THE MATERIAL VERSUS EXPERIENTIAL PURCHASE DISTINCTION AS A
PREDICTOR OF CONSUMER REGRET

A Dissertation
Presented to the Faculty of the Graduate School of Cornell University
In Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

by
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Previous research has established that experiential purchases tend to yield greater enduring satisfaction than material purchases. The present work suggests that this difference in satisfaction is paralleled by a tendency for material and experiential purchases to differ in the types of regrets they generate, as well as in the conditions required to prompt regret. In chapter one, I present five studies demonstrating that people’s material purchase decisions are more likely to generate regrets of action (buyers remorse) and their experiential purchase decisions are more likely to lead to regrets of inaction (missed opportunities). These results were not attributable to differences in the desirability of or satisfaction provided by the two purchase types. This pattern of regret is driven by the tendency for experiences to be seen as more singular—less interchangeable—than material purchases; interchangeable goods tend to yield regrets of action, whereas singular goods tend to yield regrets of inaction.

While chapter one identifies differences in what types of regret are most likely for material and experiential purchases, chapter two considers how likely a regret is to form in the first place, and what might prompt it. I present six studies that examine the relationship between dissatisfaction and regret, and find that the slope of that relationship is different for material and experiential goods. It takes just a little dissatisfaction to prompt regrets of action for material goods, but people must be significantly more dissatisfied with an experience before they regret their purchase. Interchangeability mediates this effect, and I also explore potential mechanisms for this effect, finding that purchase type—by way of interchangeability—influences both the likelihood that someone will engage in counterfactual thought, and the degree to which those counterfactual thoughts are emotionally impactful.
BIOGRAPHICAL SKETCH

Emily Rosenzweig was born and raised in New York City, and graduated Magna Cum Laude from Princeton University with a bachelor’s degree in public policy. Before enrolling at Cornell she worked for eight years in education research, including time as a senior research associate at Brown University and as sole proprietor of her own consulting business, Harvest Research. After graduating from Cornell, she will be starting her academic career as an Assistant Professor of Marketing at Tulane University.
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More than five years ago, when my application package arrived on Pam’s desk in Uris Hall, I did not look like a typical applicant to a Ph. D. program in social psychology. I hadn’t been a psychology major, had never worked in a psychology lab, and was nine years removed from my undergraduate degree, all spent working in field research. I remember how excited I was to be invited to recruitment weekend, and how I felt coming home from it: wide-eyed and wired, and desperately hoping to be part of such a dynamic, engaged, playful intellectual community. I am so grateful to the entire social psychology faculty for taking a chance on me, and seeing my potential as an academic.

I could not have asked for a more stimulating yet supportive environment to learn in. Deep thanks to Tom for his guidance and forbearance, for never giving up on me no matter how dejected I was or how many failed studies I came to him with, and for entertaining countless research ideas emailed to him after midnight. Thanks to Melissa for embracing my ideas as her own, for teaching me how to think critically about a new question and how to approach a wide open field of research, and for being the optimist to my pessimist. And thanks to Dave for teaching me to be clearer and more precise in my thought, and to probe every answer I generate with a deeper why.

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INTRODUCTION

Each day, we make dozens if not hundreds of purchase decisions. One trip to the campus store for a new flash drive requires deciding between the 8MB, the 16MB, and the 32MB models, choosing red versus blue, with or without a cover, with or without a keyfob, and with and without the Cornell logo. Many decisions we make are cascading; the simple decision that I’m too tired to cook dinner prompts multiple sets of decisions, both what type of food to eat and whether to eat-in or take-out. Every catalog that appears in the mail presents us with more choices: Buy it or not? Now or later?

All told, we do surprisingly well considering the demands on us – most of us are happy with most of our purchases (most of the time!) But inevitably, we all have the experience of making a choice, only to realize that another option would have been better. That first taste of Chinese food that makes you realize you really wanted Sushi. Or the 17 inch laptop that seems to get heavier each time you see someone whip out their MacBook Air. Similarly, we have all experienced the pain of missed purchase opportunities – the jacket we should have bought but passed on, or the play that we wished we had seen but never got around to finding time for. This dissertation explores the psychology underlying our everyday purchase decisions, investigating what prompts regret and what predicts the type of regret we will have. In it, I explore the influence that the content of our purchase decisions—specifically whether they are material or experiential goods—has on the type of regret we experience, and what is required to produce regret in the first place.
Understanding Regret

A clear definition of regret comes from Zeelenberg & Pieters (2006), who describe it as “a comparison-based emotion of self-blame, experienced when people realize or imagine that their present situation would have been better had they decided differently in the past” (p. 6). This definition highlights several key components of regret. First, it is an emotion that is heavily dependent on cognition: it requires the generation and evaluation of a counterfactual world in which one had decided differently. Just as important, regret requires choice (Zeelenberg, Van Dijk, & Manstead, 1998, 2000), as it involves taking ownership for a decision that yielded an unsatisfying outcome.

Much of the psychology research on regret is rooted in Kahneman and Miller’s (1986) work on Norm Theory, highlighting when and what types of counterfactual thoughts are likely to be generated following a negative outcome. The psychology literature has also explored the structural properties of regret. Thus a large body of work has considered the distinction between action and inaction regrets – regrets of commission versus omission – a topic that will be central to the first chapter of this dissertation. Recently, researchers have turned to examining the functional properties of regret, suggesting that regret is an emotion designed to prompt attention to the causal determinants of negative outcomes, thereby allowing us to avoid similar outcomes in the future (for review, see Epstude & Roese, 2008).

The psychology literature has also begun to address the question of the content of regret – what exactly are people regretting in their lives? Roese and Summerville (2005) find that education, career, and romance are the three life domains that prompt the greatest amount of regret (see also, Landman & Manis, 1992; Gilovich & Medvec, 1995). Beike, Markman, &

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1 It is possible, but less common, to experience regret while being satisfied with the outcome of a decision. A discussion of this follows in Chapter 2, and can also be found in discussions of decision process regret (Pieters & Zeelenberg, 2005).
Karadogan (2010) find that our regrets are more intense for missteps in domains we feel were full of opportunity in the past. Gilovich and Medvec (1994) find that the content of our regrets shifts over time, such that in the short term we are preoccupied with regrets of action, while with greater temporal distance our greatest regrets are in fact inactions or missed opportunities.

Critically, research on the content of our regrets has done more than simply inventory and categorize—it has generated insight into the cognitive processes that give rise to this emotion. Thus Gilovich and Medvec (1995) demonstrated that we engage in more psychological repair work for regrets of action than regrets of inaction, which serves to reduce their intensity over time (see also Gilovich, Medvec, & Chen, 1995). Conversely, we also appear to treat inactions in much the same way as uncompleted tasks, such that as time passes they maintain their accessibility while the accessibility of regrets of action fades (Gilovich & Medvec, 1995). Thus outside of the benefits of simply understanding the ‘what’ of regret, its study can also help us understand the ‘why.’

**Consumer Regret**

Research on consumer regret, while also originating in the 1980’s, initially stemmed from a different tradition than the research taking place in psychology at the time. The early consumer regret literature heavily referenced classical economic models and was inspired by Kahneman and Tversky’s prospect theory. In an effort to explain failures of expected utility theory to predict consumer choices, researchers suggested that consumers were regret averse and as a result were trying to maximize a modified utility function that included how their chosen outcome compared to the performance of other unchosen options (Bell, 1982; Loomes & Sugden, 1982; Inman & McAlister, 1984; Cooke, Meyvis, & Schwartz, 2001). Subsequent research focused on
understanding the consequences of regret aversion for consumer choice; building off of Norm Theory as the psychology literature had, researchers found that consumers seeking to avoid future regret made choices that adhered more closely to the status quo (Simonson, 1992), and passed up on chances to purchase desired products that they could have bought for less in the past (Tykocinski & Pittman, 1998).

More recent work on consumer regret has considered its consequences, working to differentiate the consequences of regret from that of dissatisfaction. Thus Zeelenberg & Pieters (1999) find that purchase regret, over and above the effects of dissatisfaction with a purchase, has a direct effect on subsequent switching of product or service provider. Research on the consequences of regrets of inaction has found divergent responses to the experience of missed purchase opportunities. Some work has found that regrets of inaction prompt ‘inaction inertia,’ in which consumers who regret missing a sale will fail to purchase during subsequent ones (Tykocinski, Pittman, & Tuttle, 1995; Tykocinski & Pittman, 1998). More recent work has found redoubled efforts to recoup the opportunity that was lost (Patrick, Lancellotti, & Demello, 2009). Which of these consequences is prompted by a regret of inaction appears to differ based on the goal relevance of the missed purchase as well as the reversibility of the decision.

Surprisingly, one aspect of regret that has gone unaddressed in the marketing literature is the question of the content of regret – what, exactly, are people regretting in the consumer domain? Despite research on the ‘when’ and the ‘why’ of purchase regrets, there has is almost no research on the ‘what’ is being regretted. The closest the marketing literature comes to this is suggesting that people who hope to avoid regret are more likely to purchase brand name or status quo items. However I know of no work that even examines whether this greater level of anticipated regret for deviations from branded goods reflected in greater levels of actual regret
for those purchases. The psychology literature has focused its energy on investigating the content of regret over large life choices—of mates, educational opportunities, and careers. Given the volume of consumption decisions we make daily, purchases are a good candidate to help us understand the psychology of regrets for our more mundane day-to-day choices.

*Material and Experiential Purchases*

Over the past decade, research has examined differences in the amount of enduring satisfaction people derive from material and experiential purchases (Carter & Gilovich, 2010; 2011; Nicolao, Irwin, & Goodman, 2009; Van Boven, Campbell, & Gilovich, 2010; Van Boven & Gilovich, 2003). Van Boven and Gilovich (2003) defined material purchases as “those made with the primary intention of acquiring a material good: a tangible object that is kept in one’s possession” and experiential purchases as “those made with the primary intention of acquiring a life experience; an event or series of events that one lives through” (p. 1194). Across a wide range of subject populations and time frames they found that experiential purchases tend to make people happier than material ones.

More recent research has expanded on this work to investigate potential mediators of these effects. Carter and Gilovich (2010) suggest that experiences bring greater satisfaction than material goods because material goods prompt more comparison to unpurchased options, and because engaging in comparative evaluation of material goods appears to have a differential impact on satisfaction. Carter and Gilovich (2012) find that experiences are seen as closer to the self, and that this self-relevance is associated with satisfaction. Capariello & Reis (*in press*) suggest that it is the social consumption of many experiential goods that increases the long term
satisfaction we derive from them, while Kumar & Gilovich (2013) find that we are more likely to talk about experiential than material purchases when attempting to connect with others.

This dissertation contributes to both the psychology and marketing literature on regret by considering how the type of purchase made—specifically whether it is a material or experiential good—relates to both the type of regret that a consumer is most likely to have (action vs. inaction) and how much dissatisfaction is required to prompt a regret of action. Critically, I hope to contribute not only to a catalogue of what purchases prompt regret, but to an understanding of why that might be. Thus I identify a mediator of these effects – perceived interchangeability or substitutability – that appears to be a key link in the causal chain between purchase type and regret.

Specifically, interchangeability refers to both the perceived size of the category that purchases belong to, as well as how easily substitutable purchases are for each other within that category. I find that material purchases are perceived as significantly more interchangeable than experiential ones; this difference underlies differences in both the type of regrets each purchase is likely to generate, as well as the amount of dissatisfaction required to prompt regret. The influence of purchase interchangeability on regret also suggests mechanisms by which purchase regrets are created, and I will present the results of a study designed to test these mechanisms.

Overview of Studies

Following this introduction, the body of this dissertation is divided into two chapters. The first, published in the Journal of Personality and Social Psychology, investigates how purchase type—specifically material versus experiential purchases—influences regret type. In five studies, I find that people’s material purchase decisions are more likely to generate regrets of action
(buyers remorse) and their experiential purchase decisions are more likely to lead to regrets of inaction (missed opportunities). These results were not attributable to differences in the desirability of or satisfaction provided by the two purchase types. Demonstrating the robustness of this effect, I found that focusing participants on the material versus experiential properties of the very same purchase was enough to shift its dominant type of regret. This pattern of regret is driven by the tendency for experiences to be seen as more singular—less interchangeable—than material purchases; interchangeable goods tend to yield regrets of action, whereas singular goods tend to yield regrets of inaction.

In my second chapter, I investigate the antecedents of regrets of action. While my first set of studies assumes that regret has happened and examines how purchase type shapes what type of regret that is most likely to be, this second set of studies asks: what is it that sparks regrets of action to begin with? More specifically, I investigate the relationship between dissatisfaction and regret, and present evidence that purchase type moderates this relationship. Existing literature suggests both that dissatisfaction and regret are totally dissociated, and that regret prompts dissatisfaction. I investigate the opposite direction of causality, where dissatisfaction prompts the counterfactual generation necessary for regret, and thus dissatisfaction is a precursor to regret. More specifically, I find that the relationship between dissatisfaction and regret for experiences has a relatively steep slope—at low levels of dissatisfaction, consumers are less likely to feel regret, while at high levels of dissatisfaction they are more likely to feel regret. For material goods, however, the slope of the relationship between dissatisfaction and regret is flatter, such that at low levels of dissatisfaction, material goods are regretted significantly more than experiential ones. My data provide suggest both a why and a how for this effect. Interchangeability appears to be the mediator for this difference in regret threshold. Further, I
present evidence for the mechanism through which interchangeability operates: people find it easier to generate counterfactual alternatives for more interchangeable (material) goods, and those counterfactuals are more impactful for more interchangeable goods.
CHAPTER 1:
Buyer’s Remorse or Missed Opportunity?
Differential Regrets for Material and Experiential Purchases

Introduction

Imagine you’re torn between two potential purchases, each costing around $2,000. One is a trip to Mexico; the other a new pro-style range you’ve long dreamed of for your kitchen. At one level, these might seem like rather similar purchase decisions. Both are for pleasure—you don’t need the vacation or the new range. Both entail the same cost and will require the same belt tightening to cover the expense. Yet one of the purchases is a material good—made to be kept in one’s possession—whereas the other is experiential—designed to provide an experience one lives through. Previous research indicates that the experiential good—the vacation—is likely to bring more enduring pleasure than the material good. The research we present here suggests that this difference in satisfaction is likely to be compounded by satisfaction’s flip side—regret.

We investigate the possibility that not only do material and experiential purchases differ in the satisfaction they provide, but in the type of regrets they engender as well. Specifically, we predict that material goods are more likely to result in regrets of action—buyer’s remorse—and experiential goods are more likely to result in regrets of inaction—the pain of a missed opportunity. Thus, buyers who pass up experiential purchases are hit with a double whammy—not only do they miss out on the greater satisfaction an experience might bring, but they also are likely to realize—and regret—what they missed.

The roots of this prediction lie in research on the causes of people’s differential satisfaction with material and experiential purchases (Carter & Gilovich, 2010). Specifically, we

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2 The text in this chapter is drawn directly from Rosenzweig & Gilovich, 2012, published in the Journal of Personality and Social Psychology. As a result, while the rest of this dissertation is written using the pronoun ‘I’, the pronouns in this chapter reflect the ‘we’ that were directly involved in this paper.
maintain that, on the whole, experiences are seen as less interchangeable than material purchases – there is a smaller set of items that feel like effective substitutes for experiential goods. Singular experiences are less likely to prompt counterfactual thoughts that focus on upward comparisons because the class of items to which an experience can be compared is small. Instead, the easiest and most likely comparison is between having missed out on the experience and not having done so, yielding regrets of inaction. Conversely, the greater interchangeability of material goods affords myriad opportunities for upward comparisons after a purchase, making material purchases more likely to spark rumination about alternative purchases, and hence regrets of action.

**Material and Experiential Purchases**

Over the past decade, research has examined differences in the amount of enduring satisfaction people derive from material and experiential purchases (Carter & Gilovich, 2010; 2011; Nicolao, Irwin, & Goodman, 2009; Van Boven, Campbell, & Gilovich, 2010; Van Boven & Gilovich, 2003). Van Boven and Gilovich (2003) defined material purchases as “those made with the primary intention of acquiring a material good: a tangible object that is kept in one’s possession” and experiential purchases as “those made with the primary intention of acquiring a life experience; an event or series of events that one lives through” (p. 1194). They found, across a wide range of subject populations and time frames, that experiential purchases tend to make people happier than material purchases. Carter and Gilovich (2010) present evidence for one mechanism underlying this phenomenon, finding that people are more likely to make invidious comparisons when it comes to material rather than experiential purchases. That is, people dwell on how their material purchases compare with other people’s and how they measure up to other
purchases they might have made instead. These thoughts provide the raw material for deflating upward comparisons that diminish satisfaction.

Our paper contributes to this literature in two ways. First, it elaborates on the ways that experiential purchases might bring greater happiness than material goods, examining whether experiential purchases are less likely to elicit regrets of action. Although Carter and Gilovich (2010) advanced (but did not test) the idea that material purchases might be more likely to result in regrets of action than experiential purchases, the complementary possibility (that failures to act on experiential purchase opportunities are especially likely to lead to regrets of inaction) has not been previously discussed let alone tested. We investigate whether this influence of purchase type exists over and above any effect that differential satisfaction for material and experiential purchases might have on regret. In addition, our work examines the comparability explanation described above. We investigate whether experiential purchases are seen as more singular, and whether the degree to which a purchase is seen as singular versus interchangeable underlies whether regrets of action or inaction predominate.

Patterns of Regret

Foundational work on counterfactual thinking indicated that regrets of action tend to be stronger and more common than those of inaction because it is typically easier to imagine undoing an action taken (and mentally returning to the status quo) than to imagine what would have resulted from an unchosen option (Kahneman, 1995). Other research paints a more complex picture, documenting a temporal shift in people’s regrets over actions and inactions—namely that regrets of action are more intense in the short term, but regrets of inaction gain prominence and stand out in the long run (Gilovich & Medvec, 1994,1995; for an exception see Morrison & Roese, 2011). This work on the temporal trajectory of regret demonstrates how
regrets in the same domain—one’s career, for example—shift over time from regrets of action (e.g., “I shouldn’t have criticized the VP during the board meeting”) to regrets of inaction (e.g., “I should have applied for that position in the marketing department”).

Zeelenberg et al. (2002) identified another moderator of whether regrets of action or inaction tend to dominate people’s experience, demonstrating that the valence of prior outcomes (such as winning or losing a previous soccer game) shape what people expect to generate the most regret—action (such as a coach changing the starting lineup for the next game) or inaction (keeping the lineup the same). When prior outcomes were positive, regrets of action tend to be more intense, but when prior outcomes were negative, regrets of inaction tend to dominate. The research we report here is designed to add texture to the existing literature in this area, examining whether the object of the regret itself—specifically its material or experiential qualities—can influence the type of regret people are most likely to experience.

Most of the research on regret has found that people’s greatest regrets, not surprisingly, often center on major life choices such as whom to marry, what job to take, or whether to continue with one’s education (Gilovich & Medvec, 1994, 1995; Gilovich et al., 2003; Hattiangadi, Medvec, & Gilovich, 1995; Landman, 1993; Roese & Summerville, 2003). Although it has not been at the forefront of the contemporary regret literature in psychology, everyday experience tells us that purchase decisions are a frequent source of regret. Buyer’s remorse is something most people have experienced: children old enough to have an allowance are old enough to regret buying a toy that delivered less joy than anticipated. At the same time, marketers are certainly aware of the power of regrets of inaction when they suggest that consumers will regret missing out on a great deal or special offer. Although economists and marketing researchers have placed more emphasis than psychologists on the frequent connection
between purchase decisions and regret, they have largely focused on factoring *anticipatory* regret into their models of consumer purchasing behavior (e.g. Loomes & Sugden, 1982; Hetts et al. 2000). This paper focuses squarely on the *experience* of regret that follows from consumer purchases. The present work contributes to the regret literature by being the first to examine the systematic ways in which the *objects* of regret – rather than the time frame of the regret or its valenced antecedents – might shape whether it takes the form of action or inaction.

In five studies, we tested the hypothesis that when purchase decisions lead to regret, they are more likely to lead to regrets of action for material purchases and regrets of inaction for experiential purchases. We ruled out differences in perceived desirability of material and experiential goods as an explanation for this pattern, and investigated whether differences in regret are driven by the tendency to see experiences as more singular (less interchangeable) than material goods. In Study 1 we asked participants to consider their single biggest material or experiential regret and to indicate whether it was a regret of action or of inaction. Study 2 controlled for the possibility that the regrets generated in Study 1 were for purchases of radically different types and magnitudes by asking participants to consider the purchase of a material and an experiential good that were equated for price and purchase domain. This study also examined whether the phenomenon extends to predictions for others as well as experiences for the self. Study 3 examined our hypothesis across a broad range of commonplace regrets, which yielded a naturalistic set of regrets that we used to test, in Study 3a, the proposed mechanism for our observed effects. That is, coders in Study 3a who were unaware of our hypothesis rated each of the regrets generated in Study 3 on an interchangeable/singular continuum and we examined whether this variable mediated our findings from Study 3. In addition, this study directly compared the potential mediating role of interchangeability and of differential perceived value of
material and experiential goods in our reported effects. In Study 4 we manipulated interchangeability, examining its influence on regrets for both material and experiential purchases. Finally, in Study 5 we pushed the boundaries of this phenomenon, testing whether participants asked to construe same object as either a material or experiential purchase might yield the predicted differential pattern of regret.

Study 1

In this study, we tested our prediction that people’s biggest regrets about material purchases would tend to be regrets of action, whereas their biggest regrets about experiential purchases would be regrets of inaction.

Methods

Fifty-six Cornell undergraduates were randomly assigned to either the material or experiential condition. They were asked to think of times they had made or had thought about making a material/experiential purchase and then read the following text:

Presumably, most of these purchases have worked out well for you. Occasionally, however, we make decisions that we end up regretting. And when we do, there are two kinds of regrets we can have. We can regret: (1) things we did that we wish we hadn’t done, and (2) things we didn’t do that we wish we had. When you think back on various decisions you’ve made with respect to your material/experiential purchases, what would you say is your biggest single regret?
Participants responded by checking one of two options: “a (material/experiential) purchase I made that I wish I hadn’t,” or “a (material/experiential) purchase I didn’t make that I wish I had.”

Results and Discussion

Twenty-four of the 29 participants (83%) in the experiential purchase condition indicated that their biggest regret was one of inaction, a result vastly different than the 10 out of 27 participants (37%) in the material purchase condition whose biggest regret was one of inaction, \(X^2 (1) = 12.25, p < .0001, \varphi = .47\). Thus, as predicted, when people thought about experiential purchase decisions, regrets of inaction predominated; when they thought about material purchase decisions, action regrets were more likely to come to mind. But note that this design has limitations: because we did not control the purchases participants considered, it is possible that the magnitude or the desirability of the experiential and material purchases they generated were meaningfully different. For example, research suggests that over time, experiential purchases bring greater satisfaction than material goods. (Van Boven & Gilovich, 2003). Thus, if participants in the experiential condition were thinking of more desirable items than participants in the material condition, this might artifactually account for why they were more likely to have regrets of inaction (over missing out on a qualitatively better purchase). This concern was addressed in Study 2.

Study 2

Study 2 provided a more controlled test of our hypothesis by asking participants to consider a specific material or experiential purchase decision—from the same domain and of the
same monetary value—and to tell us whether they thought a regret of action or inaction would be more intense. By framing these specific purchases in the context of a third party’s choice, we could also determine whether the pattern of results from Study 1 extends from the self to judgments about others. To investigate the impact of purchase desirability, we also asked participants to rate how much they would enjoy receiving the material or experiential purchase we described.

**Methods**

Eighty-four participants (46 women and 38 men, ages ranging from 18 to 61) were recruited through Amazon’s Mechanical Turk and paid for their participation. Participants were randomly assigned to read one of the following purchase scenarios:

“’I’d like you to imagine two people – Joe who bought a new iPod Shuffle ($55) but now wishes he hadn’t, and Mark who chose not to buy a new iPod Shuffle ($55) but now wishes he had.”

“I’d like you to imagine two people – Joe, who bought a ticket to a rock concert ($55) but now wishes he hadn’t, and Mark, who chose not to buy a ticket to a rock concert ($55) but now wishes he had.”

In both conditions, participants were asked to indicate on a seven-point scale which of the two individuals was more likely to regret his decision, from 1 (the person who acted) to 7 (the person who failed to act). Participants were then asked to imagine that someone gave them the iPod or a concert ticket and to rate how much they would enjoy it on a 1 (Not At All) to 7 (Extremely) scale. Note that the products selected for the two scenarios belonged to the same general domain—music—and had the same price attached to them. These prices were very close to the actual product values; according to a leading music-industry trade publication, the average
price for a rock concert ticket at the end of 2010 was $60 and the price of an iPod Shuffle was $55. Finally, both purchases are common enough that we expected participants to have no difficulty imagining the purchase and the potential for regret.

Results and Discussion

Participants in the material condition thought that the experience of buyer’s remorse would be more intense than the experience of regret over a missed opportunity to buy the iPod ($M = 2.47$), one-sample $t(37)$ against the midpoint value of 4 = -4.88, $p < .000$, $d = 1.60$. Participants in the experiential condition, in contrast, predicted that action and inaction regrets for the concert purchase would be equal ($M = 4.00$), $t < 1$. The difference between the ratings of the two groups of participants was significant, unequal variances $t(82) = 3.28$, $p = .002$, $d = .71$. Critically, there was no difference in how much participants felt they would enjoy receiving the iPod ($M = 5.16$) versus the concert ticket ($M = 5.37$), $t < 1$. Furthermore, controlling for the desirability of the iPod/concert ticket left the effect of material/experiential condition unchanged, $\beta = -1.50$, $t(81) = -3.15$, $p = .002$.

These data thus further support our hypothesis using a paradigm in which the material and experiential purchases were from the same domain and of equal monetary value. They augment the results from Study 1, showing that people not only expect their own regrets to be different for material and experiential purchases, but expect the same pattern for the regrets of others. These data also suggest that the effect is not driven by differences in the perceived desirability of material and experiential goods—a finding that receives further support in Study 3a and Study 5.
Study 3

Study 3 was designed to extend the results of Study 1 by asking participants to generate a number of specific regrets from their own lives and to indicate whether each was a regret of action or inaction (rather than specify their single biggest regret). We also used this set of naturalistic material and experiential regrets in further analyses (in Study 3a) to shed light on the mechanism underlying our findings.

Methods

Seventy-five Cornell undergraduates participated in exchange for extra course credit and were randomly assigned to either the material or experiential condition. After reading a definition of a material purchase (“a tangible object that you buy and keep in your possession”) or an experiential purchase (“a life experience”), participants read that regrets about purchases can come in the form of regrets of action or inaction. Specifically:

“Presumably you’ve been happy with most of your decisions about whether or not to buy material/experiential objects. Occasionally, however, we make decisions that we end up regretting. Sometimes, for example, we spend money on something and afterwards realize the purchase was a mistake, and we end up regretting the action we took. Other times we don’t make a material/experiential purchase that we had thought about; afterwards we realize that we should have made the purchase and we end up regretting our inaction.”

Participants were then asked to list three specific material or experiential regrets that came to mind. After writing them down, we asked them to go back and label each with an “A” for action or an “I” for inaction.
Results and Discussion

Two participants were excluded because they did not provide specific regrets, instead using generalities such as “buying an object that you get sick of.” Another participant was excluded because he accidentally participated twice, completing both conditions. Of the remaining 72 participants, the mean number of regrets of action was significantly higher for participants in the material purchase condition \((M = 2.24)\) than in the experiential purchase condition \((M = 1.54)\), \(t(70) = 3.48, p < .001, d = .83\), and the reverse was (of course) true for regrets of inaction. These results demonstrate that even fairly commonplace purchase decisions gone awry—e.g., bad meals, clothes participants never wore, campus concerts, and computer games—conform to the same differentiated pattern of regrets for material and experiential purchases: people experience more regrets of action over material goods and more regrets of inaction over experiential goods. These findings are consistent with those of Study 1, even though participants were asked to free-list several regrets, and did so prior to encoding them as regrets of action or inaction.

Study 3a

Previous work by Carter and Gilovich (2010) found that part of the reason experiential goods bring greater happiness is that they are less likely to elicit invidious comparisons to other goods, resulting in less time spent thinking about other purchases that might have been better than the chosen option. Carter and Gilovich noted that experiences are less likely to spark such comparisons because, being less tangible, they are literally harder to liken to one another—harder to line up and compare, feature by feature, the different possible options. Good luck
comparing the ambience at *Tetsuya’s* versus that at *Charlie Trotter’s*, the quality of light at Bondi versus Hanalei, or the view from the Blue Mountains versus Muir Pass.

In Study 3a, we pursue this idea further, examining whether experiences tend to be seen as more *sui generis* – of their own kind, or unique – than material goods and, in turn, whether material goods are seen as more interchangeable. The idea of comparability that Carter and Gilovich refer to reflects whether a purchase has features that can be easily aligned and compared with others in its class. Here we focus on the notion of interchangeability, which reflects the size of the class and the uniqueness of its members. Are there many members of the class and are they seen as ready substitutes for one another? We maintain there is a smaller set of things that provide the same benefits of the average experience than there is of the average material good.

How might this influence the type of regrets people are likely to have over material and experiential purchases? When goods are interchangeable with others of the same type, regrets of action become more likely, as there is a large pool of alternatives with which to compare the purchase—any of which might look more appealing if the current purchase doesn’t meet expectations. Conversely, when a good is seen as more singular or unique, regrets of action are less likely because it is harder to think of a counterfactual world in which a better outcome would have resulted if only a different purchase had been made. Instead, when the items or events in question are not interchangeable, it is likely to be failures to act that stand out, as the individual comes to the realization that a unique opportunity has passed.

Returning to the stimuli used in Study 2, there are a great many products that serve the same function as an iPod shuffle – including similar models from Sony or Samsung, and a variety of smartphones that play music. In contrast, there are many fewer acceptable substitutes
for a specific rock concert. Although there are certainly other concerts one could attend, even artists in the same genre don’t provide the same experience – performances by David Byrne and Regina Speckter just don’t feel that interchangeable. We contend that people see experiential goods, on the whole, as less interchangeable than material goods. We tested this hypothesis in this study by having coders evaluate each of the purchases participants listed in Study 3 on the dimension of interchangeability. We then tested whether the interchangeability of the items or events in question is related to whether the purchaser’s regret was one of action or inaction. We predicted that the interchangeability of the items would mediate the relationship between type of purchase (material vs. experiential) and type of regret (action vs. inaction). We also examined whether differential desirability of material and experiential purchases may have played a role in the different types of regrets people tend to experience over material and experiential purchase decisions.

Methods

Three research assistants who were unaware of our hypothesis and previous findings coded the full set of regrets generated in Study 3 on the dimension of interchangeability. More specifically, they read the following text:

Some things you can purchase are largely interchangeable—there are many other things just like it that could substitute and serve essentially the same function. Things that are interchangeable are easily replaceable. Other things you can purchase are much more singular—there are not many things like it or that would be a good substitute. Things that are singular feel unique and hard to replace.

For each of the purchasing decisions you read about, we’d like you to rate the object or experience for how interchangeable it is. Please use a scale between 1 and 5, where the values mean the following:

1 = Completely Interchangeable
2 = Mostly Interchangeable
3 = Somewhat Interchangeable
4 = Not Very Interchangeable
5 = Not Interchangeable At All

The responses from the 72 participants in Study 3, who each provided three regrets, were given to the coders in a single random order. The coders were given the regrets exactly as written by the Study 3 participants and all 216 regrets were rated by each coder.

Three different research assistants, who were also unaware of our hypothesis and previous findings, coded the full set of purchases generated by participants in Study 3 on the dimension of desirability. The responses from the 72 participants in Study 3 were stripped of any reference to regret, leaving only the purchase description. A list of these purchases was given to the coders in a single random order, and all 216 purchases were rated by each coder. Coders were asked to rate the object or experience by answering the question: “Cost aside, how desirable would this be to the average Cornell student? How much would they enjoy it?” The five-point scale was anchored at 1 = “very little” and 5 = “extremely”.

Results and Discussion

The ratings made by both sets of coders were reliable (interchangeability α = .77, desirability α = .81) and so they were averaged to create two indices – one of the interchangeability and one of the desirability of each purchase. As predicted, material purchases were rated as significantly more interchangeable than experiential purchases (\(M_{\text{Material}} = 2.09, M_{\text{Experiential}} = 3.14\), \(\beta = .624, t(214) = -11.68, p < .0001\). In addition, the more interchangeable a

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3 A fourth coder also rated the interchangeability of the full set of purchases, but her ratings were poorly correlated with the other three (average r = .15) and reduced the overall reliability of the four sets of ratings to .61. The analyses above were therefore conducted using just the ratings of the three reliable coders, but the findings and p-values do not change if all four coders’ ratings are included in the composite index of interchangeability.
purchase was, the more likely its regret was one of action, \( \beta = .374, t(214) = 5.87, p < .0001. \)

As detailed in Study 3, material purchases were significantly more likely to result in regrets of action than experiential purchases, \( \beta = .248, t(214) = 3.73, p < .001. \) To test whether interchangeability mediated the relationship between purchase type and regret type, we used the Baron and Kenny (1986) procedure, with the correction specified by MacKinnon and Dwyer (1993) to account for the fact that our dependent variable (regret type) was dichotomous. Interchangeability fully mediated the relationship between purchase type and regret type, Sobel \( z = 3.76, p < .001, \) such that when interchangeability was included in the model, purchase type was no longer a significant predictor, \( \beta = .02, p > .7. \)

Consistent with the findings reported by Van Boven and Gilovich (2003), the experiential purchases that participants listed were rated as significantly more desirable \( (M=3.75) \) than their material purchases \( (M = 3.17), t(211) = -4.35, p < .0001. \) In addition, desirability was a significant predictor of regret type, with especially desirable purchases being more likely to be associated with regrets of inaction \( (\beta = .139, t(209) = 4.37, p < .0001). \) However, desirability did not mediate the relationship between material/experiential purchase and regret type – purchase type remained significant when desirability was included in the model \( (\beta_{\text{Condition}} = .115, t(208) = 3.49, p = .001; \beta_{\text{Desirability}} = .173, t(208) = 2.66, p = .008). \) Finally, interchangeability continued to mediate the effects of condition on regret type even when desirability was included as a covariate in the model, Sobel \( z = 2.78, p < .005. \) These findings thus support our contention that it is

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4 When material and experiential goods are analyzed separately, interchangeability is a highly significant predictor of regret type for experiential goods, \( \beta = .386, t(103) = 4.25, p < .0001, \) but it is a much weaker predictor of regret type for material goods, \( \beta = .154, t(107) = 1.61, p = .11, \) This appears to be caused by the fact that the range of interchangeability ratings for material goods \( (\text{Min} 1 \text{ to } \text{Max} 3.33) \) was much smaller than the range for experiential goods \( (\text{Min} 1 \text{ to } \text{Max} 4.67). \) This underscores our contention that not only are material goods as a whole seen as significantly more interchangeable than experiences, but they are less variable in that interpretation.
interchangeability, not desirability, that drives the relationship between material / experiential purchases and regret type.

![Figure 1.1. Model testing mediation of the relationship between type of purchase and regret by interchangeability. ***p < .001](image)

Although not the focus of this paper, the reasons that experiential purchases are seen as less interchangeable than material purchases are worth considering. One reason doubtless stems from the ephemeral nature of experiences. The fact that they don’t persist as material goods do makes it both harder to compare them to foregone experiential purchases and harder to imagine “returning” one and having a different experience instead. Another likely reason is that experiences feel closer to the self than material goods and their close association with the self makes them seem more unique (Carter & Gilovich, 2011).

**Study 4**

To conduct a more controlled test of the importance of interchangeability in the type of purchase regrets people are likely to experience, we manipulated the interchangeability of both a material and an experiential purchase. Both material and experiential purchases vary along the
dimension of interchangeability. Dinner out at a local chain restaurant is a fairly interchangeable experience (if you can’t get into Chili’s, you can always eat at Applebees), whereas dinner at a local Ethiopian restaurant is much less so. Similarly, a summer sundress is a fairly interchangeable material good (there are many dresses that would have roughly the same appeal), but a wedding dress is more singular: most women don’t think that just any old wedding dress will do. Given that interchangeability predicted regret type for both material and experiential goods in Study 3a, we expected that making either type of purchase less interchangeable (more singular) would increase the likelihood that it would elicit regrets of inaction.

Methods

Sixty-six participants (38 women, 28 men, mean age = 34) were recruited through Amazon’s Mechanical Turk and paid for their participation. Participants were randomly assigned to one cell of a 2 x 2 design. The thirty-six participants in the material purchase condition were asked to imagine that they were looking to buy a dresser, and were randomly assigned to read either about a dresser they found at the local mall (interchangeable) or an antique dresser they found at an estate sale (singular). The thirty participants in the experiential purchase condition were asked to imagine that they were trying to decide whether to buy a plane ticket to either their family’s yearly (interchangeable) or first ever (singular) reunion getaway in California. All participants were asked to consider the two types of regret—purchasing the dresser/ticket and wishing they hadn’t, or not purchasing it and wishing they had—and to indicate on a 1 to 7 scale which regret would be stronger, from 1 (“buying the dresser/ticket”) to 7 (“not buying the dresser/ticket”). A separate sample of participants from Mechanical Turk rated the four scenarios using the same interchangeability scale described in Study 5. These participants
confirmed that the dresser from the mall is considered more interchangeable than the antique dresser, $t(19) = 6.75, p < .0001$, and that the ticket to the annual family reunion is considered more interchangeable than ticket to the first-time reunion $t(19) = 2.46, p < .03$.

Results and Discussion

As predicted, there was a main effect of interchangeability, such that participants were more likely to believe that they would experience regrets of inaction for purchases that were singular than for purchases that were interchangeable, $F(62) = 19.59, p < .0001$, $\eta_p^2 = .24$. Participants who read about the dresser framed as a singular purchase thought the regret of inaction would be stronger ($M = 4.94$) than those who read about the dresser framed as an interchangeable good, ($M = 2.39$), $t(62) = 3.65, p < .001, d = .927$. Similarly, participants who considered buying a ticket to fly home for a first-time family reunion thought the regret of inaction would be stronger ($M = 5.43$) than those who read about buying a ticket to the annual event, ($M = 3.38$), $t(62) = 2.67, p < .01, d = .68$. Neither the main effect of purchase type nor the interaction between interchangeability and purchase type was significant, both $ps > .15$.

Study 5

Study 5 was designed to explore the boundaries of our main finding by examining whether the very same object, when viewed through a material or an experiential lens, might yield different patterns of regret. Although many purchases are unambiguously material or experiential, others straddle the line between the two categories, having both material and experiential properties. In Study 5, we manipulated whether one such ambiguous purchase—a 3D TV—was framed either as an experience or as a material good. As in Study 2, participants
were then presented with two individuals who regretted their decision and were asked whose regret would be stronger—the person who made the purchase or the person who did not. We expected that focusing on the experiential features of what is generally seen as a material good would increase the predicted likelihood and strength of regrets of inaction. We also included questions that would allow us to examine whether our framing manipulation had an effect on perceived product value and whether any such effect might have artifactually yielded the predicted difference in type of regret.

Methods

Sixty-two participants (33 male, 29 female) were recruited through Amazon’s Mechanical Turk and paid for their participation. Participants were randomly assigned to either the material or the experiential condition. In the material scenario, Mark (who ultimately bought the TV) and Joe (who did not buy the TV) were both described as “imagining where a 3-D TV set would go in their apartments, what it would look like, and what their friends would think.” In the experiential condition, Mark and Joe were described as “imagining the fun they’d have watching it with friends, and how cool it would be to experience TV in a whole new way.” In both conditions, participants read that “Mark ended up buying one, but for various reasons now wishes he hadn’t. Joe did not buy one, but for various reasons now wishes he had.” Participants were asked to indicate which person would regret their decision more on a 1 to 7 scale, with 7 representing more regret on the part of Joe, who chose not to buy. Finally, participants were then asked to imagine that they were in the market for a new TV, and to report how much they would be willing to pay for a 3DTV. They also indicated how much they would enjoy owning a new
3DTV and how much satisfaction a new 3DTV would bring them, on scales ranging from 1 (Not at All / None) to 5 (Extremely / An Extreme Amount).

Results and Discussion

Participants who read about the 3D TV framed as a material good thought the regret of action would be stronger ($M = 2.10$) than did those who read about the 3D TV framed as an experience ($M=3.34$), unequal variances $t(60) = 2.28$, $p = .02$, $d = .62$. Predicted enjoyment and satisfaction were highly correlated ($r = .89$) and so we averaged them together to form an index of product desirability. We also calculated the natural log of the prices participants indicated they were willing to pay for a 3DTV in order to normalize that distribution. Our framing manipulation did not influence perceived desirability or willingness-to-pay (both $p$’s $>.6$). Furthermore, purchase framing remained a significant predictor of regret type when both desirability and log pay were included in the relevant multiple-regression analysis, $\beta = .129$, $t(54) = 2.425$, $p = .02$.

Note that the mean ratings of both groups were below the midpoint, indicating more overall anticipated regret of action. This may reflect participants’ familiarity with buyer’s remorse when it comes to the latest-and-greatest of new technologies—technologies that are often quickly rendered obsolete. Nevertheless, that the framing of the purchase to focus on its experiential properties shifted its regret profile suggests that keeping an object’s experiential properties in mind when making (and later evaluating) a purchase might lead to less buyer’s remorse.

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5 Note that desirability was a significant predictor of regret type, such that the more participants rated the 3D TV as desirable, the more likely they were to believe that regrets of inaction would predominate, $\beta = .533$, $t(54) = 2.21$, $p = .03$. 
General Discussion

Understanding and predicting possible regrets is an important part of extracting as much satisfaction and pleasure from our purchasing power as possible. Regrets, whether of action or inaction, are painful—pain that needs to be factored into the hedonic equation underlying our purchasing decisions. Our research suggests that when it comes to such decisions, the regret we’re most likely to experience is indeed predictable—broadly by whether the purchase is a material or experiential good and more narrowly by how interchangeable the purchase is with others in its class. This knowledge might make it easier to avoid some purchase regrets in the first place: tilt toward experiences over material goods when the two types expenditures are in close competition and there aren’t enough funds to cover both.

Studies 1 and 3 demonstrate that people are prone to different types of regret for material and experiential purchases, both with respect to subjects’ greatest purchase regrets and with respect to more mundane, everyday regrets that they supplied for us. Participants in Study 2 anticipated this same pattern of regrets for others, even when the magnitude and domain of the material and experiential purchases were held constant. Focusing participants’ attention in Study 5 on either the material or experiential features of the very same purchase also yielded this differential pattern of regret. In Study 3a we coded the specific regrets listed by participants in Study 3 to test a mechanism responsible for these effects. The experiential purchases participants generated in Study 3 were rated as less interchangeable than the material purchases they described, and this difference in interchangeability mediated the relationship between purchase type (material/experiential) and regret type (action/inaction). To gain experimental control over this mediator, Study 4 presented participants with one of two scenarios in which material or experiential purchases were more or less interchangeable. The interchangeability of the purchase
predicted whether participants thought it would elicit action or inaction regrets, independent of whether it was an experience or a material good.

These studies extend our understanding of regret, shedding light on the objects of regret—rather than the time frame in which they are evaluated—as a determinant of whether action or inaction regrets are likely to predominate. We chose to study this in the realm of consumer purchases, a context that often generates regret, but has not (surprisingly) received much attention in the contemporary psychological literature. Our work also complements existing research on material/experiential goods, showing that the previously documented tendency for experiences to induce more enduring satisfaction than possessions is reflected in satisfaction’s flip side—regret. Experiences tend to provide more satisfaction than material goods and the failure to realize experiences tends to elicit regrets of inaction. Conversely, not only do material purchases typically lead to less satisfaction than experiential goods, but they are more likely to lead to outright regret over having made the purchase in the first place. These findings thus parallel the message that experiential purchases yield more satisfaction than material ones, constituting an analogous result on what is in essence an additional measure of satisfaction—type of regret.

The Role of Interchangeability in Counterfactual Thinking and Regret

Research on regret is closely linked to the literature on counterfactual thinking, with the signature finding being that people are most likely to regret a negative outcome when it is easy to imagine counterfactual states of the world in which the outcome would have been better (Kahneman & Tversky, 1982; Miller & Taylor, 1995; Roese & Olson, 1995). This ease of counterfactual generation is driven by perceived mutability of the event – how easily we can
mentally ‘undo’ the outcome or its antecedents (Kahneman, 1995). Past research has focused on such determinants of mutability as departures from normality (Kahneman & Miller, 1986), position in a temporal sequence (Miller & Gunasegaram, 1990), and proximity to a notable outcome (Medvec, Madey, & Gilovich, 1995). The interchangeability of an item or event is another determinant of mutability, influencing the likelihood that an individual will consider alternative purchases that might have been made. The extent to which a purchase is seen as one of a broad set of substitutable items or as something more one-of-kind influences how easy it is to imagine a counterfactual world in which a different, and perhaps better, purchase was made. And as we have seen, this has implications for the types of regrets people tend to have over their purchase decisions. There are no doubt other features of purchasing decisions, such as the extent to which the buyer deliberated over a purchase or chose mindlessly, or whether specific alternatives purchases were considered, that might also influence the likelihood of regret. It is unclear, however, whether these other determinants of purchase mutability would differ across material and experiential goods and hence influence the type of regret that each type of purchase tends to elicit.

**Limited and Lost Opportunities**

Two recent articles highlight the importance of lost opportunities in determining the nature and intensity of regret. Beike, Markman, and Karadogan (2009) have put forward evidence that people’s most intense regrets are ones involving lost opportunities, and that the life domains that produce the greatest number of regrets (such as education) are those in which people perceive fewer opportunities in the future. The authors did not distinguish between regrets of action and inaction, and previous research on the temporal aspects of regret indicates that
regrets in the domains they reference can be of either type. It is likely, furthermore, that part of what makes an opportunity feel truly lost—and thus what amplifies the regret—is how interchangeable it is. For example, a regret of inaction over a lost opportunity to study abroad in Kenya might be more intense than regret over a failure to study abroad in England because, for most US citizens at least, time spent in England seems more interchangeable with other experiences we might have. Even with respect to regrets of action, regret intensity might be moderated by the interchangeability of the action that now cannot be remedied. Regrets about majoring in English might be stronger than regrets about majoring in Medieval Architecture because although both resulted in the lost opportunity of choosing a major with better job prospects, the English major—being more commonplace—feels more interchangeable with other popular but more practical majors.

Recent marketing research suggests that in the case of limited-opportunity purchases, the established temporal pattern of regret can flip, such that regrets of inaction dominate in the short term and regrets of action can grow stronger as time passes after the purchase (Abendorth and Diehl, 2009). This work has several interesting points of intersection with what we report here. First, it is notable that Abendorth and Diehl base their conclusions on three material purchases that are all essentially markers of an experience (souvenirs from a vacation, a live concert CD, and a concert t-shirt from a performance the participant imagined attending). The fact that these purchases, even in the short term, elicited regrets of inaction underscores our findings from Study 5 in which the framing of a (primarily) material purchase in experiential terms influenced the type of regret it provoked.

The idea of limited opportunity is certainly related to interchangeability—the two often go hand in hand. Indeed, limited purchasing opportunities often derive their power from the
degree to which other items cannot serve as substitutes. There is no great loss in a limited opportunity to buy a Samsung TV—perhaps the model is being closed out—if a comparable Sony TV remains available. On the flip side, imagine that you live in San Diego and thus can visit Sea World whenever you want. While at Sea World, you debate whether or not to spend the money to swim with dolphins, and ultimately decide not to. Although there is nothing limiting your ability to go back there the very next day, it’s still easy to imagine sitting at home that evening regretting not having purchased such an exceptional experience.

**Future Directions**

Several avenues of future research merit exploration. First, the pattern of results we report may be moderated by materialism. Materialists may be more inclined than the general population to see material goods as singular and thus experience greater regret over missed opportunities to buy them. Conversely, people who are dispositionally experience-seeking should generally be less likely to experience regrets of action and more likely to experience regrets of inaction. Second, it would also be worthwhile to explore how the opposing temporal patterns outlined by Gilovich and Medvec on the one hand, and Abendorth and Diehl on the other, apply to material and experiential purchases. It may be that a fair number of the short-term regrets of action that Gilovich and Medvec report involve material purchases, and the bulk of their corpus of long-term regrets of inaction involve missed experiential opportunities. Another potentially fruitful area of future research would be to examine the impact of the differential amount of social interaction that tends to accompany material and experiential purchases. Our findings suggest that sociality might influence people’s likely regrets because social experiences—by virtue of the unique combination of personalities attendant at each one—often seem more
singular. Going to the movies by oneself on Thursday isn’t all that different from doing it on Friday, but going with one group of friends rather than another, or even the same group of friends who are in a different mood, is not nearly as interchangeable. Finally, the results of Study 5 highlight important opportunities for the study of behavioral interventions in this domain. Might an intentional focus on the experiential elements of even clearly material purchases lead to greater satisfaction and diminished regret?

In the end, we hope our research may help inform people’s future purchase decisions. As this article was being written, the first author was the subject of our opening example. She was debating whether to take a trip to Mexico with her husband and, upon seeing the price tag for tickets, had a hard time deciding to go. Around the same time, she considered replacing the range in her kitchen—a rusty unit from the 1980’s with a tendency to spew gas for 20 minutes while deciding whether or not to light. After her husband reminded her of this very line of research, she sheepishly bought the tickets, had a wonderful week on the beach, and doesn’t regret a penny she spent getting there. She still hasn’t bought the stove of her dreams, but has no regrets over that inaction—the kitchen has yet to explode and until it does, there are still plenty of ranges from which to choose.
CHAPTER 2:

When Does Dissatisfaction Prompt Regret? The Moderating Role of Purchase Type

While the previous chapter highlighted predictors of action versus inaction regret, those studies held constant one key factor – that regret was present at all. But this leaves the question of what the distinction between material and experiential purchases might be able to tell us about how likely we are to have regret to begin with, specifically regrets of action. On the surface, the predictors of regret might seem quite simple: how likely am I to be dissatisfied with the purchase that I’ve made? Surely, the more unhappy I am with the performance of something I buy, the more likely I am to wish I hadn’t bought it. Yet survey your own purchases and you may find that dissatisfaction and regret are not always tightly coupled. Perhaps it is the fully functional Sanyo mp3 player, whose small volume buttons left you regretting that you hadn’t just spent the extra $20 and gotten an iPod. Or instead, think of dinner at a new Vietnamese restaurant in town; even if the Pho was too salty and the summer rolls rubbery, you still may feel no regret over trying it out. What is it that shapes whether and how much dissatisfaction prompts regret?

Research on regret distinguishes it from dissatisfaction in several key ways that raise the possibility that regret and dissatisfaction may not always walk in lock step with each other. Most centrally, dissatisfaction is described as a negative evaluation referencing an internal comparison standard – it is what happens when an outcome fails to live up to our pre-existing expectations for it. (Tsiros, 1998; Yi, 1990; Oliver, 1977, 1980). Regret, in contrast, is seen as requiring an external referent; it is an emotion experienced when a chosen outcome suffers in comparison to an external reference point. This external reference point is typically an unchosen option whose superior performance is learned about after the fact (Tsiros & Mittal, 2000; Zeelenberg, 2007).
Two other distinctions between dissatisfaction and regret have been noted in the literature. Most critically, regret requires a component of agency; we can be dissatisfied with outcomes we did not choose ourselves, but can only regret outcomes that stem from our own choices (Zeelenberg, Van Dijk, & Manstead, 1998, 2000). In a related distinction that follows from the importance of active choice for regret, where dissatisfaction is outcome focused, regret can attach to either an outcome or the decision process leading to that outcome (Pieters & Zeelenberg, 2006).

Starting with Regret Theory (Bell, 1982; Loomes and Sugden, 1982) a long line of research grounded in economic theory has approached dissatisfaction and regret as two independent constructs, both of which contribute to evaluation. Keaveney, Huber, and Herrmann (2007) report that “regret and satisfaction have been shown to be theoretically and empirically distinct concepts, able to exist uniquely yet simultaneously (p. 1208).” Tsiros (1998) argues:

Because satisfaction and regret are independent of each other and are influenced through different processes, a decision maker may experience one of four conditions: (1) satisfaction and rejoicing (the chosen alternative performed both better than expected and better than the forgone alternative), (2) satisfaction and regret (the chosen alternative performed better than expected but worse than the forgone alternative), (3) dissatisfaction and rejoicing (the chosen alternative performed worse than expected but better than the forgone alternative), or (4) both dissatisfaction and regret (the chosen alternative performed worse than expected and worse than the forgone alternative) (p. 51).

Using a business scenario which manipulated performance of the selected outcome and the performance of unchosen alternatives, Tsiros demonstrated that each had an independent effect on post-choice valuation. Using a similar design, Zeelenberg, Van Dijk, & Manstead, 1998, also find that participants’ reported happiness with an outcome was independent of their reported regret (see also Zeelenberg & Pieters, 1999, 2004).

However, the very same authors who argue for the independence of dissatisfaction and regret also both theoretically and empirically support the opposite point of view in other papers.
Tsiros and Mittal (2000) put forth a model of regret which includes a direct effect of regret on dissatisfaction – the opposite of the ‘I really hate this product so I regret buying it’ pathway I suggested earlier. Thus just two years after the quote above, Tsiros and Mittal report:

Specifically, regret is posited as an antecedent of satisfaction. It has been shown that higher levels of regret decrease satisfaction (Inman et al. 1997; Taylor 1997). In line with these studies, a direct influence of regret on satisfaction is posited. In other words, it is proposed here that a consumer may adjust his or her level of satisfaction with the chosen outcome depending on how this outcome compares against the forgone outcome. For example, the decision maker may reason in the following fashion: well, my choice of stock (IBM) did not meet my original growth expectations but has performed better than my other alternative (Intel). This is not to say that the decision maker will necessarily be satisfied in the above example, but he or she will be more satisfied than if no such comparison is undertaken.

Perhaps encapsulating this tension, Zeelenberg and Pieters (2007) first argue for regret as a distinct construct, positing that: “Regret is distinct from related other specific emotions such as anger, disappointment, envy, guilt, sadness and shame, and from general negative affect on the basis of its appraisals, experiential content and behavioral consequences (p. 7).” They then support this claim by citing their own research which finds that regret over a negative service delivery experience significantly predicts dissatisfaction (although regret continues to uniquely predict specific outcomes after dissatisfaction is controlled for). Keaveney, Huber, and Herrmann (2007) also model the antecedents and consequences of regret, and find that regret significantly predicts dissatisfaction.

In fact, all of the marketing literature that posits a relationship between dissatisfaction and regret draws the direction of causality from the experience of regret to dissatisfaction (Keaveney, Huber, and Herrmann, 2007; Zeelenberg & Pieters, 1999, 2007; Inman, Dyer, & Jia, 1997; Tsiros & Mittal, 2000; Taylor, 1997; Cooke, Meyvis, & Schwartz, 2001; Bui, Krishen, & Bates, 2011). None hypothesize effects in the reverse direction – in which initial levels of
satisfaction influences the likelihood of experiencing regret – and despite having the data to do so, none test this reverse direction of causality. While I do not dispute that the experience of regret may influence satisfaction\(^6\), in this chapter I suggest that satisfaction can also influence the likelihood of regret. More specifically, I use differences in the relationship between satisfaction and regret for material and experiential purchases to shed light on the underlying processes through which satisfaction influences regret.

*Why Dissatisfaction Should Predict Regret*

As described in the introduction, regret is an emotion that requires the presence of counterfactual thinking: regret can only be experienced when one compares what is to what might have been, and finds that what is is lacking. Critically, a large body of research in psychology highlights the fact that people are more likely to engage in counterfactual thinking after negative outcomes (for review, see Roese & Olson, 1997). It is negative affect that appears to prompt counterfactual thinking; one must actually feel badly about a negative outcome before counterfactuals spring to mind. This suggests that dissatisfaction, and the negative affect that comes with it, is a key precursor to the experience of regret.

Re-examining the consumer regret literature, a few findings emerge that support this direction of influence. Despite arguing that regret predicts dissatisfaction, Tsiros & Mittal (2000) present data that suggests the effect can also go in the opposite direction. The authors manipulated valence of the target outcome (which can be seen as a proxy for satisfaction, since participants either read about purchasing a computer that worked or about purchasing one which breaks) along with whether information about the outcome of a forgone alternative was

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\(^6\) For further discussion of the potential bi-directional relationship between satisfaction and regret, see the general discussion.
presented. For participants who had positive purchase outcomes (were satisfied), knowledge about the superior performance of a foregone alternative was necessary to produce regret. But for those who had negative outcomes, participants experienced regret whether or not they had been told about the foregone alternatives. The authors suggest that this interaction is explained by the fact that negative outcomes prompt spontaneous counterfactual thought, such that participants generated their own alternatives to the purchase even when the researchers did not provide it. Thus these data suggest that initial levels of satisfaction can shape how likely counterfactual thought is to occur spontaneously; given that counterfactual thought is a prerequisite for regret, this also suggests a link between purchase satisfaction and the likelihood of regret.

Furthermore, although Taylor (1997) does not differentiate between regret and dissatisfaction, her work in essence provides similar support for the idea that initial levels of satisfaction (measured by Taylor as the degree to which a purchase lives up to one’s expectations) moderate the extent to which people are influenced by counterfactual information. As she puts it:

If one’s choice meets or exceeds expectations, the consumer is satisfied and has little reason to reconsider the decision. However, when the choice does not meet expectations, one is likely to think more about the alternative given up in making the choice, as negative disconfirmation is more impactful. The disappointing outcome makes the perceived loss, as compared to the alternative, more salient, and regret and dissatisfaction are severe. (p. 231)

Although she does not include it in her formal model, note that Taylor’s words imply a reciprocal relationship between satisfaction and regret. Those who are initially satisfied with their purchase are less influenced by information about better foregone options, thus preserving their positive evaluation of the item. However those who are dissatisfied with their purchase a) are influenced by this information in a way that prompts regret and b) the direction of that
influence serves to feed back and diminish their ultimate satisfaction. Roese and Olson (1997) formally propose this bidirectional relationship between affect and counterfactual thought.

These two findings from the consumer purchase literature suggest that initial satisfaction influences the likelihood that exposure to counterfactual information will prompt regret. Other studies from these same researchers suggest that initial levels of satisfaction shape both the number of counterfactual thoughts people entertain as well as the effort they put into seeking out information about forgone alternatives (Tsiros & Mittal, 2000). The psychology literature also suggests that as dissatisfaction rises, people more effortfully seek out information about foregone alternatives. Summerville (2011) found a linear relationship between outcome negativity and effort to seek out counterfactual information. Participants played 100 rounds of a computerized card game, in which they could gain or lose 10 points per round. In these rounds participants drew a card from one of two decks, and their point score was based on the card they drew. In each round, they then had the option of seeing what card the other deck would have held for them, or they could simply move on to the next pair of card decks. Summerville found a linear relationship between the outcome of their initial card selection and whether they sought out counterfactual information – the worse their initial card draw, the more likely they were to check to see how they would have fared with the other deck.

Thus level of dissatisfaction is associated with the amount of effort made to obtain information about forgone alternatives, the likelihood of generating counterfactual thoughts, the number of thoughts generated, and the degree to which those counterfactual thoughts are emotionally impactful. Each of these suggests that as level of dissatisfaction with a purchase increases, regret should become more likely.
The Moderating Role of Purchase Type

Now that I have made an argument for why dissatisfaction should predict regret—because dissatisfaction prompts pursuit of and attention to counterfactual thoughts that are the precursors of regret—the next question is why purchase type might moderate that relationship. As highlighted in the first chapter of this dissertation, my research demonstrates that material purchases are seen as more interchangeable than experiential ones. This means both that a) material purchases are perceived as belonging to broader categories (thus with greater numbers of potential substitutes), and b) that those category members are perceived as more easily substitutable for each other.

The fact that material goods are perceived as part of categories whose members are more easily substitutable for each other suggests a main effect of purchase type on regret; in essence, this is another way of saying that material goods are more mutable, a factor known to be an important predictor of regret (Kahneman & Miller, 1986). If I am unhappy with my Samsung TV, the extent to which a Sony is seen as a fairly direct substitute will shape how easily I make the mental swap that triggers regret. But a trip to the theater to see Kiss Me Kate feels less easily substitutable even for another Cole Porter musical like Anything Goes. As a result, even if Kiss Me Kate is underwhelming, being confronted with Anything Goes is less likely to be emotionally impactful and produce regret.

However the other element of interchangeability—the perceived number of substitutes and size of the category a purchase belongs to—may be responsible for an interaction effect between level of dissatisfaction and purchase type on likelihood of regret. This difference in the interchangeability of material and experiential goods should directly influence ease, and hence likelihood, of counterfactual generation. If there is a large body of purchases that I see as very
similar to the one I have made, this means in essence that there is a large pool of potential counterfactuals to draw from. The moment my Samsung television breaks, with very little effort I can immediately think of five other television brands that I should have bought instead. If I categorize my television more broadly as electronics, I might even think I should have kept my old TV and just bought a new laptop. This large number of potential counterfactuals increases the chance that I will be able to think of one when dissatisfied with a purchase, and thus increases the odds that I will find an alternative item that would have been better than the purchase I made. Thus even at low levels of dissatisfaction, where people are exerting relatively little effort at recruiting counterfactual thoughts, the availability of alternative material goods means it is still quite likely that one will spring to mind.

Contrast this with an experiential purchase. When I realize that Cats hasn’t aged well as a theater production, fewer alternatives come to mind, as I am more likely to be defining this trip to the theater as part of a narrower category such as ‘Broadway musicals that involve people in furry costumes.’ The reduced availability of experiential counterfactuals makes me less likely to generate a superior alternative with only cursory engagement with counterfactual thought. It is only as my level of dissatisfaction increases, and I am willing to work harder to figure out how I could have made a better choice, that I will think hard enough to generate viable alternatives to my purchase.

Note that the same effort-based argument may support a different explanation for why purchase type may moderate the relationship between dissatisfaction and regret. Existing research by Carter and Gilovich (2010), demonstrates that material goods are seen as more evaluable and more easily comparable than experiential ones. Material goods have features that are more easily alignable, making it easier to determine when a forgone option is better than
one’s own. If my TV’s image isn’t as crisp as I had hoped for, I can easily compare its pixel count and megahertz to that of the other televisions that have sprung to my mind as counterfactuals. But experiential goods have features that are not as easily alignable. Thus any effort to compare my experience of Cats with the experience I might have had at The Lion King is simply more challenging. It harder to know the quality of an experiential alternative without having consumed it, harder to figure out what are the appropriate dimensions with which to compare experiences, and harder to measure how each experience rates on those more subjective dimensions.

Under this comparability account, even if I generated the same number of counterfactual alternatives for material and experiential goods, it is simply easier to determine whether material counterfactuals are superior to a material purchase than it is for experiential ones. Thus with relatively little effort, I can easily align material purchases with their counterfactuals to evaluate which is better, but am not able to do so the same for experiential goods. It is only as my dissatisfaction increases—and with it my motivation to understand whether an alternative really would have been better—that I am willing to engage in the harder mental work of aligning experience with its alternatives.

Overview of Studies

In this chapter I present six studies that demonstrate the effect of purchase type on the relationship between dissatisfaction and regret, and that explore the mediators and mechanisms underlying this effect. Studies 1a and 1b demonstrate the basic effect that purchase type moderates the relationship between dissatisfaction and regret (which I will call the regret threshold). Study 2 tests the interaction between dissatisfaction and purchase type more directly,
by manipulating level of dissatisfaction. Study 3 is a more naturalistic study which demonstrates this phenomenon by asking people to consider their own dissatisfying purchases. Study 4 tests three potential mediators of the effect of purchase type on regret threshold. Study 5 tests the process account for this mediation, by examining whether the number and content of the counterfactuals generated for material and experiential purchases differs based on their interchangeability.

**Study 1a**

Study 1a offers an initial test of the hypothesis that the amount of dissatisfaction required to prompt regret is different for material and experiential purchases. Participants are asked to imagine they bought exemplars of each category and were somewhat dissatisfied with them. They were then asked, given this level of dissatisfaction, how likely they would be to regret their purchase.

**Methods**

*Participants.* Forty (40) American participants ranging in age from 18 to 64 (24 women, $M_{age} = 32$) were recruited on Amazon’s Mechanical Turk for a study about purchase decisions.

*Materials and Procedure.* A list of 8 material and 8 experiential purchases was generated by revisiting prior datasets in which participants had listed examples of each type of purchase and selecting some of the most commonly referenced ones. The sixteen items were also selected to reflect a range of price points and types of purchases within both the material and experiential categories. Thus the material list included items such as a video game system, a wristwatch, and
a pair of rollerblades, while the experiential list included items such as dinner out at a restaurant, passes to a local ski slope, and admission to a museum.

Participants thus saw a randomized list of the 16 purchases, and were asked to imagine that they had purchased each of the items and then found they weren’t fully satisfied with their purchase. For each material and experiential purchase, participants answered the question “given that you were somewhat dissatisfied with this item, how likely would you be to also feel regret about the purchase?” Participants recorded their answers on a scale ranging from 1 = Very Unlikely to Regret to 7 = Very Likely to Regret.

Results and Discussions

I averaged together the predicted likelihood of regret for material goods ($\alpha = .81$) and for experiential goods ($\alpha = .76$). A paired sample t-test revealed that given the same level of moderate dissatisfaction, participants thought they were more likely to regret material ($M=4.84$, $SD = 1.08$) than experiential ($M=4.18$, $SD = 1.04$) purchases; $t(39) = 3.74$, $p = .001$. This provides initial support for the argument that purchase type moderates the relationship between dissatisfaction and regret. The same moderate level of dissatisfaction was expected to prompt greater regret for material than experiential goods, when measured across a variety of common purchases.

Study 1b

While Study 1a is suggestive of the predicted interaction between dissatisfaction and purchase type, it is possible that this study is in fact capturing a main effect of purchase type on likelihood of regret. Study 1b rules out this possibility by asking participants to predict the
relationship between dissatisfaction and regret in a different way. While in Study 1a dissatisfaction was held constant and likelihood of regret was measured, in Study 1b I hold regret constant and measure the level of dissatisfaction participants feel would be required to produce it. In the rest of this chapter I call this the regret threshold: how much dissatisfaction is required for people to report they would regret a purchase. The results from Study 1a suggest that the regret threshold should be higher for experiential than material purchases.

Participants were told they had made a purchase that hadn’t lived up to their expectations, and then were asked how dissatisfied they would need to be before they regretted their purchase. The logic in Study 1 suggests that the threshold at which dissatisfaction prompts regret should be higher for experiential goods than material ones, because generating counterfactuals for experiences is more difficult. As a result, it should take significantly more

Methods

Participants. 24 alumni attending Cornell University reunions weekend participated; gender and age were not recorded.

Materials and Procedure. The list of material and experiential purchases participants considered was the same as in Study 1. Participants read the following text as an introduction to the survey: “We all make purchases that we aren’t fully satisfied with. Sometimes even though a purchase is just slightly worse than we thought it would be, we regret it and wish we had bought something else or bought nothing at all. Other times we have to really hate something before we actually feel regret and wish we could undo our purchase.” Participants were instructed to imagine having purchased each of the sixteen material and experiential items expecting to like them. They were then asked “How dissatisfied would you have to be with each of these
purchases before you regretted buying it?” Participants answered this question for all the 16 items, on a response scale ranging from 1 = A Little Dissatisfied to 5 = Extremely Dissatisfied.

Results and Discussion

A paired-samples t-test was conducted to compare the mean level of dissatisfaction participants thought was required before they would regret these material and the experiential purchases. As predicted, participants reported they would need to be significantly more dissatisfied with an experience ($M=3.14$, $SD = .71$) than a material good ($M=2.58$, $SD = .63$) before that dissatisfaction would prompt regret; $t(23) = 3.52$, $p=.002$. Note that if people were simply more likely to have regrets of action independent of how dissatisfied they were—a main effect of purchase type—we would expect to see no difference on our dependent measure, which specifically asked participants about the level of dissatisfaction required to prompt regret.

Study 2

While studies 1a and 1b suggest that purchase type moderates the relationship between satisfaction and regret, it is unclear what level of satisfaction has the largest gap in regret for material and experiential purchases. This gap could be largest for purchases we are highly dissatisfied with, as perhaps we are more motivated to justify the value of awful experiences in a way we are not for awful material goods. Carter and Gilovich’s (2012) work demonstrating that experiences are tied more closely to the self suggest this might be true. Or the gap could be largest for purchases we are just slightly dissatisfied with, as small disappointments may be something we are more prepared for with experiential than material purchases. Research on tolerance for surprise in material versus experiential goods (Jampol and Gilovich, 2013),
supports this latter account. Study 2 was designed to answer this question by directly manipulating level of dissatisfaction and testing its differential influence for material and experiential goods.

Methods

Participants. Ninety (90) American participants, ranging in age from 18 to 66 (44 women, \(M_{age} = 30\)) were recruited from Amazon’s Mechanical Turk. One participant did not answer any of the questions in the study, so we have data from 89 participants.

Materials and Procedure. Study 2 used a two-way mixed between-within design. All participants saw a list of 7 material and 7 experiential purchases taken from Studies 1a and 1b\(^7\). Participants were randomly assigned to either the low-dissatisfaction or the high-dissatisfaction condition. In the low dissatisfaction condition, participants were asked to imagine that they had bought each of the items and experiences and were “a little bit dissatisfied…. It fell a little bit short of your expectations”. In the high dissatisfaction condition, participants were asked to imagine they had bought each of the items and experiences and were “extremely dissatisfied… It fell short of almost all your expectations.” They were then asked how likely they would be to regret their purchase. (1 = Very Unlikely to Regret, 7 = Very Likely to Regret).

Results and Discussion

The data was analyzed using a repeated measures ANOVA, with purchase type as the within-subject factor and dissatisfaction level as the between-subjects factor. The data revealed a significant main effect for purchase type, Wilks’ Lambda = .677, \(F(1,87) = 41.42, p < .000;\)

\(^7\) One material purchase (a pair of boots) and one experiential purchase (a yoga class) were removed from the items used in Studies 1a and 1b because despite the high alpha in those studies, they did not correlate well with the other items in their purchase sets.
material purchases were significantly more likely to be regretted than experiential ones. This main effect was qualified by the predicted interaction effect, Wilks’ Lambda = .935, F(1,87) = 6.09, p = .016. Experiential purchases were more likely to be regretted at high than low levels of dissatisfaction (M_{low} = 3.37, M_{high} = 3.93), while material purchases were regretted equally at the two different levels of dissatisfaction (M_{low} = 4.43, M_{high} = 4.39).

These data demonstrate that the gap in regret for material and experiential goods is largest at low levels of dissatisfaction; purchases that are just a little worse than we expected are significantly more likely to prompt regret for material than experiential goods, while this difference is much smaller for highly dissatisfying purchases. This is particularly notable because while the set of really awful material and experiential goods we buy is likely to be quite small, the set of slightly underwhelming ones is much larger. As a result, Study 2 suggests that the likelihood of experiencing buyer’s remorse is much higher for material than experiential goods.

**Study 3**

While the previous studies support the hypothesis that regret is associated with different levels of dissatisfaction for material and experiential purchases, the question remains whether this difference emerges solely when people evaluate purchases abstractly, or whether this same pattern exists when people consider their own sub-par purchases. Study 3 was designed to test this phenomena in a context in which participants themselves generated the items and experiences being evaluated. This also served to greatly expand the range of purchases under consideration, testing the generality of the effect. Because people may have lower regret thresholds for higher priced purchases, and previous research suggests that the material
purchases participants report can be more expensive than their experiential ones, a measure of purchase cost was included as control variable to rule out this potential confound.

Methods

Participants. 262 participants ranging in age from 19 to 62 (175 men, M_{age} = 29) were recruited from Amazon’s Mechanical Turk.

Materials and Procedure. Study 3 used a one-way within subjects design. Participants answered the same set of three questions about one material and one experiential purchase, where the order those question blocks were presented in was counterbalanced. For both material and experiential goods, participants were first asked to think of and write down a purchase they had made that they “weren’t fully satisfied with.” They reported how dissatisfied they were with that purchase on a scale ranging from 1 = Just A Little Dissatisfied to 10 = Extremely Dissatisfied. Participants were then asked to report how much they regretted their purchase, on a scale ranging from 1 = No Regret At All to 7 = Intense Regret. Finally, we asked for the cost of their purchase.

Results and Discussion

Mean levels of dissatisfaction with both material (M = 6.48, SD = 2.48) and experiential purchases (M = 6.63, SD = 2.18) were moderate, and did not significantly differ from each other (t<1). Because the distribution of purchase prices was left-skewed, this variable was log transformed; there was also no significant difference between the prices of material and experiential goods (M_{ln[price]} = 4.09 [$59.73], SD = 1.72) than their experiential purchases (M_{ln[price]} = 3.93 [$50.90], SD = 1.56), p > .25.
Using a mixed linear model, I regressed participant’s reported regret on level of dissatisfaction, purchase type, the interaction of dissatisfaction and purchase type, and log-price, including a random factor for subject to account for the within-participant correlation between material and experiential ratings. Dissatisfaction exerted a main effect on regret; the more dissatisfied someone was with a purchase, the more likely they were to regret it, $\beta = .49$, $t(503.668) = 10.57$, $p < .000$. There was also a significant main effect of purchase type on regret; experiential purchases were on average, significantly less likely to be regretted, $\beta = -.19$, $t(251.19) = 3.06$, $p = .002$. Purchase price was associated with regret; more expensive goods were also significantly more likely to be regretted, independent of how dissatisfied participants were with them, $\beta = .09$, $t(450.82^8) = 4.09$, $p < .000$.

I predicted an interaction effect between purchase type and dissatisfaction, such that low levels of dissatisfaction would be more likely to induce regret for material than experiential purchases, while at high levels of dissatisfaction, regret would be equally likely for material and experiential goods. The data supports this hypothesis, $\beta_{\text{type*dissat}} = .162$, $t(398.83) = 2.39$, $p = .017$. Figure 2.1 illustrates this interaction.

![Figure 2.1: The Interaction between Dissatisfaction and Purchase Type on Regret](image)

$^8$ There are fewer degrees of freedom for this variable because some participants did not list a purchase price.
Thus Study 3 provides further support for the hypothesis that purchase type moderates the relationship between dissatisfaction and regret, and demonstrates that this pattern holds even when people are considering their own unsatisfactory purchases. As in Study 2, biggest gap between material and experiential purchases occurred at the lowest levels of dissatisfaction. This is where purchase type makes its biggest impact—for purchases that were just a little bit worse than expected. In these cases, material purchases were significantly more likely to be regretted than experiential ones.

**Study 4**

While the studies presented so far have demonstrated differential regret thresholds for material and experiential purchases, they do not explain why we observe this pattern of data. The literature suggests that material and experiential purchases differ in several underlying ways, and each of these has the potential to explain the influence that purchase type has on regret threshold. Determining which difference between material and experiential purchases underlies this effect will shed light on the mechanism by which dissatisfaction prompts regret. Thus in Study 4, my goal was to test competing potential mediators for the effect of purchase type on regret threshold. In the introduction, I outlined two potential mediators: interchangeability and comparability. Both of these would imply cognitive reasons why purchase type interacts with dissatisfaction to predict regret; interchangeability by increasing the ease of generating counterfactuals, and comparability by making it easier for people to evaluate whether counterfactual that has been generated would have been better than the unsatisfactory outcome.\(^9\)

\(^9\) Note that interchangeability might also effect the degree to which the counterfactuals that are generated prompted regret; if counterfactuals for experiences are less of a close match than counterfactuals for material goods, then this could also result in less regret for experiences even given the same number of counterfactuals as material purchases.
However the existing literature on material and experiential goods presents one additional potential mediator that is less cognitive and more motivational in nature. Carter and Gilovich (2012) found that experiential purchases are seen as closer to and more reflective of the self; they are more central to people’s life narratives. This difference in the identity centrality of material and experiential goods may lead to differences in how motivated people are to avoid admitting regret over their purchase.

A huge body of social psychology research suggests that people are strongly motivated to preserve their sense of self esteem, and as a result often narrate negative life events in ways that highlight their broader benefits to the self. Thus we hear about how people ‘wouldn’t change a thing’ about their struggles with cancer, alcoholism, or divorce because while painful, these experiences have “made me who I am today.” Implied here is that feeling regret over choices that have shaped who we are is admitting we are unsatisfied with ourselves – that we wish we were who we might have been without the negative experience we chose. In order to avoid this kind of threatening admission, participants who are dissatisfied with an experiential purchase may be more motivated to engage in dissonance reduction strategies that justify their decision.

In study 2 I discuss the fact that this line of reasoning would be most likely to predict an interaction such that the gap in regret was largest at high levels of dissatisfaction, where dissonance should be most intense. Nonetheless, I felt it was worth measuring perceived closeness to the self, as even if it did not mediate the relationship between purchase type and regret threshold, it might exert a positive main effect on that dependent measure. Thus in addition to having participants rate their own purchases on measures of interchangeability and comparability, I also asked them to report how much they felt their purchases were reflections of
themselves. By measuring all three potential mediators within one design, I am able to pit these competing explanations against each other and compare their predictive power.

Finally, while in Study 3 I asked participants to name purchases they were dissatisfied with, in Study 4 I took a different approach. Because I wanted as much statistical power as possible to test for mediation, I intended to ask participants to name and then rate ten of their own purchases – five material and five experiential. However I was concerned that participants would have a hard time identifying so many purchases they were unhappy with, and so I instead asked people to name significant purchases they had made in the past five years, and measured their satisfaction with them. Critically, regret threshold was then measured by asking participants how likely they would be to regret their purchase if it had been only half as good as it actually was. Because initial levels of satisfaction differed, asking participants to imagine their purchase was only half as satisfying had the effect of measuring regret threshold across a range of different levels of dissatisfaction, as in Study 3. As a result, I predicted that satisfaction would interact with purchase type to predict regret threshold, in much the same way that dissatisfaction did in Study 3. This difference in methods between the two studies means that while in Study 3 I expected the largest difference in material / experiential regret thresholds to come at low levels of dissatisfaction, for the purposes of Study 4, I expected this gap to emerge at higher levels of purchase satisfaction.

Methods

Participants. 200 American participants were recruited via Amazon’s Mechanical Turk in exchange for payment.
**Materials and Procedure.** Participants were asked to list the five most significant material and experiential purchases they had made in the past five years, in counterbalanced order. Participants then reported how satisfied they had been with each of those purchases (1 = Neutral, 7 = Extremely Satisfied), and how much each purchase had cost. Next, participants rated their ten purchases using four different scales, administered in random order. For each scale, participants rated the ten purchases they had listed, and the order those purchases were presented in was randomized.

**Regret Threshold.** The dependent variable for this study is regret threshold – the degree of dissatisfaction participants would need to feel with a purchase before they would regret making it. Participants were asked to imagine that each of their purchases hadn’t lived up to their expectations, and answered the question “how much worse would each of these items or experiences have had to be before you would regret their purchase?” Answers were recorded on a scale ranging from 1 (Would Need To Be Just A Little Worse For Me To Regret) to 7 (Would Need To Be A Lot Worse For Me To Regret.)

**Interchangeability.** Participants read the following text that helped define the concept of interchangeability for them: “Some things we purchase are largely interchangeable – there are many other things just like it that could substitute and serve essentially the same function. Things that are interchangeable have lots of substitutes and are easily replaceable. Other things we purchase are much more singular – there are not many things like it that would be a good substitute. Things that are singular feel unique and hard to replace.” Participants were then asked “for each of the purchases you made, we’d like you to tell us how interchangeable this purchase is? How many good substitutes are there for it?” Participants recorded their answers on a scale
ranging from 1 (Not At All Interchangeable (Very Unique – No Substitutes)) to 7 (Extremely Interchangeable (Many Substitutes)).

*Comparability.* Participants read the following text that helped define the concept of comparability for them: “Some things are easy to compare because you can look at different features of them and see how they stack up. Two houses, for example, might be relatively easy to compare because you can compare the amount of square feet in each… On the other hand, you might find it hard to compare two friends because the things that are easiest to ‘line up’ and assess such as their height or weight or where they were born may not capture the essence of who they are…” Participants then answered the question “how easy or difficult would it be to compare this to other things in its own category?” by rating their ten purchases on a scale ranging from 1 (Very Difficult to Compare) to 7 (Very Easy to Compare).

*Closeeness to the Self:* Participants read the following text that helped define the concept of identity centrality: “Some purchases we make feel like they reflect who we are; they are closely tied to us. For example, someone who loves country music might feel that way about a pair of cowboy boots, or a trip to the country music hall of fame. Other purchases we make say less about us. We may still like these purchases very much, but we don’t feel as personally close to them.” They then answered the question “for each of these purchases, how closely tied do you feel to this purchase? How reflective is it of you?” The scale for this item ranged from 1 (Not At All Close / Reflective Of Me) to 7 (Extremely Close / Reflective Of Me).

*Results and Discussion*

Table 2.1 displays the means and correlations for the variables measured in Study 3. Because the distribution of prices was significantly left-skewed, I used a natural log
transformation to normalize it, and all subsequent analyses were conducted using this log-
transformed variable. All other continuous variables were standardized.

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<tr>
<td>6. ln(Cost)</td>
<td>.136**</td>
<td>.095**</td>
<td>-.027</td>
<td>-.014</td>
<td>.121**</td>
<td>–</td>
</tr>
<tr>
<td>Mean</td>
<td>5.88</td>
<td>4.91</td>
<td>4.18</td>
<td>4.79</td>
<td>4.90</td>
<td>5.25 ($191)</td>
</tr>
<tr>
<td>SE</td>
<td>1.22</td>
<td>1.76</td>
<td>2.137</td>
<td>1.90</td>
<td>1.76</td>
<td>1.88</td>
</tr>
</tbody>
</table>

Table 2.1: Study 3 Correlations and Descriptive Statistics

Satisfaction level and price significantly differed between purchase types. Participants
were significantly more satisfied with their material purchases ($M = 5.95$, $SD = 1.14$) than their
experiential ones ($M = 5.81$, $SD = 1.30$); unequal variance $t(1963.86) = 2.53, p = .011^{10}$. Material
purchases also cost more; $M_{\text{Material}} = 5.53$, $M_{\text{Experiential}} = 4.99$, $t(1990) = 6.43$, $p < .000$. All
subsequent analyses include purchase price as a covariate, but the results do not differ whether or
not it is included.

As in studies 2 and 3, purchase type interacted with satisfaction to predict regret.

Experiential purchases were associated with a higher threshold of dissatisfaction before

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10 This pattern of data is unusual, given a wide variety of research suggesting that on average, people are more
satisfied with experiential than material goods. However this discrepancy in satisfaction appears to grow over time
(Carter & Gilovich, 2010). Thus because I asked participants how satisfied they had been with their purchase, rather
than how satisfied they were at the present time, I may have eliminated this this effect.
participants reported they would regret their purchase, $\beta = .16, t(1797.768) = 4.85, p < .000$. Similarly, higher levels of initial satisfaction were associated with a higher regret threshold, $\beta = .35, t(1912.43) = 12.44, p < .000$). This main effect was qualified by the predicted interaction between purchase type and satisfaction, $\beta = .09, t(1878.23) = 2.58, p = .01)$. The more satisfied participants were with their purchase, the larger the gap between the regret threshold for material and experiential purchases. The less satisfied participants were with their purchase, the lower the regret threshold and the more similar the levels of regret for material and experiential purchases were.

**Mediation.** Study 4 was designed to test for moderated mediation. This means determining whether the effect of purchase type (material vs. experiential) on regret threshold is mediated through either perceived interchangeability, controllability, or closeness to the self, and whether this indirect effect is moderated by satisfaction level. Figure 2.2 below illustrates a conceptual model of the pathway being tested.

![Figure 2.2: Conceptual Model of Conditional Indirect Effect of Purchase Type on Regret Threshold](image)

I will first describe each of the links in this model individually, and then present results of a statistical test for moderated mediation, which analyzes the full pathway simultaneously. All
three potential mediators—interchangeability, comparability, and identity centrality—were significantly related to purchase type. Controlling for purchase satisfaction and price, material purchases were significantly more interchangeable ($\beta = .817, t(1802.334) = 21.932, p < .000$) and easily comparable ($\beta = .807, t(1798.524) = 22.655, p < .000$) than experiential ones. They were also less closely tied to the self ($\beta = -.105, t(1799.479) = 2.839, p = .005$). All three potential mediators also significantly predicted regret threshold. More interchangeable purchases are associated with lower regret thresholds ($\beta = -.195, t(1906.296) = -10.496, p < .000$), and more easily comparable purchases are also associated with lower regret thresholds ($\beta = -.137, t(1963.094) = -7.057, p < .000$). Purchases that are closer to the self are associated with higher regret thresholds ($\beta = .218, t(1972.795) = 10.506, p < .000$). However only interchangeability showed a significant interaction with satisfaction in predicting regret threshold ($\beta = -.04, t(1886.73) = 2.68, p = .007$). Neither comparability ($t < 1$) nor closeness to the self ($p > .12$) interacted with satisfaction in this way.

Formal statistical tests for the conditional indirect effect of purchase type through each potential mediator were conducted using the moderated mediation approach outlined in Preacher, Rucker, and Hayes, 2007. Neither comparability nor closeness to the self showed evidence of conditionally mediating the effect of purchase type on regret threshold. Tests for mediation were conducted at the 10th, 25th, 50th, 75th, and 90th percentiles of satisfaction. Bootstrap confidence intervals12 for the indirect effect of purchase type on regret threshold through comparability and through closeness to the self contained zero at all of those points. This means that purchase type

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11 Note that while a t-test comparing the identity relevance of material and experiential purchases is not statistically significant, this appears to be explained by the fact that people were significantly more satisfied with identity relevant purchases, and also significantly more satisfied with experiential than material goods, thus obscuring the true relationship between identity relevance and purchase type. Once satisfaction was controlled for, the predicted difference between the identity-relevance of material and experiential purchases emerged.

12 Bias-corrected confidence intervals were generated using 10000 bootstrap samples from the data.
did not influence regret threshold through either of those two mediators, no matter how satisfied or dissatisfied people were with their purchases.

Interchangeability * did conditionally mediate the relationship between purchase type and regret threshold, interacting in the predicted direction with satisfaction. Bootstrap confidence intervals reveal that at the 10\textsuperscript{th} percentile of satisfaction—the lowest level of satisfaction and thus the highest level of dissatisfaction—there is no indirect effect of purchase type on regret threshold. However at the 25\textsuperscript{th}, 50\textsuperscript{th}, 75\textsuperscript{th}, and 90\textsuperscript{th} percentiles of satisfaction, the indirect effect of purchase type on regret threshold through interchangeability is significant (all confidence intervals exclude zero). Furthermore, that indirect effect grows as the level of satisfaction increases (from -.71 to .09 to .91 at the 25\textsuperscript{th}, 50\textsuperscript{th}, and 75\textsuperscript{th} percentiles of satisfaction respectively).

The statistical final model predicting regret threshold is detailed in Table 2, with purchase type included as to illustrate its redundancy with interchangeability.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>( \beta )</th>
<th>SE</th>
<th>df</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-.074254</td>
<td>.073340</td>
<td>1171.965</td>
<td>-1.012</td>
<td>.312</td>
</tr>
<tr>
<td>Comparability</td>
<td>-.082727</td>
<td>.022135</td>
<td>1977.703</td>
<td>-2.382</td>
<td>.017</td>
</tr>
<tr>
<td>Closeness to Self</td>
<td>.176271</td>
<td>.020884</td>
<td>1972.234</td>
<td>8.440</td>
<td>.000</td>
</tr>
<tr>
<td>Purchase Type</td>
<td>-.011116</td>
<td>.039074</td>
<td>1849.639</td>
<td>-.284</td>
<td>.776</td>
</tr>
<tr>
<td>Ln(Cost)</td>
<td>.013608</td>
<td>.010374</td>
<td>1968.579</td>
<td>1.312</td>
<td>.190</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>.304631</td>
<td>.020818</td>
<td>1947.769</td>
<td>14.633</td>
<td>.000</td>
</tr>
<tr>
<td>Interchangeability</td>
<td>-.136410</td>
<td>.021848</td>
<td>1940.798</td>
<td>-6.244</td>
<td>.000</td>
</tr>
<tr>
<td>Interchangeability * Satisfaction</td>
<td>-.039526</td>
<td>.017735</td>
<td>1888.110</td>
<td>-2.229</td>
<td>.026</td>
</tr>
</tbody>
</table>

Table 2.2: Study 4 Final Regression Model Predicting Regret Threshold
Reiterating my core hypothesis about purchase type in terms of this mediator, there was a main effect of interchangeability, such that more interchangeable goods—i.e. material ones—had lower regret thresholds. That effect was moderated by level of satisfaction. Low levels of dissatisfaction—essentially, minor irritants—were more likely to prompt regret for more interchangeable goods. At higher levels of dissatisfaction, interchangeability no longer significantly influenced the likelihood of regret.

**Study 5**

While Study 4 demonstrates that differences in interchangeability underlie the differences in regret threshold for material and experiential purchases, this still leaves a critical open question—what is the mechanism by which interchangeability moderates the relationship between dissatisfaction and regret? If interchangeability is the ‘why,’ what is the ‘how?’ There are two primary pathways through which purchase interchangeability could moderate the effects of dissatisfaction on regret, relating to the two components built into the definition of interchangeability. The first relates to the number perceived of potential substitutes, and the second relates to the perceived ‘goodness of fit’ of those substitute purchases.

We know that more interchangeable (material) goods are seen as having many potential substitutes, while less interchangeable (experiential) goods are seen as having fewer potential substitutes. Research indicates that low levels of dissatisfaction should prompt people to invest relatively low levels of efforts at counterfactual generation (Summerville, 2011). In the case of highly interchangeable material goods, with a larger pool of substitute purchases, even a cursory search is likely to bring to mind at least counterfactual alternative. However the same low level of effort invested in counterfactual generation for more singular experiential goods is less likely
to be successful, given that the pool of potential substitutes is smaller. Given that regret is contingent on counterfactual thought, a lower likelihood of bringing to mind a substitute purchase means a lower likelihood of regret. To reiterate, it takes more cognitive effort to think of counterfactuals for purchases that are more singular and unique— and thus it takes a higher level of dissatisfaction to prompt this higher level of effort.

Second, part of what makes a purchase feel singular rather than interchangeable is the perception that even within a smaller set of perceived category members, those category members are in essence not seen as good matches for each other—they are not seen as clean substitutes. Thus the difference in ease of generating counterfactuals for material and experiential goods may be compounded by the fact even after counterfactuals are generated, considering counterfactuals will be more distressing for material goods, as those counterfactuals will be perceived as better substitutes for the unsatisfying purchase that was made (for suggestive evidence in support of this hypothesis, see Carter & Gilovich, 2010, studies 4 and 5a). The following example helps illustrate: if you are a Star Trek fan and were unhappy with the new Star Trek movie, being reminded that you could have seen Star Wars instead is unlikely to have much emotional impact on you— as a true fan, while you may realize these both fall under the mantle of ‘science fiction movies,’ you are unlikely to see them as good substitutes for each other. Even if you know for certain that Star Wars was a better movie than the latest Star Trek offering, its superiority is less likely to prompt regret if the two do not seem substitutable to you. Thus ease of counterfactual generation is the first step by which purchase interchangeability may influence regret threshold, as at least identifying a counterfactual alternative is necessary for regret. However interchangeability may also influence regret threshold after counterfactuals have been generated, by determining how painful the prospect of a superior alternative might be.
Study 5 was designed to test these hypotheses about the mechanism through which interchangeability mediates the relationship between purchase type and regret threshold. I manipulated the interchangeability of a material and experiential purchase and measured likelihood of generating counterfactual thoughts. This allowed me to test how counterfactual thought generation was both influenced by and interacted with interchangeability in predicting regret threshold. Furthermore, manipulating interchangeability within purchase type was designed to demonstrate that interchangeability has the same effects for both material and experiential goods; this would mean that the influence of purchase type on regret threshold is simply driven by the fact that at the mean level, material goods are perceived as more interchangeable than experiential ones.

Methods

Participants. 102 participants (55 men, M_age = 32) were recruited from Amazon’s Mechanical Turk.

Materials and Procedure. Pretesting yielded one pair of material goods and one pair of experiential goods, each of which included one more and one less interchangeable purchase. For the material goods, these purchases were a pair of Reeboks (more interchangeable) and a pair of snakeskin cowboy boots (less interchangeable). For the experiential goods, the purchases were a burger at Applebees (more interchangeable) or sushi at a Japanese restaurant (less interchangeable).

Study five used a fully within-subjects design. Participants first rated all four purchases, in random order, on the same interchangeability scale used in Study 4. Next, participants answered one block of questions for each of the four purchases, with blocks presented in random
order. Within each block, participants read the following vignettes, and then answered questions rating the protagonist’s likelihood of having each of three counterfactual thoughts, on a scale ranging from 1 = Very Unlikely to 7 = Very Likely.

Experiential Interchangeable:
Sarah wanted to go to a casual restaurant, and decided to go to Applebees for a burger. Unfortunately her meal wasn’t as good as she thought it would be. Since she wasn’t totally satisfied with her meal at Applebees, how likely would she be to think each of the following thoughts: “I should have gone to Chili’s instead,” “I should have gone to TG.I Friday’s instead,” and “I should have gone to Ruby Tuesday’s instead”

Experiential Singular:
Maria wanted to go to an ethnic restaurant, and decided to go to a Japanese restaurant for sushi. Unfortunately her meal wasn’t as good as she thought it would be. Since she wasn’t totally satisfied with her meal at the Japanese restaurant, how likely would she be to think each of the following thoughts: “I should have gone to a Korean restaurant instead,” “I should have gone to an Indian restaurant instead,” and “I should have gone to a Thai restaurant instead.”

Material Interchangeable:
Kristen wanted to buy a new pair of running shoes, and she decided to buy a pair of Reeboks. Unfortunately her shoes weren’t as good as she thought they would be. Since she wasn’t totally satisfied with her Reeboks, how likely would she be to think each of the following thoughts: “I should have bought a pair of Nikes instead,” “I should have bought a pair of Asics instead,” and “I should have bought a pair of New Balance instead.”

Material Singular:
Emily wanted to buy a new pair of boots, and she decided to buy a pair of snakeskin cowboy boots. Unfortunately her boots weren’t as good as she thought they would be. Since she wasn’t totally satisfied with her snakeskin cowboy boots, how likely would she be to think each of the following thoughts: “I should have bought a pair of motorcycle boots instead,” “I should have bought a pair of steel-toe boots instead,” and “I should have bought a pair of rain boots instead.”

At the end of each block, participants reported the regret threshold for the protagonist of the vignette. Thus, for example, they answered the question “how dissatisfied would Sarah need to be with her burger at Applebees before she would regret going there?” on a scale ranging from 1 = “Would need to be just a little dissatisfied for her to regret” to 7 = “Would need to be
extremely dissatisfied for her to regret.” Thus as in earlier studies, higher numbers reflect a higher tolerance for dissatisfaction before regret is triggered.

Results

Manipulation check. As suggested by my pretest data, participants reported that the pair of running shoes ($M = 5.66, SD = 1.51$) was significantly more interchangeable than the pair of snakeskin cowboy boots ($M = 4.27, SD = 1.81$), $t(99) = 6.84, p < .000$. Similarly, the burger at Applebees ($M = 6.09, SD = 1.17$) was rated as significantly more interchangeable than the sushi at a Japanese restaurant ($M = 4.76, SD = 1.76$), $t(101) = 7.14, p < .000$.

Mediation. The mechanism by which I hypothesized interchangeability influences regret threshold is illustrated in figure 2.3 below. I predicted that interchangeability would exert a conditional indirect effect on regret threshold through ease of counterfactual generation, moderated by the degree to which interchangeability influenced the relationship between counterfactual generation and regret. In simpler terms, I expected interchangeability to influence regret threshold by making it easier to generate counterfactual thoughts, and for the emotional impact of those thoughts to be strongest for highly interchangeable goods. I will describe each of the relationships outlined in the figure, and then present formal tests for the moderated mediation.
Interchangeability and Counterfactual Generation. Interchangeability predicted ease of counterfactual generation for both material goods ($\beta = .231$, $t(202) = 3.375$, $p = .001$), and for experiential ones ($\beta = .312$, $t(194.282) = 4.721$, $p < .000$). Thus the more interchangeable people perceived both a material and an experiential good, the more likely they were to expect someone to generate specific counterfactual thoughts about it when dissatisfied.

Counterfactual Generation and Regret Threshold. In an interesting and unexpected finding, ease of counterfactual generation significantly predicts regret threshold for both material and experiential purchases, but in different directions. For material goods, as expected, the more likely people thought someone was to generate the three counterfactual thoughts listed in each scenario, the lower their regret threshold, $\beta = -.142$, $t(131.76) = -2.404$, $p = .018$. Thus the more likely someone thought they would be to generate counterfactual thoughts after buying the pair of Reeboks or snakeskin boots, the less dissatisfaction they thought it would take before they regretted their purchase. But for experiential goods, the reverse was true. Greater likelihood of counterfactual generation increased regret threshold rather than decreased it, $\beta = .127$, $t(164.058) = 2.139$, $p = .034$. Thus after buying sushi or a burger at Applebees, the more likely people thought they were to think ‘I could have gone for Korean instead’ or ‘I could have gone to Ruby Tuesday’s instead,’ the more dissatisfied they would need to be with the sushi before regretting their purchase. While this difference in the impact of counterfactual thought on regret threshold was unexpected—and I discuss reasons for its emergence in the discussion section—it should not undermine the more important question of whether interchangeability moderates the effect of counterfactual generation as predicted.

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13 See the discussion section for potential explanations for this finding.
**Interchangeability Moderates the effect of Counterfactuals on Regret.** As hypothesized, interchangeability interacted with counterfactual generation to predict regret threshold.

For material goods, this means that interchangeability amplified the effect of counterfactual generation – more interchangeable goods were more likely to be associated with counterfactual thought, and once those counterfactual thoughts happened, they were more likely to prompt regret for highly interchangeable goods $\beta = -0.140$, $t(186.511) = -2.116 \ p = .036$. For experiential goods, although the effect was not statistically significant, it works in the same direction, mitigating the degree to which counterfactual generation increased regret threshold, $\beta = -0.089$, $t(144.696) = -1.57 \ p = .12$. Thus for more unique experiences, thinking of alternative experiences one might have purchased only serves to underscore how not-replaceable that experience really was, which increases the amount of dissatisfaction people will tolerate before regretting it.

Combining data across the two purchases, and including purchase type and the interaction between purchase type and counterfactual generation in the model, this interaction effect between interchangeability and counterfactual generation is statistically significant and not itself moderated by purchase type, $\beta = -0.125$, $t(382.473) = -2.688 \ p = .007$. Graphs of the interaction between interchangeability and counterfactual generation on regret threshold for both material and experiential purchases are presented in Figures 2.4 and 2.5 below.

![Figure 2.4](image-url)

![Figure 2.5](image-url)
The Conditional Indirect Effect of Interchangeability. Finally, formal statistical tests for the moderated mediation model outlined in figure 2.3 confirm the conditional indirect effect of interchangeability on regret threshold through ease of counterfactual generation. At relatively low levels of interchangeability—the 10\textsuperscript{th} and 25\textsuperscript{th} percentiles—this indirect effect is not significantly different than zero. However as interchangeability increases, so does the indirect impact of interchangeability on regret threshold. Thus at the 10\textsuperscript{th} and 25\textsuperscript{th} percentiles of interchangeability, ease of counterfactual generation does not mediate the relationship of interchangeability on regret threshold—bootstrap confidence intervals for the indirect effect contain zero. Thus at the 50\textsuperscript{th}, 75\textsuperscript{th}, and 90\textsuperscript{th} percentiles of interchangeability, this indirect effect is significantly negative, and grows larger as the perceived interchangeability of a purchase increases.

Discussion

These data strongly suggest a mechanism by which purchase type influences regret threshold. Material goods are more interchangeable than experiential ones, and interchangeability both prompts counterfactual thought and shapes the impact of those thoughts on the level of dissatisfaction required to prompt regret. As predicted, more interchangeable purchases were seen as more likely to prompt counterfactual thought, and an increased likelihood of counterfactual thought reduced the amount of dissatisfaction necessary before people reported they would feel regret. Furthermore, the more interchangeable a purchase was, the steeper the slope relating counterfactual thought to regret threshold. Thus for highly interchangeable goods, just one counterfactual thought may be enough to turn mild dissatisfaction into regret, while for
more unique purchases—as experiences are at the mean level perceived to be—it may take considerably more counterfactual thought before that same regret threshold is observed.

It was surprising that increased likelihood of counterfactual thought was associated with higher rather than lower regret thresholds for experiential purchases, but I would advise against over interpreting these findings. Given the small number of purchases used as stimuli, it is possible that the counterfactuals participants read about for the material purchases (e.g. the Nike sneakers or the steel-toed boots) in this study were evaluated more positively than the counterfactuals listed for the experiential purchases (the Ruby Tuesday’s or the Korean food). At the extreme, this could mean that in the experiential condition, the counterfactuals listed were seen as downward comparisons, making an unsatisfying meal of sushi or a burger seem better. What is most important is that interchangeability moderated the effects of counterfactual thought on regret threshold equally and in the same direction for both the material and experiential purchases. In both cases, the more a purchase was perceived as interchangeable, the more likely it was to generate counterfactual thought, and the more those counterfactual thoughts diminished regret threshold.

**General Discussion**

Across six studies, I have demonstrated that the relationship between dissatisfaction and regret differs for material and experiential purchases. Low levels of dissatisfaction are more likely to prompt regret for material than experiential goods, while higher levels of dissatisfaction prompt regret equally for the two purchase types. As in my first chapter, I want to emphasize that these findings are not produced by some property that inheres only in experiential purchases. The difference in regret threshold for material and experiential purchases is driven by a feature of
those purchases—perceived interchangeability— that differs at the mean level but varies substantially within each purchase category.

This research adds to the existing literature in several key ways. First, while the marketing literature has focused on how regret influences satisfaction, I demonstrate the reverse, outlining the pathway by which dissatisfaction does (or does not) lead to regret. Given that regret has unique emotional markers and behavioral consequences, understanding this direction of causality is a step towards better understanding consumer judgment and decision making.

It is worth noting that that there may be a bi-directional relationship between dissatisfaction and regret, as Roese and Olson (1997) suggest. While dissatisfaction is typically defined as a deviation from expectations formed prior to purchase, it is not hard to imagine dissatisfaction may also be experienced when there is deviation from expectations formed after purchase. And a likely source of post-purchase expectation is information about counterfactual alternatives. If after I purchase my iPod shuffle, I learn that the Sony mp3 player includes a radio and a voice recorder, this may increase my dissatisfaction with the iPod by changing the standard to which I am holding it. Thus even if the iPod shuffle lives up to what I expected from it prior to purchase, my satisfaction with it may decrease upon learning of ‘what features might have been.’ However note that in this case, regret feels in some ways incidental to the subsequent devaluation of my purchase – it is learning about the features I might have had been that makes my current purchase feel worse, whether or not I experience the emotion of regret along with that new knowledge.

Demonstrating the path of influence from interchangeability through counterfactual generation to regret is also a novel contribution. There is a huge body of literature examining the causes of counterfactual thought, as well as many papers considering its consequences. However
to my knowledge this is the only research highlighting the way that the properties of the event that triggers counterfactual thought can themselves shape how impactful those thoughts are in producing regret. I can also imagine other contexts in which this same pathway of influence might apply. Thus while Study 4 found that closeness to the self did not mediate the difference in regret thresholds for material and experiential purchases, outside of the question of purchase type it may nonetheless interact with counterfactual thought to predict our emotions in similar ways. For example, it is not hard to imagine that purchases which are tied to our identity are more likely to prompt downward than upward, and that the identity-relevance of our purchase may then also shape the relative impact of those counterfactuals on our emotions or evaluations of what we’ve bought. Said in the form of an example: if I buy a new Le Creuset pot and see it as highly reflective of who I am as a cook, I may be more likely to compare it to lower quality cookware from Walmart than to the even more expensive All Clad I might have purchased. And the more closely I see that Le Creuset as self-relevant, the better that thinking about that crappy Walmart pot might make me feel.

Understanding the mediating role of interchangeability on the relationship between dissatisfaction and regret may also shed light on at least one previous finding in the literature. Carter and Gilovich found that participants’ satisfaction with experiential goods was less negatively impacted by the presence of upward comparison standards than was their satisfaction with material goods. Specifically, participants in the material condition received a pen as a gift, while being aware that they could have received three superior purchases instead: a leather bound notebook, an espresso mug, or a USB flash drive. Participants in the experiential condition received a bag of Sun Chips as a gift, and saw that the other options were a Dove chocolate bar, a Lindt chocolate bar, and a Cadbury chocolate bar. Relative to a control condition
where no comparison standards were displayed, satisfaction with the pen good was diminished in the context of superior alternatives, while satisfaction with the chips was not\textsuperscript{14}. Why might this be?

The authors suggest that the consumption of an experiential good is hedonically engrossing, serving to focus the mind and reduce attention paid to upward comparison standards. However my work suggests an alternative explanation for their finding. Experiential goods are seen as part of smaller categories of less substitutable purchases. If participants don’t see a Godiva truffle as belonging to the same category as a bag of chips, they should be less likely to make an (upward) comparison between the two. Compounding this point, in Carter and Gilovich’s experiential condition, a bag of chips stands out against the three other chocolate bars – in essence highlighting the fact that the chips are in a distinct category from the other three, which are similar. The material condition looks quite different; given that the pen was placed with three disparate other items participants might have received, this in essence underscores the idea that all four fall into a broader category of “stuff” or “prizes,” and this joint categorization promotes counterfactual thought. This hypothesis suggests that the pattern of data Carter and Gilovich found might have been attenuated in a setting in which participants received a pen but knew they could instead have received one of three different types of mugs, while experiential participants received sun chips but saw that they could have received a hamburger, a latte, or a Godiva chocolate bar.

\textsuperscript{14} Note that while my research demonstrates the effect of dissatisfaction on regret, participants in Carter and Gilovich’s study made no choices, and thus had no opportunity for regret. As a result, the consequences of comparisons with un-received alternatives appear to have been channeled into their final summary evaluations of their satisfaction with what they had received.
Future Directions.

Given the predictive power of interchangeability for regret, this research also raises the question of what else outside of the material / experiential distinction may influence how interchangeable we believe our purchases are. Earlier I gave an example of a Star Trek fan who sees Star Wars as a poor substitute for his sci-fi franchise of choice, despite recognizing their shared categorization. Exploring this example further suggests a different potential moderator of regret threshold: expertise.

Research suggests that expertise allows people to see finer distinctions between category members, and enhances their ability to generate subcategories (for review in a consumer context, see Alba & Hutchinson, 1987). Furthermore, while most consumers rely on alignable features in their evaluation of products, this is moderated by expertise: experts rely less on alignable and more on non-alignable features in their evaluations (Nam, Wang, & Lee, 2012). This suggests that experts may generally see their purchases as less interchangeable, to the extent that they are focusing on the aspects of those purchases that make them distinct from each other. Items or experiences that may look like easy substitutes for each other to a lay person—whether it be Daniel and Union Square Café, or Louboutin and Feragamo high heels—may appear much less so to experts. As a result, it is possible that expertise may increase regret threshold, because when a purchase isn’t fully satisfying experts are less likely to see other category members as good substitutes for it.

Data from Study 4 suggest another potential influence on perceived interchangeability – closeness to the self. While Study 4 can only show a correlation between these two variables, it is not hard to imagine that they may be causally linked. In Western cultures people tend to define themselves in terms of the traits, values, and characteristics that are most distinctive and unique.
Given that we see ourselves as one-of-a-kinds, the purchases we associate most closely with ourselves may take on that property as well. Thus the orange dress I bought because it is ‘so me’—my favorite color, and sparkly just like my personality—may come to seem less interchangeable with other dresses precisely because of this association.

Moving away from features of the perceiver that may shape evaluations of interchangeability, purchase framing may influence this construct as well. For example, research suggests that advertising which emphasizes the alignability of product features should be successful for products that dominate their competition on the most important of those features (Lee & Lee, 2007; Markman & Medin, 1985). While this strategy may increase sales, it may also perversely increase the likelihood of regret for customers who are dissatisfied. To the extent that Samsung advertises its televisions by highlighting their superiority to Sony on alignable features such as brightness and clarity, their products may be initially evaluated more highly, but also seen as more easily substitutable with the competition. As a result, if a customer is dissatisfied with their Samsung, the company has in essence pre-supplied buyers with both a counterfactual and with the ingredient—interchangeability—that will make that counterfactual most likely to prompt regret.
CONCLUSION

While I have included a general discussion in each chapter, in this conclusion I will briefly explore a few new directions I hope to explore in the future.

*Which vs. Whether?* In Chapter 2 I focused on a specific type of counterfactual thought—thoughts of specific alternative purchases that might have been superior to one that was made. However a brief survey of your own regrets may highlight the fact that this is not the only type of counterfactual we entertain when dissatisfied with a purchase. When thinking about purchases we regret, there are many times when the most salient counterfactual is not a different item or experience, but instead is simply having not made the dissatisfying purchase in the first place. I call this the Whether vs. Which distinction. One can regret *whether* a purchase was made (comparing a negative purchase to a counterfactual world where we had simply not bought it), or regret *which* purchase was made (comparing a negative purchase to a different purchase that might have been better). In essence these two antecedents reflect the difference between regretting having spent money versus regretting making the wrong choice with money spent.

This is an unexplored distinction in the regret literature, but one which I believe raises interesting questions. First, the regret literature is equivocal on which of these types of regret should be the most intense or aversive. Research suggests that regrets are most intense for actions which violate the status-quo (Kahneman, Knetsch, and Thaler 1991, Kahneman and Miller, 1986; Tsiros and Mittal, 2000); in consumer contexts this has often been instantiated as deviations from previously purchased or nationally recognized brands (Lemon, White, and Winer 2002; Simonson 1992). However to the extent that most people shop more often than they buy, not-buying is likely to represent the status quo with respect to purchasing decisions.

Considering the Whether and Which distinction, people who wish they hadn’t made a purchase
are directly referencing the status quo of not having bought, while those who wish they had made a different purchase are referencing an alternative deviation from the status quo. This perspective predicts that Whether regrets will be more intense. In addition, regrets over having made a purchase seem likely to be associated with greater dissatisfaction—the item must be so unsatisfying or unused that the counterfactual of not owning it at all seems preferable—perhaps resulting in more intense regrets.

On the other hand, pre-purchase information search and deliberation over alternatives is associated with more intense regrets (Carmon, Wertenbroch, and Zeelenberg, 2003; Keaveney, Huber, and Herrmann, 2007), as is the recognition of greater numbers of alternative courses of action (Miller, Turnbull, and McFarland, 1990). To the extent that regretting which purchase was made involves reference to alternatives that were considered prior to purchase (like when I debated between the iPod and the Sony mp3 player before purchase), these regrets may be more intense. In addition, research suggests that regret is strongest when relatively small mental leaps are necessary to undo the regretted outcome (Kahneman and Miller, 1986). Using this logic, Which regrets should be more painful: while Whether regrets require retracting the whole act of purchase, Which regrets require only the mental substitution of a different item into that same act.

Furthermore, the findings presented in this dissertation suggest that material and experiential purchases may differ in the type of action regret they are associated with. To the degree that material purchases are seen as more interchangeable, this suggests that ‘which’ regrets may predominate, since other items that are seen as good substitutes are easily cognitively accessible. Conversely, the relative singularity of experiential purchases suggests that when regrets occur, they may be more likely to be ‘whether’ regrets, as people construct a counterfactual world where they simply had not made the purchase.
Note that there are other reasons outside of interchangeability to suggest this pattern might occur. Experiential purchases, being more hedonic in nature, may be more likely to prompt binging or overconsumption. A search for the word ‘regret’ on Twitter turns up many tweets ending in ‘#foodcoma.’ Overconsumption of some experiences would naturally seem to suggest the counterfactual world in which we simply hadn’t eaten that eighth chocolate chip cookie, or hadn’t watched the full 16-episode season of Mad Men all in one day.

What Does This Regret Say About Me? While only referenced briefly in my introduction, the regret literature has distinguished between regrets about the outcome of a choice, and regrets over the decision process which led to that choice. I have dealt exclusively with outcome regrets, but have preliminary data suggesting that process regrets may differ meaningfully for material versus experiential purchases. We know that on average, material goods are seen as more evaluable than experiences, and have more discrete and alignable features than most experiences we buy. The relatively more evaluable nature of material purchases suggests that they should be more amenable to a rational decision process—comparing the pros and the cons of each option and choosing accordingly.

But if that is the case—if material goods are more amenable to rational calculation, and more likely to prompt maximizing rather than satisficing (Carter & Gilovich, 2010)—then what inferences do we draw when someone regrets their choice of a material good? I have preliminary data to suggest that people may evaluate people who regret a material purchase are evaluated more negatively than those who regret an experiential purchase, and that this difference in evaluation is focused on perceptions of their decision making skill. Thirty five people attending Cornell reunions completed a survey, in which they were assigned to either the material regret or experiential regret condition. All participants read the following scenario:
Imagine that you’re at a party, talking to John, who you just met. The conversation comes around to mistakes with money, and you tell a story about a recent financial blunder you made. John tells you that he recently found himself agonizing over a few purchase decisions. He needed a new mp3 player, and was going back and forth on which model to buy… And he also wanted to go to a summer concert and found himself debating which band to see.

Participants in the material condition read the following final line: “John said ‘the concert worked out fine – I’m happy with the one I went to. But the mp3 player turned to be a dud – I made a mistake on that one.’” Participants in the experiential condition read that he had the opposite regret: “John said ‘the mp3 player worked out fine – I’m happy with the one I got. But the concert turned to be a dud – I made a mistake on that one.’” Participants were then asked ‘how good a decision maker is John?’, and ‘how good is John’s judgment?’ Averaging their responses to these two items, participants saw the man who regretted the mp3 player as a worse decision maker than the man who regretted the concert player, $t(33) = -2.93, p=.006$.

Subsequent studies in this line of research may explore whether people evaluate their own decision making process more negatively for failed material purchases than failed experiential ones. In addition, are there behavior consequences that result from this differential assignation of self- or other-blame for material regrets? It seems possible that regrets for material goods prompt people to redouble their efforts at maximizing in the future and make efforts to improve their decision process; regrets for experiential goods may be seen as more unavoidable, and not come with the same consequences for subsequent decision making.

In conclusion, as I move forward in my career, I hope to do research on consumer purchase regret that still explores the underlying psychological mechanisms behind regret and can inform the psychological literature. And I hope to be able to draw from ongoing work in psychology to understand regret in the applied context of our day-to-day purchase regrets.
believe the work presented in this dissertation meets those two goals, and suggests new areas of inquiry that will continue me on that path in the future.
REFERENCES


Capariello, P. & Reis, H.J. (in press). To do, to have, or to share? Valuing experiences over material possessions depends on the involvement of others. *Journal of Personality and Social Psychology*.


Kumar, A. & Gilovich, T. (under review). Talking about what you did and what you have: The differential story utility of experiential and material purchases.


