No, offered at end
White and Gerard (1981)	2 research tasks	No
Gerard and White (1983)	20 paintings	No
Frey et al. (1984)	8 non-fiction books	No, offered at end
Svenson and Benthorn (1992), study 1	Various items	No
Svenson and Benthorn (1992), study 2	Various items	No
Steele, Spencer and Lynch (1993), study 1	10 albums	No
Steele, Spencer and Lynch (1993), study 2	10 CDs	No, offered at end
Steele, Spencer and Lynch (1993), study 3	10 albums	No, offered at end
Heine and Lehman (1997)	10 CDs	No
Lyubomirsky and Ross (1999), study 1	Colleges	No
Lyubomirsky and Ross (1999), study 2	10 desserts	No, offered at end
Lyubomirsky and Ross (1999), study 3	10 desserts	No, offered at end
Shultz et al. (1999)	8 posters	No
Lieberman et al. (2001), study 1	15 art prints	No
Lieberman et al. (2001), study 2	15 art prints	No
Gilbert and Ebert (2002), study 1	12 prints of photos	No, offered at end
Gilbert and Ebert (2002), study 2a	9 art posters	No, offered at end
Harmon-Jones and Harmon-Jones (2002), study 1	8 exercise tasks	No

Harmon-Jones and Harmon-Jones (2002), study 2	9 research tasks	No
Carmon, Wertebroch and Zeelenberg (2003), study 1	Various product scenarios	No
Carmon, Wertebroch and Zeelenberg (2003), study 2	Various product scenarios	No
Carmon, Wertebroch and Zeelenberg (2003), study 3	6 restaurant coupons	No, offered at end
Carmon, Wertebroch and Zeelenberg (2003), study 4	4 CDs	No, offered at end
Kitayama et al. (2004), study 1	10 CDs	No
Kitayama et al. (2004), study 2	10 CDs	No
Kitayama et al. (2004), study 3	10 CDs	No
Kitayama et al. (2004), study 4	10 CDs	No
Ritov (2006), study 1	2 gift items	Yes, but only the chosen gift was evaluated
Ritov (2006), study 3	8 gift items	Yes, but only the chosen gift was evaluated
Egan, Santos and Bloom (2007)	Stickers	Unspecified
Koller and Salzberger (2007)	Holiday trips	Yes, but only regret for the chosen trip was evaluated
Harmon-Jones et al. (2008), study 1	9 research tasks	No
Harmon-Jones et al. (2008), study 2	9 research tasks	No
Egan, Bloom and Santos (2010)	3 toys	Unspecified
Lee and Schwarz (2010), study 1	10 CDs	No
Lee and Schwarz (2010), study 2	4 jams	No

Litt and Tormala (2010), study 1	6 digital cameras	No
Litt and Tormala (2010), study 2	6 car stereos	No
Litt and Tormala (2010), study 3	6 digital cameras	No
Sharot, Velasquez and Dolan (2010), study 1	80 vacation destinations	No
Sharot, Velasquez and Dolan (2010), study 2	80 vacation destinations	No
Sharot, Velasquez and Dolan (2010), study 3	80 vacation destinations	No

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This list includes studies on human participants that compare ratings of alternatives measured before and after making a choice. These studies are omitted from the reference list, but are available from the authors upon request.

Appendix B. Example Advertising Manipulation (Chapter III, Study 1)

**Target Ad (Woodbury)**



**Nontarget Ad (The North Stars)**



Photo by John Rogers, used with permission

## Appendix C. Scale Items (Chapter III)

### Impulsiveness Scale

I made this choice spontaneously.

“Just do it” describes the way I made this choice.

I chose without thinking.

“I saw it, I chose it” describes how I made the decision.

I made the choice on the spur-of-the-moment.

I carefully planned my decision. (reverse coded)

I was a bit reckless in my choice.

“Choose now, think about it later” describes how I made the choice.

I made the choice according to how I felt at the moment.

(1 = Strongly disagree to 7 = Strongly agree)

### Customer Satisfaction Scale

How do you feel about your experiences with Woodbury:

(1 = Displeased to 7 = Pleased)

(1 = Disgusted to 7 = Contented)

(1 = Very dissatisfied to 7 = Very satisfied)

(1 = Did a poor job to 7 = Did a good job)

(1 = Unhappy with to 7 = Happy with)

### Loyalty Intent Scale

How likely are you to say positive things about Woodbury to other people?

How likely are you to encourage your friends and relatives to listen to Woodbury?

How likely are you to listen to Woodbury over the next few months?

(1 = Not at all likely to 7 = Extremely likely)

You will recommend Woodbury to someone who seeks your advice.

You will consider listening to Woodbury as your first choice.

(1 = Strongly agree to 7 = Strongly disagree)

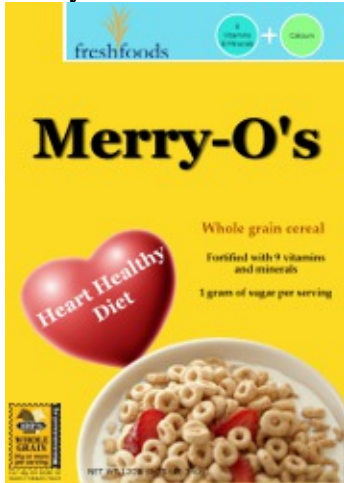
Appendix D. Sampled Firms (Chapter III, Field Study)

Advance Auto Parts	J. Crew	Under Armour
Aetna	J. C. Penney	United Airlines
AFLAC	Jamba Juice	United Parcel Service
Allstate	Jo-Ann Stores	United States Cellular
Amazon.com	Jones Soda	Unitedhealth Group
Amerco (U-Haul)	Kohl's	US Airways
American International Grp	Kroger	Virgin Media
Ameriprise Financial	Leap Wireless (Cricket)	Vonage
Apple	Lowe's	Wal-Mart
AT&T	Macy's	Walgreen
Bed Bath & Beyond	McCormick & Schmick's	Weight Watchers
BIDZ.com	McDonald's	Whole Foods Market
Big Lots	Metlife	Zumiez
Blue Nile	Morton's Restaurant	
Buffalo Wild Wings	Netflix	
Build-A-Bear Workshop	New York & Company	
Burger King	Nike	
Cabela's	Nordstrom	
Capella Education	optionsXpress	
Caribou Coffee Company	Pacific Sunwear	
Charles Schwab	PetMed Express	
Cheesecake Factory	Polo Ralph Lauren	
Chipotle Mexican Grill	Principal Financial Group	
Cinemark	Progressive	
Citi Trends	Prudential	
Coach	Regal Entertainment	
Columbia Sportswear	Rent-A-Center	
Costco	Ross	
Crocs	Ruth's Chris Steak House	
CVS Caremark	Safeway	
Dell	Sally Beauty Supply	
Diamond Foods	Sears	
Dick's Sporting Goods	Shutterfly	
Domino's Pizza	Sprint Nextel	
DSW Shoe Warehouse	T. Rowe Price	
Ediets.com	Target	
FedEx	TD AMERITRADE	
GameStop	Tempur-Pedic	
Gander Mountain	Texas Roadhouse	
Genworth Financial	TJX (T.J. Maxx & Marshalls)	
Golfsmith	Travelers	
Guess?	True Religion Apparel	
Hertz	U.S. Auto Parts	
Home Depot	Ultra Salon	

## Appendix E. Manipulation of Cereal Similarity (Chapter IV, Study 1)

### High Similarity Features Condition

Merry-Os and Cheerios have a lot in common:

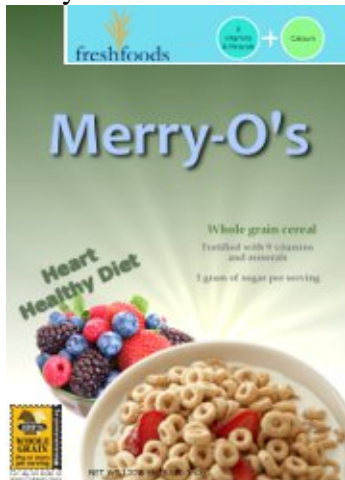


Made from whole grain oats  
A good source of fiber  
Helps reduce the risk of heart disease  
Tastes delicious

Made from whole grain oats  
A good source of fiber  
Helps reduce the risk of heart disease  
Tastes delicious

### Moderate Similarity Features Condition

Merry-Os and Cheerios are different kinds of cereal:



Made from wheat, oats and corn  
A good source of vitamins and minerals  
Excellent nutrition promotes energy  
Unique toasted flavor

Made from oats  
A good source of fiber  
Helps reduce the risk of heart disease  
Classic flavor



## Appendix F. Criteria for Selecting Replacement Song (Chapter IV, Studies 2 and 3)

$A_{ij}$  is the initial attractiveness of song  $i$  to person  $j$  (1 = Not at all, 7 = Very much)

$S_{ij}$  is person  $j$ 's perceived similarity between song  $i$  and the selected, top rated song (1 = Very dissimilar, 7 = Very similar)

For every song  $i$  we computed a rating  $R_{ij}$  which varied based on the experimental condition:

Low similarity condition:

$$R_{ij} = (A_{ij} - 7)^2 + (S_{ij} - 1)^2$$

Moderate similarity condition:

$$R_{ij} = (A_{ij} - 7)^2 + (S_{ij} - 4)^2$$

High similarity condition:

$$R_{ij} = (A_{ij} - 7)^2 + (S_{ij} - 7)^2$$

Finally the replacement song was selected as the song  $i$  that has the minimum rating  $R_{ij}$ .

## References

- Aaker, David A. (1991), *Managing Brand Equity*. New York: The Free Press.
- Amazon.com (2012), (accessed April 23, 2012), [available at <http://www.amazon.com/gp/help/customer/display.html?ie=UTF8&nodeId=13316081>].
- Anderson, Eugene W., Claes Fornell, and Donald R. Lehmann (1994), "Customer Satisfaction, Market Share, and Profitability: Findings from Sweden," *Journal of Marketing*, 58 (3), 53-66.
- Anderson, Eugene W., Claes Fornell, and Sanal K. Mazvancheryl (2004), "Customer Satisfaction and Shareholder Value," *Journal of Marketing*, 68 (4), 172-85.
- Atkinson, John W. and David Birch (1970), *The Dynamics of Action*. New York: Wiley.
- Barsalou, Lawrence W. (1982), "Context-Independent and Context-Dependent Information in Concepts," *Memory & Cognition*, 10, 82-93.
- (1983), "Ad Hoc Categories," *Memory & Cognition*, 11 (3), 211-27.
- (1991), "Deriving Categories to Achieve Goals," in *The Psychology of Learning and Motivation: Advances in Research and Theory*, Gordon H. Bower, ed. Vol. 27. New York: Academic Press, Inc.
- Beatty, Sharon E. and Scott M. Smith (1987), "External Search Effort: An Investigation across Several Product Categories," *The Journal of Consumer Research*, 14 (1), 83-95.
- Berridge, Kent C. (2004), "Motivation Concepts in Behavioral Neuroscience," *Physiology & Behavior*, 81 (2), 179-209.

- (2007), "The Debate over Dopamine's Role in Reward: The Case for Incentive Saliency," *Psychopharmacology*, 191 (3), 391-431.
- Blattberg, Robert C. and Kenneth J. Wisniewski (1989), "Price-Induced Patterns of Competition," *Marketing Science*, 8 (4), 291-309.
- Blood, Anne J. and Robert J. Zatorre (2001), "Intensely Pleasurable Responses to Music Correlate with Activity in Brain Regions Implicated in Reward and Emotion," *Proceedings of the National Academy of Sciences*, 98 (20), 11818-23.
- Blue Book: Research Services Directory* (2009), "Blue Book: Research Services Directory," (accessed 10/14/2009), [available at <http://www.bluebook.org/>].
- Boulding, William, Ajay Kalra, Richard Staelin, and Valarie A. Zeithaml (1993), "A Dynamic Process Model of Service Quality: From Expectations to Behavioral Intentions," *Journal of Marketing Research*, 30 (1), 7-27.
- Brandtstädter, Jochen and Klaus Rothermund (2002), "The Life-Course Dynamics of Goal Pursuit and Goal Adjustment: A Two-Process Framework," *Developmental Review*, 22 (1), 117-50.
- Brehm, Jack W. (1956), "Postdecision Changes in the Desirability of Alternatives," *The Journal of Abnormal and Social Psychology*, 52 (3), 384-89.
- Brendl, C. Miguel, Arthur B. Markman, and Claude Messner (2003), "The Devaluation Effect: Activating a Need Devalues Unrelated Objects," *Journal of Consumer Research*, 29 (4), 463-73.
- Broniarczyk, Susan M., Wayne D. Hoyer, and Leigh McAlister (1998), "Consumers' Perceptions of the Assortment Offered in a Grocery Category: The Impact of Item Reduction," *Journal of Marketing Research*, 35 (2), 166-76.

- Bucklin, Randolph E. and V. Srinivasan (1991), "Determining Interbrand Substitutability through Survey Measurement of Consumer Preference Structures," *Journal of Marketing Research*, 28 (1), 58-71.
- Carmon, Ziv, Klaus Wertebroch, and Marcel Zeelenberg (2003), "Option Attachment: When Deliberating Makes Choosing Feel Like Losing," *Journal of Consumer Research*, 30 (1), 15-29.
- Carpenter, Gregory S. and Kent Nakamoto (1989), "Consumer Preference Formation and Pioneering Advantage," *Journal of Marketing Research*, 26 (3), 285-98.
- Child, Irvin L. and Joseph H. Grosslight (1947), "The Effect of Substitute Activity as Depending Upon the Nature of the Similarity between Substitute and Original Activity," *The American Journal of Psychology*, 60 (2), 226-39.
- Churchill, Gilbert A., Jr. and Carol Surprenant (1982), "An Investigation into the Determinants of Customer Satisfaction," *Journal of Marketing Research*, 19 (4), 491-504.
- Clancy, Kevin J. and Jack Trout (2002), "Brand Confusion," *Harvard Business Review*, 80 (3), 22-22.
- Cohen, Joel B. and Marvin E. Goldberg (1970), "The Dissonance Model in Post-Decision Product Evaluation," *Journal of Marketing Research*, 7 (3), 315-21.
- Conchar, Margy P., Melvin R. Crask, and George M. Zinkhan (2005), "Market Valuation Models of the Effect of Advertising and Promotional Spending: A Review and Meta-Analysis," *Journal of the Academy of Marketing Science*, 33 (4), 445-60.
- Connolly, Terry and Marcel Zeelenberg (2002), "Regret in Decision Making," *Current Directions in Psychological Science*, 11 (6), 212-16.

- Curry, B. and K. D. George (1983), "Industrial Concentration: A Survey," *Journal of Industrial Economics*, 31 (3), 203-55.
- Danaher, Peter J. and Roland T. Rust (1996), "Indirect Financial Benefits from Service Quality," *Quality Management Journal*, 3 (2), 63-75.
- Deutsch, Morton, Robert M. Krauss, and Norah Rosenau (1962), "Dissonance or Defensiveness?," *Journal of Personality*, 30 (1), 16-28.
- Emmelhainz, Margaret A., James R. Stock, and Larry W. Emmelhainz (1991), "Consumer Responses to Retail Stock-Outs," *Journal of Retailing*, 67 (2), 138-47.
- Erickson, Gary and Robert Jacobson (1992), "Gaining Comparative Advantage through Discretionary Expenditures: The Returns to R&D and Advertising," *Management Science*, 38 (9), 1264-79.
- Festinger, Leon (1964), *Conflict, Decision and Dissonance*. Stanford, California: Stanford University Press.
- Festinger, Leon A. (1957), *A Theory of Cognitive Dissonance*. Stanford, CA: Stanford University Press.
- Fishbein, Martin and Icek Ajzen (1975), *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Reading, Massachusetts: Addison-Wesley.
- Foxman, Ellen R., Darrel D. Muehling, and Phil W. Berger (1990), "An Investigation of Factors Contributing to Consumer Brand Confusion," *Journal of Consumer Affairs*, 24 (1), 170-89.
- Freitas, Antonio L., Peter Gollwitzer, and Yaacov Trope (2004), "The Influence of Abstract and Concrete Mindsets on Anticipating and Guiding Others' Self-Regulatory Efforts," *Journal of Experimental Social Psychology*, 40 (6), 739-52.

- Galt, Virginia (2006), "65 Means Freedom to Start a Whole New Career: A Growing Number of Canadians Are Looking at Working Past Retirement Age, Some to Start a New Business or Pursue a Dream Job," in *The Globe and Mail*. Canada.
- Gollwitzer, Peter M. (1990), "Action Phases and Mind-Sets," in *Handbook of Motivation and Cognition: Foundations of Social Behavior*, E. Tory Higgins and Richard M. Sorrentino, eds. Vol. 2. New York: The Guilford Press.
- Gupta, Sunil and Valarie Zeithaml (2006), "Customer Metrics and Their Impact on Financial Performance," *Marketing Science*, 25 (6), 718-39.
- Hallowell, Roger (1996), "The Relationships of Customer Satisfaction, Customer Loyalty, and Profitability: An Empirical Study," *International Journal of Service Industry Management*, 7 (4), 27-42.
- Hamilton, Rebecca W. and Debora Viana Thompson (2007), "Is There a Substitute for Direct Experience? Comparing Consumers' Preferences after Direct and Indirect Product Experiences," *Journal of Consumer Research*, 34 (4), 546-55.
- Harmon-Jones, Eddie and Cindy Harmon-Jones (2002), "Testing the Action-Based Model of Cognitive Dissonance: The Effect of Action Orientation on Postdecision Attitudes," *Personality & Social Psychology Bulletin*, 28 (6), 711-23.
- Harmon-Jones, Eddie, Cindy Harmon-Jones, Meghan Fearn, Jonathan D. Sigelman, and Peter Johnson (2008), "Left Frontal Cortical Activation and Spreading of Alternatives: Tests of the Action-Based Model of Dissonance," *Journal of Personality and Social Psychology*, 94 (1), 1-15.
- Hausman, Angela (2000), "A Multi-Method Investigation of Consumer Motivations in Impulse Buying Behavior," *Journal of Consumer Marketing*, 17 (5), 403-19.

- Heckhausen, Heinz (1991), *Motivation and Action* (Peter K. Leppmann, Trans.). Berlin: Springer-Verlag.
- Henle, Mary (1942), *An Experimental Investigation of Dynamic and Structural Determinants of Substitution*. Durham: Duke University Press.
- (1944), "The Influence of Valence on Substitution," *The Journal of Psychology*, 17 (1), 11-19.
- Heskett, James L., Thomas O. Jones, Gary W. Loveman, W. Earl Sasser, Jr., and Leonard A. Schlesinger (1994), "Putting the Service-Profit Chain to Work," *Harvard Business Review*, 72 (2), 164-74.
- Hicks, John Richard (1963), *Theory of Wages*. London: Macmillan.
- Huffman, Cynthia, S. Ratneshwar, and David Glen Mick (2000), "Consumer Goal Structures and Goal-Determination Processes: An Integrative Framework," in *The Why of Consumption: Contemporary Perspectives on Consumer Motives, Goals and Desires*, S. Ratneshwar and David Glen Mick and Cynthia Huffman, eds. New York: Routledge.
- Inman, J. Jeffrey and Marcel Zeelenberg (2002), "Regret in Repeat Purchase Versus Switching Decisions: The Attenuating Role of Decision Justifiability," *Journal of Consumer Research*, 29 (1), 116-28.
- Jacobi, Jennifer A., Eric A. Benson, and Gregory D. Linden (2006), "Personalized Recommendations of Items Represented within a Database," Vol. US 7,113,917 B2. United States: Amazon.com, Inc.
- Johnson, Michael D. (1986), "Consumer Similarity Judgments: A Test of the Contrast Model," *Psychology & Marketing*, 3, 47-60.

- (1988), "Comparability and Hierarchical Processing in Multialternative Choice," *Journal of Consumer Research*, 15 (3), 303-14.
- (1989), "The Differential Processing of Product Category and Noncomparable Choice Alternatives," *Journal of Consumer Research*, 16 (3), 300-09.
- Johnson, Michael D., Andreas Herrmann, and Frank Huber (2006), "The Evolution of Loyalty Intentions," *Journal of Marketing*, 70 (2), 122.
- Jones, Michael A., Kristy E. Reynolds, Seungoo Weun, and Sharon E. Beatty (2003), "The Product-Specific Nature of Impulse Buying Tendency," *Journal of Business Research*, 56 (7), 505-11.
- Kacen, Jacqueline J. (2003), "Bricks & Clicks & the Buying Impulse: An Investigation of Consumer Impulse Buying Behavior in an Online and Traditional Retail Environment," *European Advances in Consumer Research*, 6, 271-76.
- Kahneman, Daniel (2003), "Maps of Bounded Rationality: Psychology for Behavioral Economics," *American Economic Review*, 93 (5), 1449-75.
- Kahneman, Daniel, Peter P. Wakker, and Rakesh Sarin (1997), "Back to Bentham? Explorations of Experienced Utility," *The Quarterly Journal of Economics*, 112 (2), 375-406.
- Kalish, Nancy (1997), *Lost and Found Lovers: Facts and Fantasies of Rekindled Romances*. New York: William Morrow & Co.
- Kamakura, Wagner A. and Gary J. Russell (1989), "A Probabilistic Choice Model for Market Segmentation and Elasticity Structure," *Journal of Marketing Research*, 26 (4), 379-90.



- Kollat, David T. and Ronald P. Willett (1967), "Customer Impulse Purchasing Behavior," *Journal of Marketing Research*, 4 (1), 21-31.
- Koller, Monika and Thomas Salzberger (2007), "Cognitive Dissonance as a Relevant Construct Throughout the Decision-Making and Consumption Process - an Empirical Investigation Related to a Package Tour," *Journal of Customer Behavior*, 6 (3), 217-27.
- Kruglanski, Arie W., James Y. Shah, Ayelet Fishbach, Ron Friedman, Woo Young Chun, David Sleeth-Keppler, and Mark P. Zanna (2002), "A Theory of Goal Systems," in *Advances in Experimental Social Psychology*, Mark P. Zanna, ed. Vol. 34. San Diego, CA: Academic Press.
- Lancaster, Kelvin (1971), *Consumer Demand: A New Approach*. New York: Columbia University Press.
- Laran, Juliano and Chris Janiszewski (2009), "Behavioral Consistency and Inconsistency in the Resolution of Goal Conflict," *Journal of Consumer Research*, 35 (6), 967-84.
- Laran, Juliano, Chris Janiszewski, and Marcus Jr. Cunha (2008), "Context-Dependent Effects of Goal Primes," *Journal of Consumer Research*, 35 (4), 653-67.
- Lattin, James M. and Leigh McAlister (1985), "Using a Variety-Seeking Model to Identify Substitute and Complementary Relationships among Competing Products," *Journal of Marketing Research*, 22 (3), 330-39.
- Lawler, Edward E., III, Walter J. Kuleck, Jr., John Grant Rhode, and James E. Sorensen (1975), "Job Choice and Post Decision Dissonance," *Organizational Behavior and Human Decision Processes*, 13, 133-45.

- Lewin, Kurt (1935), *A Dynamic Theory of Personality: Selected Papers*. New York: McGraw Hill.
- Liberman, Nira, Michael D. Sagristano, and Yaacov Trope (2002), "The Effect of Temporal Distance on Level of Mental Construal," *Journal of Experimental Social Psychology*, 38 (6), 523-34.
- Liberman, Nira and Yaacov Trope (1998), "The Role of Feasibility and Desirability Considerations in near and Distant Future Decisions: A Test of Temporal Construal Theory," *Journal of Personality and Social Psychology*, 75 (1), 5-18.
- Lipshitz, Raanan and Orna Strauss (1997), "Coping with Uncertainty: A Naturalistic Decision-Making Analysis," *Organizational Behavior and Human Decision Processes*, 69 (2), 149-63.
- Lissner, Käte (1933), "Die Entspannung Von Bedürfnissen Durch Ersatzhandlungen," *Psychologische Forschung*, 18 (1), 218-50.
- Litt, Ab and Zakary L. Tormala (2010), "Fragile Enhancement of Attitudes and Intentions Following Difficult Decisions," *Journal of Consumer Research*, 37 (4), 584-98.
- Losciuto, Leonard A. and Robert Perloff (1967), "Influence of Product Preference on Dissonance Reduction," *Journal of Marketing Research*, 4 (3), 286-90.
- Madhavaram, Sreedhar R. and Debra A. Laverie (2004), "Exploring Impulse Purchasing on the Internet," *Advances in Consumer Research*, 31 (1), 59-66.
- McGill, Ann L. and Punam Anand (1989), "The Effect of Vivid Attributes on the Evaluation of Alternatives: The Role of Differential Attention and Cognitive Elaboration," *Journal of Consumer Research*, 16 (2), 188-96.

- Medin, Douglas L., Robert L. Goldstone, and Arthur B. Markman (1995), "Comparison and Choice: Relations between Similarity Processes and Decision Processes," *Psychonomic Bulletin & Review*, 2 (1), 1-19.
- Meyers-Levy, Joan and Alice M. Tybout (1989), "Schema Congruity as a Basis for Product Evaluation," *Journal of Consumer Research*, 16 (1), 39-54.
- Mittal, Banwari (1995), "A Comparative Analysis of Four Scales of Consumer Involvement," *Psychology & Marketing*, 12 (7), 663-82.
- Morgan, Neil A., Eugene W. Anderson, and Vikas Mittal (2005), "Understanding Firms' Customer Satisfaction Information Usage," *Journal of Marketing*, 69 (3), 131-51.
- Morgan, Neil A. and Lopo Leotte Rego (2006), "The Value of Different Customer Satisfaction and Loyalty Metrics in Predicting Business Performance," *Marketing Science*, 25 (5), 426-39.
- Nelson, Leif D., Tom Meyvis, and Jeff Galak (2009), "Enhancing the Television-Viewing Experience through Commercial Interruptions," *Journal of Consumer Research*, 36.
- Oliver, Richard L. (1997), *Satisfaction: A Behavioral Perspective on the Consumer*. New York: McGraw-Hill.
- (1999), "Whence Consumer Loyalty?," *Journal of Marketing*, 63 (4), 33-44.
- Oliver, Richard L. and John E. Swan (1989), "Consumer Perceptions of Interpersonal Equity and Satisfaction in Transactions: A Field Survey Approach," *Journal of Marketing*, 53 (2), 21-35.

- Peck, Joann and Terry L. Childers (2006), "If I Touch It I Have to Have It: Individual and Environmental Influences on Impulse Purchasing," *Journal of Business Research*, 59 (6), 765-69.
- Peckham, James O. (1963), "The Consumer Speaks," *Journal of Marketing*, 27 (4), 21-26.
- Peracchio, Laura A. and Alice M. Tybout (1996), "The Moderating Role of Prior Knowledge in Schema-Based Product Evaluation," *Journal of Consumer Research*, 23 (3), 177-92.
- Petty, Richard E., John T. Cacioppo, and David Schumann (1983), "Central and Peripheral Routes to Advertising Effectiveness: The Moderating Role of Involvement," *Journal of Consumer Research*, 10 (2), 135-46.
- Pine, Alex, Tamara Shiner, Ben Seymour, and Raymond J. Dolan (2010), "Dopamine, Time, and Impulsivity in Humans," *Journal of Neuroscience*, 30 (26), 8888-96.
- Preacher, Kristopher J. and Andrew F. Hayes (2004), "SPSS and SAS Procedures for Estimating Indirect Effects in Simple Mediation Models," *Behavior Research Methods, Instruments and Computers*, 36 (4), 717-31.
- Ramanathan, Suresh and Geeta Menon (2006), "Time-Varying Effects of Chronic Hedonic Goals on Impulsive Behavior," *Journal of Marketing Research*, 43 (4), 628-41.
- Rao, Vithala R., Manoj K. Agarwal, and Denise Dahlhoff (2004), "How Is Manifest Branding Strategy Related to the Intangible Value of a Corporation?," *Journal of Marketing*, 68 (4), 126-41.

- Ratneshwar, S., Lawrence W. Barsalou, Cornelia Pechmann, and Melissa Moore (2001), "Goal-Derived Categories: The Role of Personal and Situational Goals in Category Representations," *Journal of Consumer Psychology*, 10 (3), 147-57.
- Ratneshwar, S., Cornelia Pechmann, and Allan D. Shocker (1996), "Goal-Derived Categories and the Antecedents of across-Category Consideration," *Journal of Consumer Research*, 23 (3), 240-50.
- Ratneshwar, S. and Allan D. Shocker (1991), "Substitution in Use and the Role of Usage Context in Product Category Structures," *Journal of Marketing Research*, 28 (3), 281-95.
- Ritov, Ilana (2006), "The Effect of Time on Pleasure with Chosen Outcomes," *Journal of Behavioral Decision Making*, 19 (2), 177-90.
- Rook, Dennis W. and Robert J. Fisher (1995), "Normative Influences on Impulsive Buying Behavior," *Journal of Consumer Research*, 22 (3), 305-13.
- Rook, Dennis W. and Stephen J. Hoch (1985), "Consuming Impulses," *Advances in Consumer Research*, 12 (1), 23-27.
- Rosch, Eleanor, Carolyn Mervis, Wayne Gray, David Johnson, and Penny Boyes-Braem (1976), "Basic Objects in Natural Categories," *Cognitive Psychology*, 7, 573-605.
- Shah, James Y., Ron Friedman, and Arie W. Kruglanski (2002), "Forgetting All Else: On the Antecedents and Consequences of Goal Shielding," *Journal of Personality and Social Psychology*, 83 (6), 1261-80.
- 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 (3), 278-92.

- Shocker, Allan D., Barry L. Bayus, and Namwoon Kim (2004), "Product Complements and Substitutes in the Real World: The Relevance Of "Other Products", " *Journal of Marketing*, 68 (1), 28-40.
- Shultz, Thomas R., Elène Léveillé, and Mark R. Lepper (1999), "Free Choice and Cognitive Dissonance Revisited: Choosing 'Lesser Evils' Versus 'Greater Goods'," *Personality & Social Psychology Bulletin*, 25 (1), 40-48.
- Slutsky, Eugen E. (1960), "On the Theory of the Budget of the Consumer," in *Readings in Price Theory*, Kenneth E. Boulding and George J. Stigler, eds. London: George Allen and Unwin.
- Smith, Robert E. and William R. Swinyard (1983), "Attitude-Behavior Consistency: The Impact of Product Trial Versus Advertising," *Journal of Marketing Research*, 20 (3), 257-67.
- Srivastava, Rajendra K., Robert P. Leone, and Allan D. Shocker (1981), "Market Structure Analysis: Hierarchical Clustering of Products Based on Substitution-in-Use," *Journal of Marketing*, 45 (3), 38-48.
- Stanovich, Keith E. and Richard F. West (2000), "Individual Differences in Reasoning: Implications for the Rationality Debate?," *Behavioral and Brain Sciences*, 23, 645-726.
- Stefflre, Volney J. (1971), *New Products and New Enterprises: A Report of an Experiment in Applied Social Science*. Irvine, CA: University of California, Irvine.
- Stern, Hawkins (1962), "The Significance of Impulse Buying Today," *Journal of Marketing*, 26 (2), 59-62.

- Strack, Fritz and Ronald Deutsch (2004), "Reflective and Impulsive Determinants of Social Behavior," *Personality and Social Psychology Review*, 8 (3), 220-47.
- Strack, Fritz, Lioba Werth, and Roland Deutsch (2006), "Reflective and Impulsive Determinants of Consumer Behavior," *Journal of Consumer Psychology*, 16 (3), 205-16.
- Thompson, Debora Viana, Rebecca W. Hamilton, and Roland T. Rust (2005), "Feature Fatigue: When Product Capabilities Become Too Much of a Good Thing," *Journal of Marketing Research*, 42 (November), 431-42.
- Tom, Gail, Barbara Garibaldi, Yvette Zeng, and Julie Pilcher (1998), "Consumer Demand for Counterfeit Goods," *Psychology and Marketing*, 15 (5), 405-21.
- Trope, Yaacov, Nira Liberman, and Cheryl Wakslak (2007), "Construal Levels and Psychological Distance: Effects on Representation, Prediction, Evaluation, and Behavior," *Journal of Consumer Psychology*, 17 (2), 83-95.
- Tsiros, Michael and Vikas Mittal (2000), "Regret: A Model of Its Antecedents and Consequences in Consumer Decision Making," *Journal of Consumer Research*, 26 (4), 401-17.
- Tuorila, Hely, F. Matthew Kramer, and Armand V. Cardello (1997), "Role of Attitudes, Dietary Restraint, and Fat Avoidance Strategies in Reported Consumption of Selected Fat-Free Foods," *Food Quality and Preference*, 8 (2), 119-23.
- Tversky, Amos (1977), "Features of Similarity," *Psychological Review*, 84 (4), 327-52.
- Vakratsas, Demetrios and Tim Ambler (1999), "How Advertising Works: What Do We Really Know?," *The Journal of Marketing*, 63 (1), 26-43.

- Vallacher, Robin R. and Daniel M. Wegner (1987), "What Do People Think They're Doing? Action Identification and Human Behavior," *Psychological Review*, 94 (1), 3-15.
- (1989), "Levels of Personal Agency: Individual Variation in Action Identification," *Journal of Personality and Social Psychology*, 57 (4), 660-71.
- van Horen, Femke and Rik Pieters (2011), "When High-Similarity Copycats Lose and Moderate-Similarity Copycats Gain: The Impact of Comparative Evaluation," *Journal of Marketing Research*, 49 (1), 83-91.
- Vohs, Kathleen D. and Ronald J. Faber (2007), "Spent Resources: Self-Regulatory Resource Availability Affects Impulse Buying," *Journal of Consumer Research*, 33 (4), 537-47.
- Vroom, Victor H. and Edward L. Deci (1971), "The Stability of Post-Decision Dissonance: A Follow-up Study of the Job Attitudes of Business School Graduates," *Organizational Behavior and Human Performance*, 6 (January), 36-49.
- Walster, Elaine (1964), "The Temporal Sequence of Post-Decision Processes," in *Conflict, Decision, and Dissonance*, Leon Festinger, ed. Stanford, California: Stanford University Press.
- Wang, Fang, Xiao-Ping S. Zhang, and Ming Ouyang (2009), "Does Advertising Create Sustained Firm Value? The Capitalization of Brand Intangible," *Journal of the Academy of Marketing Science*, 37 (2), 130-43.
- Zaichkowsky, Judith Lynne (1985), "Measuring the Involvement Construct," *Journal of Consumer Research*, 12 (3), 341-52.



Zeithaml, Valarie A., Leonard L. Berry, and A. Parasuraman (1996), "The Behavioral Consequences of Service Quality," *Journal of Marketing*, 60 (2), 31-46.

Zhang, Ying, Ayelet Fishbach, and Arie W. Kruglanski (2007), "The Dilution Model: How Additional Goals Undermine the Perceived Instrumentality of Shared Path," *Journal of Personality and Social Psychology*, 92 (3), 389-401.