“What’s Pain Got To Do With It?”: How the Pain of Payment Influences Our Choices and Our Relationships

by

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Dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Business Administration in the Graduate School of Duke University

2015
ABSTRACT

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Abstract

One of the most frequent things we do as consumers is make purchases. We pay for a coffee or for food, we pay for necessities around the house, we even pay for one another, buying drinks or dinner for a friend every now and then. In today’s marketplace, the decision of whether to purchase is also coupled with the decision of how to make a purchase. Consumers have many different methods to pay for their transactions. Can the way a consumer chooses to pay change the likelihood that s/he makes a purchase? Post-purchase, can the payment method used to pay for a purchase influence how connected individuals feel to that product, brand, or organization? Given that we sometimes pay for others (and vice versa), can the way we pay influence our interpersonal relationships?

In what follows, I argue that the way individuals pay, and specifically the pain associated with making a payment, can have a pervasive effect on their decision to make a purchase and how they feel post-transaction. Across three essays, I focus on how the pain of paying can influence the likelihood to purchase an item from a consideration set (Essay 1) and, subsequently, how the pain of paying can influence post-transaction connection to a product, organization, or even to other people (Essay 2 and 3). Across field, laboratory, online, and archival methods, I find robust evidence that increasing the pain of paying may initially deter individuals from choosing. However, post-transaction, increasing the pain of payment may have an upside: individuals feel closer
and more committed to a product that they purchased, organization that they donated to, and feel greater connection and rapport to whomever they spent their money on. However, I also demonstrate the boundary conditions of these findings. When individuals are spending money on something that is undesirable, such as paying for a competitor, increasing the pain of payment decreases interpersonal connection and rapport.
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1. Introduction: How the Pain of Paying Influences Our Choices and Our Relationships

One of the most interesting aspects of the psychology of money is the pain of paying. Most purchase contexts involve the tradeoff of giving up or parting with money in order to receive a particular item or good. Prior research has demonstrated that the psychological pain associated with payment and parting with money can vary not only as a function of the objective amount, but also can vary based on payment form (e.g., cash versus debit card), even when the amount is held constant. My dissertation examines how the pain of payment can serve as a signal of value, impacting consumer decision-making at the time of purchase and post-transaction through the relationships individuals have with products, organizations, and even interpersonally. Across all three essays, I use a variety of methodological approaches to study the research questions at hand.

1.1 How the Pain of Paying Influences Behavior

In this dissertation, I focus on how the pain of paying can influence our likelihood to purchase an item from a consideration set (Essay 1) and, subsequently, how the pain of paying can influence our connection post-purchase to a product, organization, or even to other people (Essay 2 and 3).

1.2 How the Pain of Paying Influences Purchase Likelihood From a Consideration Set

First, I examine whether the pain of payment can influence how we evaluate a
consideration set as a whole and decide whether or not to make a purchase from that consideration set. While there are many ways to look at how consideration sets are evaluated, one compelling way is investigating whether the pain of payment can alter choice overload. Research has demonstrated that as the number of available alternatives increases, buying initially increases and then decreases, resulting in an inverted U-shape function. As the affective and cognitive costs increase, individuals do not feel as compelled to make any choice at all and may do nothing (i.e., make no purchase). Could the pain of paying affect whether an individual makes a choice? In three experiments using real choices with real costs and a minimum of three different numbers of alternatives, I demonstrate that an inverted U-shaped function can be reliably obtained under some conditions. In particular, I demonstrate that manipulating pain of paying systematically moderates choice overload. Increasing choice set size alone does not produce choice overload effects in all conditions. In particular choice overload is less likely to occur for a larger set of alternatives if the pain of payment is lower (e.g., if payment is via debit card versus cash).

1.3 How the Pain of Paying Can Affect Post-Purchase Product and Organizational Connection

Can the pain of payment influence product and brand commitment after the purchase has occurred? In Essay 2, I examine how the pain of payment influences the affective reaction to the chosen option post-purchase. I argue that when individuals pay using a more painful form of payment, they compensate and justify the pain by imbuing
their chosen alternative with more value and are more committed to their purchase post-
transaction. Using archival donation data from a university’s alumni association, a
controlled field experiment, and a laboratory experiment where participants spend
money that is not even their own (i.e., choosing where to donate someone else’s money),
I find that experiencing more pain of payment increases commitment and loyalty,
emotional attachment to the product, and increases the probability of publicly signaling
their commitment.

1.4 How the Pain of Payment Influences Interpersonal Connection and Rapport

In Essay 3, I ask whether experiencing more pain of payment during a
transaction, where one person spends money on him/herself and another person,
influences feelings of interpersonal commitment. I argue that paying with a more
painful form during a transaction will increase interpersonal affiliation, measured both
implicitly through physical distance and explicitly through collaboration on a task and
explicit measures of affiliation. For the spender, I hypothesize that individuals will use
the pain of payment as a cue of how much they like the other person, increasing their
affiliation. For the recipient, I hypothesize that the pain will serve as a cue of how much
pain the other person went through for them, increasing the recipient’s feelings of
reciprocity, and thus increasing their affiliation. However, I also pose a boundary
condition. I argue that this effect will only hold in settings where the two individuals
have the goal to collaborate. Experiencing more pain of payment will decrease
affiliation, particularly for the spender, in settings where the goal is more competitive and self-oriented. Findings from two experiments support these hypotheses, demonstrating that experiencing more pain of payment can increase interpersonal affiliation in collaborative settings but can decrease affiliation, particularly for the spender, in competitive settings.
2. How We Pay Influences the Propensity to Experience Choice Overload

2.1 Introduction

In 1997, Amazon.com reached three major milestones: they crossed the threshold of offering more than 10 million products, they made it easier than ever for consumers to pay for products by patenting a 1-Click ordering system, and they announced to the world that they were going public, which officially marked their ascent to the top of retail. While Amazon’s rise could be attributed to a host of factors, two important factors are that, in comparison to brick and mortar retailers, Amazon makes it painless to pay while offering an impressive array of choices in any given product domain. First, with regard to payment, because of Amazon’s online structure customers are limited to predominantly paying by credit card/debit card, as opposed to also being able to pay with cash. Furthermore, that payment could be applied with just the click of a button. Second, there is a significant benefit in offering more alternatives; specifically, companies are able to meet the preferences of a greater proportion of consumers, leading to greater purchase likelihood (Baumol and Ide 1956; Kahn, Moore, and Glazer 1987). However, adding more alternatives to a choice set isn’t costless. Each item added to the consideration set requires the consumer to exert more processing costs in order to find the optimal alternative (McAlister 1982). As a result, having more options to choose from can be burdensome, increasing the cognitive effort, decision conflict, frustration, anxiety, and post-decision regret (Iyengar and Lepper 2000; Schwartz 2004; Chernev
More options now decrease the likelihood that consumers will make a purchase (Iyengar and Lepper 2000; Shah and Wolford 2007). The interaction of these two trends results in an inverted U-shaped function: as the number of alternatives increases, buying behavior increases initially and then decreases (Shah and Wolford 2007).

Yet, in contrast to the proposed inverted U-shaped function, Amazon has seen monumental growth. This growth comes despite having over 230 million products on their website, including 5 million in the clothing department, 20 million in the sports department, and 4 million in the office department. Consumers are still turning to Amazon for their purchases even when confronted with larger set sizes. In an effort to understand one reason for why this might be the case, I turn to the payment process itself. In particular, I ask whether the way consumers pay could impact how they respond to, and the ease with which they deal with larger product assortments. Put differently, could payment method (specifically, paying by plastic rather than with cash) attenuate the likelihood that consumers will be burdened by a greater number of product options and experience choice overload, moderating the inverted U-shaped relationship?

There is no denying that the number of options available for purchase has proliferated across the entire marketplace. In 1976, the average American supermarket carried around 9,000 different products, whereas today the average number is around
50,000 and growing (Kenner 2008). During this same time period, the way individuals pay for purchases has shifted. In 1999, paper payments (i.e., cash and checks) accounted for nearly 60% of in-store payments. By 2010, that number shrank to a little over 40%, as plastic cards (i.e., debit, credit, and gift cards) became the preferred form of payment for a majority of in-store payments (Foster, Schuh, and Zhang 2013). The trend away from paper seems to be advancing, with mobile and online transactions also gaining momentum. Thus, while individuals are faced with choosing from a greater product assortment, which can be a potentially difficulty and burdensome task, the process of spending has become more convenient and painless than ever before.

Previous work has argued that choice overload is a function of the cognitive and affective costs associated with an increasing number of alternatives. Yet, in today’s marketplace, online shopping and spending is more popular than ever, increasing in revenue by over 200% annually since 2000. Consumers can enjoy endless variety, which can allow for more precise preference matching while also enjoying the convenience of paying with a less painful payment form (i.e., debit, credit, or gift card). Drawing on the pain of paying literature (e.g., Prelec and Loewenstein 1998; Raghubir and Srivastava 2008; Thomas, Desai, and Seenivasan 2011), I argue that the way consumers pay can influence how likely they are to experience choice overload effects and decrease purchasing in the face of an increasing assortment set. Understanding how payment
affects the choice overload paradigm can provide substantial insight into why the choice overload effect may occur and what can be done to lessen these effects.

In the next section I discuss prior research on the effect of the number of alternatives on choice, followed by a consideration of how pain of payment affects consumer spending and decision-making. Next I detail a formal model that motivates our predictions for how pain of payment can affect consumers’ utility and purchase likelihood. Then, I present data collected from three natural field experiments documenting the effect of pain of payment on the relationship between number of options and purchasing. Specifically, we show that decreasing pain of payment by either paying via plastic card rather than cash or by reducing prices attenuates choice overload effects. This represents an important contribution to both the choice overload literature and the literature on payment form. I end with a general discussion, theoretical and marketing implications, and some questions for future research.

2.2 Theoretical Development

In this section, I will review the two lines of literature that provide theoretical development and support for my predictions.

2.2.1 Impact of Increasing Assortment Size and Pain of Payment on Buying Behavior

When consumers make a buying decision, they must process the options from their particular consideration set, decide whether they should make a purchase, and, if
so, the number of units they should purchase. In a rational choice model with no psychological or processing costs, offering more options is favorable to the consumer (Kekre and Srinivasan 1990; Lancaster 1990). Larger assortments increase the probability of matching each individual’s unique preferences (Baumol and Ide 1956). Consumers are more likely to identify a product that fulfills their needs if they can choose from a larger choice set (Kahn, Moore, and Glazer 1987). Larger assortments also create a perception of freedom of choice, generally considered positive (Brehm 1972; Ratner and Kahn 2002). Furthermore, larger assortments satisfy the need for sensory and cognitive stimulation, providing a source of value, which at times can trump hedonic pleasure (Ratner, Kahn, and Kahneman 1999). Consumers may also prefer larger assortments because variety offers flexibility to buffer against uncertainty about future preferences, even when preferences are relatively certain in the present (Kahn and Lehmann 1991). Thus, increasing the number of available choice options has benefits for the consumer. If this were the only consideration, then larger assortments should always lead to increased buying.

However, greater variety is also often associated with higher costs (Draganska and Jain 2005; Lancaster 1979). Increasing assortment size increases cognitive resource demands in order to compare various options; the number of possible pairwise comparisons increases as the square of the number of options, for example. Extensive assortments require increased working memory processing, which is taxing for the
decision maker (Schwartz 2000; Huffman and Kahn 1998; Malhotra 1982; Shugan 1980). With each additional alternative in the choice set, the tradeoffs required to compare the benefits and costs of the various alternatives become more difficult to assess (Chernev 2003a, b). As a result, as the number of options increases, people tend to process a smaller fraction of the available information regarding their choices, all else held constant (Payne 1976; Hauser and Wernerfelt 1990). With more choice, consumers may also have multiple items that meet their criteria and are close in subjective value, leading to greater decision conflict, confusion, anxiety and frustration (Greenleaf and Lehmann 1995; Iyengar and Lepper 2000) and a higher incidence of choice deferral and reduced likelihood of making a purchase (Dhar 1997; Iyengar and Lepper 2000; Shah and Wolford 2007).

Shah and Wolford (2007) investigated the relationship between increasing choice and propensity to purchase by varying the assortment size from two to twenty options. Consumers were given a chance to purchase a pen for $1 (in cash) from a set of alternatives. They found that buying behavior was an inverted U-shaped function of the number of choice alternatives. Initially, when choice increased from two to ten options, buying increased, peaking at the ten-pen condition with 90% of individuals purchasing a pen. After this optimal point had been exceeded (i.e., from twelve to twenty options), increasing assortment size resulted in less buying. Thus, while an increasing number of options can provide a greater probability of preference-matching, after a certain point,
individuals tend to be overwhelmed with the required effort associated with comparing among alternatives, leading them to choose nothing and defer choice altogether. This should be especially true for larger choice sets (e.g., over ten options in Shah and Wolford 2007).

From the retailer’s perspective, this poses a real paradox. On one hand, consumers prefer variety, favoring choice sets that have a more extensive assortment (Kahn 1995; McAlister and Pessemier 1982). On the other hand, choice can be overwhelming for the consumer, resulting in a decreased likelihood to purchase an item and reduced post-purchase satisfaction. Past research by Mogilner, Rudnick, and Iyengar (2008) offers one potential solution: partitioning the alternatives into easy to process categories. They find that the presence of these distinct categories when displaying options leads to greater perceptions of variety and consumer satisfaction. In this paper, however, we pose another potential alternative: manipulating the payment method used for the purchase. Most decisions require some form of payment. While past work has demonstrated how choice overload is affected by the number of alternatives, I argue that the payment experience, and in particular, the pain individuals experience when parting with money may significantly affect the relationship between the number of alternatives and the likelihood of buying an alternative.
2.2.2 Payment Form and Pain of Payment

Classic economic theory states that the utility of a consumption experience is determined by the sum of the experience’s benefits minus the associated costs (e.g., Deaton 1992; Hicks 1946; Marshall 1920; von Neumann and Morgenstern 1944). Classic theory defines these costs as economic in nature; they are a function of the price paid for the specific good or experience. For example, paying less money overall—e.g., $10 versus $20 for a pair of headphones—decreases the costs associated with an item, subsequently increasing overall utility, whereas paying more money increases costs and decreases utility (e.g., Doob et al. 1969; Hicks 1946).

Recent research on the pain of paying suggests that the benefits and costs of a transaction are not solely economic: subtle nuances of the payment experience can also make a consumption experience more or less attractive. When consumers make purchases, they typically experience a pain of paying, which refers to the negative affective reaction that consumers experience when parting with their money (Zellermayer 1996). This pain is psychological rather than physical in nature (Mažar, Plassman, Robitaille and Lindner 2015) and can depend on factors other than payment magnitude.

The form of payment used for a transaction (e.g., cash, check, credit/debit card) is one such factor influencing the pain associated with paying (Raghubir and Srivastava 2008; Soman 2001, 2003; Thomas, Desai, and Seenivasan 2011). Payment forms vary in
terms of the degree of transparency of the payment. The greater the transparency, the more painful and aversive it is for the consumer to part with money. Cash, the legal tender of money, is considered the most transparent and psychologically proximal form of payment. Consumers must physically part with cash in a transaction, so they can easily feel the money they are spending during that transaction and can also easily see the amount being spent (Soman 2003). Subsequently, cash is the most painful form of payment (Raghubir and Srivastava 2008). Paying by check or voucher is less transparent and thus less painful than paying by cash. Whereas checks and vouchers easily show the amount or value of a transaction, no physical money changes hands, leading to consumers feeling less pain of payment in comparison to when they pay by cash (Soman 2001). Credit cards, debit cards, and other forms of plastic money are even less transparent; the ritual of swiping a card obscures the cash value of the transaction, divorcing people further from its economic reality (e.g., Feinberg 1986; Raghubir and Srivastava 2008; Soman 2003; Thomas, Desai, and Seenivasan 2011). Finally, some recent technological developments in consumer payment, such as automatic payroll deductions, online payments (e.g., Amazon’s 1-Click Payment) or mobile payments, have introduced payment forms that are even less transparent than credit or debit cards, as consumers may not even know the payment has occurred.

Though not the focus of the present research, in addition to payment form and payment magnitude, Prelec and Loewenstein (1998) argue that the extent to which
individuals experience *pain of paying* also depends on *when* they pay for the experience. They argue that paying later for an experience and avoiding debt in that given moment tends to feel less painful than paying at the time of the experience or before the experience has occurred, even if the objective cost remains fixed (Prelec and Loewenstein 1998). Although this theoretical account is consistent with the notion that cash is more psychologically painful than check or credit card, this account also implies that a debit card—which, like cash, also immediately drains one’s resources—should be psychologically no different than cash—and distinct from credit card payments. However, research by Thomas, Desai, and Seenivasan (2011) demonstrates that this is not the case. They find that individuals report less pain of paying with debit cards in comparison to cash. Moreover, to the best of my knowledge, there is no empirical support, published or otherwise, that finds behavioral or psychological differences between debit, credit, and gift cards, which is consistent with the theoretical conceptualization that the pain of payment is caused by the payment form and not by payment decoupling or time discounting of delayed payment (Thomas, Desai, and Seenivasan 2011). Thus, this research centers on the argument that the form of payment can influence the disutility or psychological aversion to parting with money, creating varying levels of pain of payment for the consumer, above and beyond the psychological pain experienced from the economic magnitude of the purchase.
The insight that different payment forms are associated with different levels of pain has implications for understanding and predicting real-world consumer behavior. For example, scholars have shown that using less painful and less transparent forms of money can increase the willingness to pay and amount spent while making a purchase from a consideration set (Feinberg 1986; Hirschmann 1979; Prelec and Simester 2001; Raghubir and Srivastava 2008). Soman (2001) showed that consumers who paid for a past expense using a relatively low-pain credit card were more likely to purchase an additional discretionary product (e.g., a boxed set of CDs from an artist that they liked) than those who paid for the same past expense using a relatively higher-pain check. Similarly, Prelec and Simester (2001) find that individuals will bid nearly twice as much money for an item in an auction setting when using a credit card than when using cash.

Interestingly, even priming the notion of cash prior to a product evaluation leads people to focus on a product’s costs and negative attributes, whereas priming debit/credit cards prior to a product evaluation leads to a focus on the product’s benefits and positive attributes (Chatterjee and Rose 2012). In addition, feeling more pain of payment can decrease immediate post-purchase satisfaction with a product (Soster, Gershoff, and Bearden 2014). These results, along with other prior work in the pain of payment literature, suggest that less painful forms of payment are associated with positive outcomes during the consumer deliberation and point of purchase process. Therefore, it is worth investigating whether paying with less painful forms of payment
or paying less money overall can reduce the negative effects of larger assortments.

Effectively, I ask whether consumers (and retailers) can enjoy the benefits that larger assortments provide without suffering from the cognitive and affective costs associated with sorting through this increasing set size.

In the next section I present a simple model to motivate our predictions. In particular, I show that this model predicts that lower pain of payment can reduce choice overload effects.

### 2.3 A Model of the Interactive Effect of an Increasing Assortment Size and Pain of Payment on Utility

Assume that the consumer is given a set of \( N \) goods to choose from. We propose that the benefits of variety increase with \( N \) but with diminishing marginal returns:

\[
b(N) = \gamma_b N^\alpha
\]

where \( \gamma_b \) is a scaling constant for benefits. In this model \( \alpha < 1 \) to capture diminishing marginal returns. The costs associated with variety also increase with \( N \) and increase faster as \( N \) increases:

\[
c(N) = \gamma_c \tau N^{\beta}
\]

where \( \gamma_c \) is a scaling constant for costs and \( \tau \) is a parameter reflecting the pain of payment. In particular, \( \tau \) multiplies the number of alternatives term, modeling our belief that the pain of payment will interact with the number of alternatives in affecting utility and ultimately purchasing. In this model, \( \beta >1 \) in order to capture the increasing
growth in costs as N increases. My rationale is that the number of pairwise comparisons grows as the square of N, increasing the psychological costs for the consumer. Higher values of \( \tau \) represent higher pain of payment. This can be due to increasing the pain of payment through payment form (e.g., cash as opposed to debit card) and/or through payment magnitude (e.g., paying more versus paying less for the same item).

The utility function is captured by the following:

\[
    u(N) = b(N) - c(N)
\]

\[
    = \gamma \beta N^\alpha - \gamma_c \tau N^\beta
\]

Solving for the value of N yielding maximum utility, we obtain:

\[
    u'(N) = \alpha \gamma \beta N^{\alpha-1} - \beta \gamma_c \tau N^{\beta-1} = 0
\]

\[
    \alpha \gamma \beta N^{\alpha-1} = \beta \gamma_c \tau N^{\beta-1}
\]

\[
    N^{(\alpha-\beta)} = (\beta \gamma_c \tau)/(\alpha \gamma \beta)
\]

\[
    N = ((\beta \gamma_c \tau)/(\alpha \gamma \beta))^{(1/(\alpha-\beta))}
\]

It is easily shown that \( u''(N) < 0 \) if \( 0 < \alpha < 1 < \beta \), so the value of N given in (5) is the number of options yielding maximum utility. It is also readily shown that \( dN/d\tau < 0 \) if \( 0 < \alpha < 1 < \beta \), so less pain of payment (smaller \( \tau \)) leads to an increase in the value of N that optimizes utility.

In short, according to this simple cost-benefit model, the pain of payment can influence the utility one experiences from an increasing choice set and subsequently
whether one decides to purchase from a choice set or not. More specifically, decreasing
the pain of payment one experiences when purchasing an item from a choice set
attenuates the degree to which the negative impact of an increasing assortment set is felt.
In other words, as depicted in my model, I predict that the pain of payment interacts
with an increasing choice set in determining the magnitude of choice overload effects
such that decreasing the pain of paying will result in a decrease in the likelihood of
experiencing choice overload, while increasing the pain of paying will result in an
increase in the likelihood of experiencing choice overload.

2.4 Testing Whether Pain of Payment Influences the Choice Overload Phenomenon

In this section, I describe three experiments designed to test the validity of my
hypotheses on how manipulating the pain of payment can interact with the number of
alternatives to influence consumer buying behavior. I expect inverted U-shaped patterns
for conditions where pain of payment is greater (i.e., paying with cash or paying higher
prices) and more monotonic patterns (i.e., patterns where choice does not decrease as
much for higher numbers of alternatives) for conditions where there is less pain of
payment (i.e., paying with debit or paying lower prices). In examining the purchase
patterns, I characterize both the region where purchase likelihood is increasing (the
benefits portion) and the region where purchase likelihood either decreases or stays
roughly the same (the costs portion). In all the experiments reported, the respondents
were given the opportunity to purchase an actual pen using their own funds. That is, the decisions to be made were real.

2.4.1 Experiment 1: Manipulating Payment Method and Number of Alternatives

In Experiment 1 I manipulated pain of payment through payment form (debit card versus cash payment), and I also manipulated the number of alternatives from which the individuals could choose to purchase. Participants were given an option to purchase a pen from a consideration set ranging from two to eighteen pens, using either cash or a plastic student card commonly used on campus that served as a debit card. I expect that decreasing the pain of payment by using plastic, a psychologically more distant form of money, will reduce choice overload effects in comparison to paying by cash, a psychologically more proximal form of money. Specifically, I predicted that a higher proportion of consumers paying by plastic card would purchase a pen even as the number of alternatives increased in comparison to individuals paying with cash, thereby moderating the choice overload effect. For those paying in cash, this would be reflected by an inverted U-shaped relationship between buying and an increasing number of alternatives for individuals. For those paying with plastic, buying would initially increase with more options; however, unlike the cash condition, purchasing would not decrease even in larger choice sets due to the lower psychological pain associated with payment. Therefore, I predicted that there would be a significant main effect of number of alternatives and number of alternatives squared, as well as a
significant two-way interaction between number of alternatives squared and payment form on the proportion of individuals purchasing at least one pen.

2.4.1.1 Method for Experiment 1

The study was conducted at a private Northeastern university. The study was conducted in a library café area. A table was set up in the main corridor with a sign “Nice Pens for Sale.” Passersby were invited to purchase a pen at a discounted rate, using their own money, if they so chose. Participants were those individuals who physically approached the table (i.e., individuals who walked by without stopping to look at or pick up a pen were not considered participants). This design assumed that all of the individuals who approached the table had some interest in purchasing a pen.

The first experiment had a 2 (payment form: cash, student plastic card) X 5 (number of alternatives: 2, 6, 10, 14, 18) between subjects design. Each condition had forty participants (N=400). Participants were told that several hundred pens were being purchased for a major recruiting event and participants would be able to give their opinion on which pen they liked the best for themselves. All pens had black ink, some combination of both silver and black on the outside, and had a rollerball tip. The pens ranged in actual manufacturer’s cost from $1.89 to $2.39 and came from several different manufacturers (which was necessary only because no pen brand carried 20 distinct black pens). Despite these constraints, the pens differed in appearance, feel, and writing delivery mechanism. Thus, before the main experiments were conducted, I ran a pilot
test with 10 participants who were independent from any of the experiments. They rated each of the 18 different pens on a scale from 1, *highly undesirable*, to 10, *highly desirable.* Individuals rated each of the pens twice in random order, and the ratings were averaged to produce a single rating score for each pen. I used those ratings to rank the pens and subsequently ensure that there was rating variability for the pens across all of the choice conditions. Subjects were then told that they could purchase a pen at a discounted rate if they so chose. The number of pens on the table varied from 2 to 18 in increments of 4, and the price for each pen was held constant at $1.00.

In the cash payment form condition (n=200 across number of alternative conditions), participants were told that due to technical constraints they could only pay with cash. A bag of dollars and various change was visible on the table with the pens in order to implicitly assure participants that exact change was not necessary. In the plastic payment form condition (n=200), a different set of participants was informed that due to certain technical constraints, they could only pay with a plastic student spending card commonly used on campus. The university’s student card is proxy for a debit card given that students can put money on the card at any time. A designated sheet of paper mimicking official student card payment sheets was used. Participants had to indicate their ID number, amount of money spent, and signature to confirm their purchase. The dollar bills and bags of change were removed to further assure that they would not consider a cash payment form.
I measured the proportion of individuals purchasing a pen as a function of the number of alternatives in their consideration set and the form of payment used.

2.4.1.2 Results of Experiment 1

![Chart showing the impact of payment form and number of alternatives on the proportion buying a pen.](chart.png)

**Figure 1: The Impact of Payment Form and Number of Alternatives on the Proportion Buying a Pen**

Paying with a less salient form of money (plastic card) decreases the propensity of experiencing choice overload effects in comparison to paying with a more salient form (cash).
Table 1: Logistic Regression Results, Experiment 1

<table>
<thead>
<tr>
<th>Variables</th>
<th>Proportion Buying a Pen (%)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Buying With Cash</td>
<td>Buying with Plastic</td>
<td>Overall Model</td>
</tr>
<tr>
<td>Constant</td>
<td>−2.35</td>
<td>−1.86</td>
<td>−2.23</td>
</tr>
<tr>
<td></td>
<td>(17.72)***</td>
<td>(12.60)***</td>
<td>(27.75)***</td>
</tr>
<tr>
<td>Number of Alternatives (N)</td>
<td>0.508</td>
<td>0.461</td>
<td>0.485</td>
</tr>
<tr>
<td></td>
<td>(16.89)***</td>
<td>(13.53)***</td>
<td>(30.43)***</td>
</tr>
<tr>
<td>Number of Alternatives^2 (N^2)</td>
<td>−0.024</td>
<td>−0.016</td>
<td>−0.017</td>
</tr>
<tr>
<td></td>
<td>(16.35)***</td>
<td>(7.05)***</td>
<td>(15.64)***</td>
</tr>
<tr>
<td>Cash (C)</td>
<td>0.303</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.823)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-way Interaction (N^2× C)</td>
<td>−0.005</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(7.77)**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Observations</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>LR-X2</td>
<td>18.83***</td>
<td>34.22***</td>
<td>73.44***</td>
</tr>
<tr>
<td>Degree of Freedom</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>P-Value</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Adj. R-Squared</td>
<td>0.090</td>
<td>0.157</td>
<td>0.168</td>
</tr>
</tbody>
</table>

Note: Values in parentheses are Wald Chi-square (X^2) statistics. * = p<.10 * = p<.05; ** = p<.01; *** = p<.001

Figure 1 presents the proportion of subjects who purchased a pen as a function of set size and payment form. Table 1 presents the logistic regression coefficients for my sample, where I regress the number of alternatives, number of alternatives squared, payment form, and the two-way interaction between number of alternatives squared and payment form on the proportion buying a pen. I used the interaction between the number of alternatives squared and payment form since I was investigating the moderating effect of payment form on the inverted-U shape, which is captured by the quadratic component of the number of alternatives variable (and not the linear component of the number of alternatives variable, Aiken and West 1991). Table 1 also
presents the regressions within the two payment form conditions.

The overall model was significant, $X^2(4)= 73.44, p<0.001$. Furthermore, I see that number of alternatives, number of alternatives squared, and the interaction between number of alternatives squared and payment form are statistically significant predictors of buying. The negative beta coefficient for the quadratic component indicates that the curve is concave and downward. The main effect of payment form was not significant, $X^2(1)=.823, b= 0.303$. The peak in buying for those paying by cash was 10.58 compared to 14.41 for those paying by plastic (following the formula Peak= $–(\text{coefficient of N})/(2*\text{coefficient of N}^2)$, Aiken and West 1991).

First, note that I replicate the inverted U-shaped relationship between proportion purchasing and number of alternatives found by Shah and Wolford (2007) for the cash condition. The effect of number of alternatives squared is negative and significant ($X^2(1)=15.64, p<.001, b= -.017$). I also show an initial increase in purchasing (the benefits portion). Cash customers purchased significantly more at 10 alternatives ($M_{10\text{-pen}}=72.5\%$) than at 2 alternatives ($M_{2\text{-pen}}=22.5\%, t(78)=5.11, p<.001$) and 6 alternatives ($M_{6\text{-pen}}=35\%, t(78)=3.58, p=.001$). I expected the negative results of increasing assortment size to significantly decrease the proportion of buying for higher numbers of alternatives for cash customers (the costs portion). As expected, cash customers purchased significantly less at 14 alternatives ($M_{14\text{-pen}}=45\%, t(78)=-2.57, p=.012$) and 18 alternatives ($M_{18\text{-pen}}=30\%, t(78)=-4.15, p<0.001$) than at 10 alternatives ($M_{10\text{-pen}}=72.5\%$).
For plastic customers, I expect to find a similar increase in purchasing from 2 and 6 to 10 options, but no declines in purchasing from 10 to 14 and 18 options. Plastic customers purchased significantly more at 10 alternatives ($M_{10\text{-pen}}=80\%$) than at 2 alternatives ($M_{2\text{-pen}}=30\%$, $t(78)=5.13$, $p<.001$) and 6 alternatives ($M_{6\text{-pen}}=50\%$, $t(78)=2.93$, $P=.004$). There was no significant difference in proportion buying as a function of payment form in the 2-pen, 6-pen, and 10-pen choice sets (2-pen: $t(78)=.755$, $p=.452$; 6-pen: $t(78)=1.36$, $p=.179$; 10-pen: $t(78)=.781$, $p=.437$). On the costs portion, as expected, for plastic customers, there was no significant difference between purchasing at 10 alternatives ($M_{10\text{-pen}}=80\%$) and at 14 alternatives ($M_{14\text{-pen}}=82.5\%$, $t(78)=-.283$, $p=.778$) or 18 alternatives ($M_{18\text{-pen}}=75\%$, $t(78)=.53$, $p=.598$). Also as expected, the effect of the number of alternatives squared was smaller and less significant for the plastic card customers. Finally, the proportion purchasing was larger for plastic than for cash in both the 14-pen and 18-pen conditions (14-pen: $t(78)=3.74$, $p<0.001$; 18-pen: $t(78)=4.46$, $p<0.001$).

2.4.1.3 Discussion of Experiment 1

To summarize, the results of Experiment 1 demonstrate that consumers paying with cash respond to an increasing number of alternatives initially by increasing their likelihood to purchase one item, replicating prior work (Kahn and Lehmann 1991; Kekre and Srinivasan 1990; McAlister 1982; Shah and Wolford 2007). However, this occurs only to a point. With further additions to the choice set, consumers paying by cash are increasingly less likely to make a purchase, thereby exhibiting choice overload. In
contrast, consumers paying by card, a less transparent and salient form of money, initially buy more as the number of alternatives increase but do not significantly decrease their purchase likelihood in larger assortment sets in comparison to their cash counterparts. Thus, cash consumers replicate the inverted U-shaped function for buying while plastic consumers show a more nearly monotonic relationship.

This first experiment provides initial evidence for the hypothesis that the payment method used for the purchase transaction can have a significant impact on the propensity to experience choice overload effects. However, a few questions remain unanswered. First, are consumers likely to exhibit these purchase differences if they were allowed to purchase more than one item? In real world settings, it is relatively rare for the retailer to impose a purchase restriction on the consumer. It is foreseeable that payment method may not have a meaningful difference on choice overload effects when consumers are allowed to purchase as many options as they want.

I addressed this first potential confound by running a follow-up field experiment (N=200) manipulating payment method (cash or student debit card) as well as the assortment number (2-20, in increments of two), while allowing consumers to purchase as many pens as desired. I once again used a logistic regression to determine whether there was a main effect of number of alternatives and payment form and a significant interaction of payment form and number of alternatives on the proportion buying a pen. I used both number of alternatives and number of alternative squared to check whether
there was a curvilinear relationship between the number of alternatives and proportion of individuals buying as well as a main effect of payment form and then an interaction term of payment form and number of alternatives squared. The overall model was significant, $X^2(4)= 25.44$, $p<0.001$, corrected $R^2=0.119$. The linear component of number of alternatives was significant ($X^2(1)=15.12$, $p<.001$, $b=.476$), as was the quadratic component ($X^2(1)=16.53$, $p<.001$, $b=-.023$). The negative beta coefficient for the quadratic component indicates that the curve is concave and downward. The main effect of payment form was not significant ($X^2(1)=.005$, $p=0.942$, $b=.034$). However, despite allowing individuals to purchase as many options as they wanted, these results were qualified by a significant interaction of payment form and number of alternatives squared on buying, $X^2(1)=4.05$, $p=.044$, $b=.05$. The peak in buying for those paying by cash was 10.48 compared to 13.28 for those paying by plastic (following the formula $\text{Peak} = -b_1/2b_2$, Aiken and West 1991). The significant interaction term also indicates that the inverted U-shaped curve for the plastic-paying consumers is flatter. Thus, even when giving all individuals the opportunity to purchase any and all alternatives that they want, cash consumers were still likely to experience stronger choice overload effects (i.e., a decreased likelihood for purchasing at all in larger assortments) in comparison to those who paid by plastic.

In addition to the logistic regression, I also ran an analysis of variance test to determine whether the numbers of pens purchased was significantly influence by the
number of alternatives, payment form, and their interaction. The overall model was significant, F (4, 195) = 15.69, p < 0.001, corrected R² = 0.228. The linear component of number of alternatives was significant (t(1) = 3.18, p = 0.002, b = 0.126), as was the quadratic component (t(1) = 3.18, p = 0.002, b = 0.126). The main effect of payment method was not significant (t(1) = 0.98, p = 0.922, b = -0.015), though the interaction between payment method and number of alternatives squared was significant, t(1) = 4.23, p < 0.001, b = 0.003). Looking closer, there are no significant differences between the number of pens purchased and payment form in smaller choice sets (when the number of alternatives available equals ten or fewer options), t(99) = -1.39, p = 0.126; M_Cash = 0.58 pens, M_Plastic = 0.76 pens. However, in larger choice sets (when the number of alternatives is greater than ten options — e.g., twelve or more options), there is a significant difference, with plastic paying consumers purchasing more pens in comparison to cash paying consumers, t(99) = -5.17, p < 0.001; M_Cash = 0.48 pens, M_Plastic = 1.34 pens.

Second, despite ruling out the possibility that restricted choice perceptions were driving the results, it is unclear from my first experiment and follow-up experiment if pain of payment is truly the psychological driver of the interaction results between payment method and number of alternatives on buying behavior. I attempt to address this concern in Experiment 2 by explicitly measuring whether pain of payment is underlying our results.

Finally, past research has found that the presentation format of the options can
affect decision-making (Kahn and Wansink 2004; Martin and Norton 2009). Retailers can physically display their assortments in categories, enhancing the perception of variety despite keeping the number of options fixed (Hoch, Bradlow, and Wansink 1999; Mogilner, Rudnick, and Iyengar 2008). I use categories based upon pen color in my follow-up experiment, and I argue that consumers may use the color category structure to focus their search on pens of one color. Therefore, the greater the number of color categories, the fewer the number of options in each category. Hence, I predict that while individuals may perceive more variety due to assortment categorization, the difference between the proportion purchasing and paying by cash versus by plastic will be lowest in the condition with the largest number of categories (because the number of options in each category will be small, so choice differences between payment modes will be reduced for small option sets, as shown in Experiment 1). The difference between the proportion purchasing and payment method will be the highest in the condition with a single category that contains the largest number of options, with the two-category assortment condition being in between the two other conditions.

2.4.2 Experiment 2: Manipulating Payment Method and Assortment Categories

Experiment 2 seeks to answer two main questions: 1) Does the pain of payment drive buying differences between payment method in larger assortment sets? And 2) Can the way that a larger assortment is organized affect the purchase likelihood differences between cash and card users? I manipulate payment form (cash or plastic)
and the presence of assortment categories, while holding the total number of options available for purchase constant. Once again, purchase likelihood is the main dependent variable of interest. Similarly to Experiment 1, individuals have the option to purchase a pen from a larger choice set (i.e., sixteen pens), using their own money via either cash or plastic (e.g., debit card or student card). Replicating Kahn and Wansink (2004), I manipulate whether the pens are categorized into one category (sixteen black pens), two distinct categories organized by color (eight black pens and eight blue pens), or four distinct categories organized by color (four black pens, four blue pens, four green pens, and four purple pens).

I predict that the pain of payment will mediate the effect of payment method on the proportion purchasing a pen in larger assortments. In addition, I hypothesize that paying with plastic will reduce choice overload effects in comparison to paying by cash, with the largest reduction in the one category case (where all sixteen options may be considered), the next largest in the two category condition (eight options per category), and the least in the four category condition.

2.4.2.1 Method for Experiment 2

The study was conducted at a private Southeastern university. Passerbys were invited to purchase a pen at a discounted rate, using their own money, if they so chose. Participants will be those individuals who physically approach the table (i.e., individuals who walk by without stopping to look at or pick up a pen will not be
considered participants). This design assumes that all of the individuals who approached the table have some interest in purchasing a pen.

Experiment 2 used a 2 (payment form: cash or plastic) X 3 (assortment structure: one category, two categories, four categories) between subjects design. All participants (N=120) were given a chance to purchase one pen from a set of sixteen options using their own money. The pens ranged in actual manufacturer’s cost from $1.89 to $2.39 and came from several different manufacturers (which was necessary only because no pen brand carried 16 distinct black pens), but were being sold for a discount and were all priced at $1.00.

In the cash payment form condition, participants were told that due to technical constraints they could only pay with cash. In the plastic payment form condition, a different set of individuals were informed that due to certain technical constraints, they could only pay with a plastic student spending card commonly used on campus or a debit or credit card. While all participants saw sixteen pens, I manipulated the assortment categories in order to determine whether assortment categorization moderated our effects (Kahn and Wansink 2004). In the one category condition, participants were given sixteen black pens to choose between. In the two-category condition, the sixteen pens were organized into two-color groups containing eight black pens and eight blue pens. In the four-category condition, the sixteen pens were
organized into four-color groups, containing four black pens, four blue pens, four green pens, and four purple pens.

After individuals made the choice whether to buy or not, they were asked the following questions: How painful is paying $1 for the pen (adapted from Shah et al. 2016; 1-7 Likert scale: 1= Not at all painful, 7=Very Painful)? How much variety do you think there is in this assortment (Kahn and Wansink 2004; 1-7 Likert scale: 1=Very Little, 7=Very Much)? How certain are you about your choice to buy or not buy (1-7 Likert scale: 1=Not at all, 7=Very Certain)?

2.4.2.2 Results for Experiment 2

![Bar chart showing the impact of payment form and number of assortment categories on the proportion of participants buying a pen.](image)

**Figure 2: The Impact of Payment Form and Number of Assortment Categories on the Proportion Buying a Pen**
Paying with a less salient form of money (plastic card) decreases the propensity of experiencing choice overload effects in comparison to paying with a more salient form (cash) only when the assortment categories are low (sixteen all black pens).

Figure 2 presents the proportion of participants who purchased a pen as a function of payment method and assortment category. The logistic regression model regressing payment method, a dummy variable for the two-category condition, a dummy variable for the four-category condition, and the interactions of cash × two-category condition and cash × four-category condition was significant, X²(5)= 13.03, p=.023. Looking more closely, in the one category condition (sixteen black pens), plastic paying individuals bought significantly more pens than cash paying individuals, z=2.89, p=.004, MPlastic=80%, MCash=35%. In the two category condition (eight black pens, eight blue pens), plastic paying individuals marginally bought more pens than cash paying individuals, z=1.94, p=.052, MPlastic=75%, MCash=45%. In the four category condition (four black pens, four blue pens, four green pens, four purple pens), there was no significant difference in buying between plastic and cash paying individuals, z=.32, p=.749, MPlastic=55%, MCash=50%.

With regards to perceived variety, the results from Experiment 2 replicated prior work by Kahn and Wansink (2004) and Hoch, Bradlow, and Wansink (1998), as increasing the number of assortment categories increased perceived variety, F(2, 118)=26.25, p<.001 (One Category: M=4.10, SD=1.84; Two Categories: M=5.33, SD=1.41;
Four Categories: M=6.43, SD=0.87). However, neither payment method (F(1, 119)=.259, p=.61) nor the interaction of assortment categories and payment method (F(2, 118)=.635, p=.532) had a significant effect on perceived variety. The main effect of payment method, assortment categories, or the interaction between payment method also did not affect decision certainty (p>.10).

Mediation of Pain of Payment on Proportion Buying. I tested whether pain of paying mediated the relationship between the experimental manipulations and the likelihood of purchasing using a structural equation model. In this model, Cash (using effect-coding of -1 and 1), Assortment (mean-centered), and their interaction predict pain of paying (the mediator). All of the variables are then used to predict the dependent variable, a dummy variable that indicates whether the participant purchased the pen. Results form a 1,000 draw bootstrap support our hypotheses. The first stage of the mediation looks at the effects of the experimental manipulations on the mediating variable. The SEM results suggest that pain of paying is positively predicted by both Cash (b = 0.28, SE = 0.09, t = 3.22, p = .001) and Assortment (b = 0.09, SE = 0.04, t = 2.03, p = .041), but not their interaction (b = 0.03, SE = 0.02, t = 1.56, p = .12).

The second stage of the mediation looks at how all the variables affect likelihood of purchase. As predicted, increased pain of payment is negatively associated with purchase likelihood (b = -0.39, SE = 0.03, t = 12.40, p < .001) and, because the mediating variable is included as a predictor, none of the experimental manipulations are
significantly related to likelihood of purchase (Cash: $b = -0.07$, $SE = 0.05$, $t = 1.31$, $p = .19$; Assortment: $b = 0.02$, $SE = 0.02$, $t = 1.07$, $p = .29$; Interaction: $b = -0.01$, $SE = 0.01$, $t = 1.00$, $p = .32$). To confirm mediation, I then calculated the indirect effects of the two experimental manipulations on the dependent variable. There is a significant negative indirect effect of Cash on likelihood of purchasing (Indirect effect $= -0.11$, $SE = 0.04$, $z = 3.06$, $p = .002$) and of Assortment on likelihood of purchasing (Indirect effect $= -0.034$, $SE = 0.017$, $z = 1.96$, $p = .040$).

2.4.2.3 Discussion for Experiment 2

Thus far, I have found that the way individuals pay for a good can influence their propensity to purchase from larger assortment sets. I also have evidence that the pain of payment mediates the relationship between payment form and larger assortment sets on buying. In other words, when individuals pay with plastic they feel less pain of payment allowing them to continue purchasing from a large consideration set in comparison to individuals who pay by cash, who feel greater pain of payment and respond by experiencing choice overload effects. The differences in purchasing behavior across payment form can be attenuated if we increase the number of assortment categories.

Prior research has found evidence that when the differences among alternatives is smaller, individuals respond by avoiding making a choice altogether due to preference uncertainty (Dhar 1997). However, I found no differences across assortment
conditions or payment method on decision certainty, perhaps because my measure of
certainty was post-decision, whereas past work has used pre-decision certainty
measures. I strategically chose to measure certainty post-decision in order to have a
clean measure of my main dependent variable of interest, purchase likelihood. Thus, it
remains possible that preference uncertainty could play a role in our results.

Given that my main theoretical variable of interest is the pain of paying
construct, I focus on manipulating this mediating variable in order to gain better insight
into whether pain of paying is truly driving my results. Pain of paying can be
manipulated in many different ways. While my experiments thus far have focused on
payment form, manipulating pain of paying via the economic cost of an item should also
influence the likelihood that individuals will experience choice overload effects. I predict
that individuals paying more money for the pen, regardless of payment form, should
experience choice overload effects, resulting in an inverted U-shaped function between
buying and an increasing choice set. Similarly, individuals paying less money for the
pen, regardless of payment form, should be less influenced by larger assortments,
moderating the inverted U-shaped function between buying and an increasing choice
set. In Experiment 3, I examine this potential account by manipulating the pain of
payment, both by payment form and by payment magnitude.
2.4.3 Experiment 3: Manipulating Payment Method, Payment Magnitude, and Number of Alternatives

In Experiment 3, I examine whether the results are specific to paying with a less salient form of money or, rather, as I theorized, by any variable that affects the pain of payment. I test the effect of pain of payment, manipulated via both payment form and payment magnitude, and choice size on buying. I once again manipulate payment form by asking individuals to either pay with cash or plastic using their money. For the price manipulation, I use three levels of payment magnitude, low ($0.25), medium ($1.00), and high ($2.00). I chose this pricing scheme because the retail price for a single unit of the pens offered varied from $1.86-$2.13, so $2.00 was chosen as the upper limit for each pen. More typically, the pens are sold in a box of one dozen pens, which typically provides a quantity discount. In this case, each unit now ranges between $0.89-$1.18, so $1.00 was chosen, and also serves as a replication of Experiment 1. Finally, I chose $0.25 because the university receives between a 60-75% discount from the retail price of a majority of office supplies, including the box of one dozen pens.

I expect that for low payment magnitude (i.e., $0.25), both cash and plastic purchasers will continue purchasing at a high rate despite an increasing number of options in the choice set. For medium payment magnitude (i.e., $1.00, the same price used in Experiment 1) I expect to replicate our Experiment 1 results that cash purchasers will purchase less at high numbers of alternatives while plastic purchasers will still purchase at a high rate at high numbers of alternatives. I expect that at high payment
magnitude (i.e., $2.00), even plastic users will be affected by the increasing pain of payment from high price and will thus decrease purchases at high numbers of alternatives, resulting in an inverted U-shaped function similar to that of cash purchasers.

2.4.3.1 Method for Experiment 3

Participants (N=360) at a Southeastern private university had a chance to purchase one pen from a choice set. The experiment had a 2 (payment form: cash, student plastic card) X 3 (payment magnitude (price): $0.25, $1.00, $2.00) X 3 (number of alternatives: 4, 10, 16) between-subjects design with 20 participants per cell. I used three different levels for number of alternatives, rather than the five levels used in the previous experiment, due to the increase in the total number of cells for the design required by the payment magnitude manipulation. The number of pens on the table for selection was either a small choice set (4 pens), a medium choice set (10 pens), or a high choice set (16 pens). Similar to the previous experiments, a sign that read “Nice Pens for Sale” was displayed on a table in the hallway of a library. Participants were invited to purchase a pen from an assortment using their own money. In the ‘cash’ paying condition, a large bag with coins and various denominations of bills was placed on the table. Participants were told that due to technical constraints, only cash could be accepted for payment. In the plastic condition, two student card reader machines were on the table and any trace of physical money was removed. Participants in the plastic
payment condition were told that due to technical constraints, only a student card could be used for purchase. Participants were also informed as they approached the table that the pens could be purchased for $0.25, $1.00, or $2.00 depending on the payment magnitude condition. On average, $2.00 was the actual retail price for each of the pens.

2.4.3.2 Results for Experiment 3

![Figure 3: The Impact of Payment Form, Payment Magnitude, and the Number of Alternatives on the Proportion Buying a Pen](image)

Paying with a less salient form of money (plastic card) or paying less money decreases the propensity of experiencing choice overload effects in comparison to paying with a more salient form (cash) or paying more money.
Table 2: Logistic Regression Results, Experiment 3

<table>
<thead>
<tr>
<th>Variables</th>
<th>Proportion Buying a Pen (%)</th>
<th>Overall Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low Magnitude ($0.25)</td>
<td>Control Magnitude ($1.00)</td>
</tr>
<tr>
<td>Constant</td>
<td>−1.29</td>
<td>−3.13</td>
</tr>
<tr>
<td></td>
<td>(0.570)</td>
<td>(6.47)**</td>
</tr>
<tr>
<td>Number of Alternatives (N)</td>
<td>0.564</td>
<td>0.861</td>
</tr>
<tr>
<td></td>
<td>(1.41)</td>
<td>(7.91)**</td>
</tr>
<tr>
<td>Number of Alternatives$^2$ ($N^2$)</td>
<td>−0.018</td>
<td>−0.040</td>
</tr>
<tr>
<td></td>
<td>(0.511)</td>
<td>(6.84)**</td>
</tr>
<tr>
<td>Cash (C)</td>
<td>0.541</td>
<td>0.795</td>
</tr>
<tr>
<td></td>
<td>(0.473)</td>
<td>(1.48)</td>
</tr>
<tr>
<td>2-way Interaction ($N^2$ × C)</td>
<td>0.005</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>(0.183)</td>
<td>(0.533)</td>
</tr>
<tr>
<td>Payment Magnitude (M)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M ($0.25 vs. $1.00)</td>
<td>1.26</td>
<td></td>
</tr>
<tr>
<td>M ($2.00 vs. $1.00)</td>
<td>−1.98</td>
<td></td>
</tr>
<tr>
<td>2-way Interaction (C × M)</td>
<td>0.150</td>
<td></td>
</tr>
<tr>
<td>2-way Interaction ($N^2$ × M)</td>
<td>−0.003</td>
<td></td>
</tr>
<tr>
<td>3-way Interaction ($N^2$ × C × M)</td>
<td>0.003</td>
<td></td>
</tr>
<tr>
<td>Number of Observations</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>LR-X2</td>
<td>15.87***</td>
<td>19.86***</td>
</tr>
<tr>
<td>Degree of Freedom</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>P-Value</td>
<td>0.003</td>
<td>0.001</td>
</tr>
<tr>
<td>Adj. R-Squared</td>
<td>0.124</td>
<td>0.153</td>
</tr>
</tbody>
</table>

Note: Values in parentheses are Wald Chi-square (X2) statistics. • p<.10 * p<.05; ** p<.01; *** p<.001

Figure 3 presents the proportion of participants who purchased a pen as a function of assortment size, payment form, and payment magnitude. Table 2 presents the logistic regression coefficients for our sample, where we regress the number of alternatives, number of alternatives squared, payment form, payment magnitude, the two-way interaction between number of alternatives squared and payment form, the two-way interaction between number of alternatives squared and payment magnitude, two-way interaction between payment form and payment magnitude, and the three-way interaction between the number of alternatives squared, payment form, and payment magnitude on the proportion buying a pen. Again, I used the interaction
between the number of alternatives squared and payment form and payment magnitude as I was investigating the moderating effect of payment form and payment magnitude on the inverted-U shape, which is captured by the quadratic component of the number of alternatives variable.

The overall model was significant, $X^2(9) = 147.15, p<.001$, as were the number of alternatives, number of alternatives squared, and payment magnitude. Using the previous formula for the peak ($-(\text{coefficient of } N)/(2\times\text{coefficient of } N^2)$), the peaks for the different magnitudes are 10.38 ($2.00$), 10.76 ($1.00$), and 15.67 ($0.25$), which are in the expected order.

Similar to Experiment 1, I expected that when the price of the pen was $1.00, the negative effects of increasing assortment size would significantly decrease the proportion of buying between the ten-alternative and the sixteen-alternative groups for cash paying consumers but not for plastic paying consumers. Once again I replicate the inverted U-shaped pattern found in the first experiment and for the $1.00$ cash customers. For the $1.00$ cash payment condition, there were significant main effects of number of alternatives ($X^2(1)= 6.81, p = .009, b=1.03$) and number of alternatives squared ($X^2(1)= 6.06, p = .014, b= -.48$). There was a significant increase from small to medium choice sets ($M_{\text{small choice}}=40\%; M_{\text{medium choice}}=85\%, t(38)=3.24, p=.003$) and a marginally significant decrease from medium to large choice sets ($M_{\text{medium choice}}=85\%, M_{\text{large choice}}=60\%, t(38)=1.80. p = .08$).
For plastic consumers at $1.00, there was a marginally significant increase from small to medium choice sets (M_{small\text{ choice}}=65\%, M_{medium\text{ choice}}=90\%, t(38)=1.93, p=.061). Consistent with Experiment 1, plastic consumers also did not significantly decrease purchasing when comparing the higher choice set and the medium choice set (t(38)=0.00, p=1.0, M_{high\text{ choice}}=90\%, M_{medium\text{ choice}}=90\%). Comparing the two payment modes, there was no significant difference in proportion buying as a function of payment form in the small or medium choice sets (Small: t(38)=1.59, p=.119; Medium: t(38)=0.467, p=.643). However, payment form significantly affected the proportion buying in higher choice sets (High: t(38)=2.28, p=.029). Consistent with this, the number of alternatives squared was significant for cash customers in the $1.00 condition ($^{2}(1)= 6.06, p =.014, b= -.48$) but not for plastic customers paying $1.00 ($^{2}(1)= .831, p =.362, b= -.022$). However, even though there is a different pattern for cash and plastic customers, I did not obtain a payment form by number of alternatives interaction for the within-condition ($1.00$) regression ($^{2}(1)= .533, p =.465, b= .003$).

Decreasing payment magnitude to $0.25$ (lower pain of payment) attenuated the negative effects of large assortment size for both cash and plastic consumers. There was a significant increase from small to medium choice sets for cash (t(38)=2.49, p=.017, M_{small\text{ choice}}=65\%, M_{medium\text{ choice}}=95\%) and a directional increase for plastic (t(38)=1.44, p=.16, M_{small\text{ choice}}=80\%, M_{medium\text{ choice}}=95\%). Cash and plastic consumers did not significantly decrease purchasing in higher choice conditions as compared to medium choice conditions (Cash:
Finally, there was no significant difference in proportion buying as a function of payment form in the high choice sets ($t(38)=-1.00, p=0.32$). Moreover, there was no significant difference in proportion buying as a function of payment form in the small, medium, or higher choice sets (Small: $t(38)=1.05, p=.30$; Medium: $t(38)=0.00, p=1.00$; Higher: $t(38)=1.00, p=.324$). None of the main effects or interactions for payment form, number of alternatives, or number of alternatives squared was significant for payment magnitude of $0.25$.

When the pain of payment was increased by increasing the price to $2.00$, the negative effects of larger assortments become salient to consumers regardless of payment form. In both cases there were marginal increases from small to medium choice sets (cash: $t(38)=1.80, p=.08$, $M_{\text{small choice}}=15\%$, $M_{\text{medium choice}}=40\%$; plastic: $t(38)=1.71, p=.10$, $M_{\text{small choice}}=20\%$, $M_{\text{medium choice}}=45\%$). There was also a directional decrease from medium to higher choice for cash ($t(38)=1.38, p=.176$, $M_{\text{medium choice}}=40\%$, $M_{\text{high choice}}=20\%$) and a marginal decrease for plastic ($t(38)=1.71, p=.10$, $M_{\text{medium choice}}=45\%$, $M_{\text{high choice}}=20\%$). There was no significant difference in proportion buying as a function of payment form in the small, medium, or high choice sets (Small: $t(38)=-.41, p=.69$; Medium: $t(38)=-.31, p=.76$; High: $t(38)=.00, p=1.00$). Increasing the pain of payment through magnitude also replicated the inverted U-shape of buying as a function of an increasing number of alternatives for both payment groups. Both the linear component ($X^2(1)= 7.31, p=0.007$,
b=0.664) and the quadratic component ($X^2(1) = 6.88, p = .009, b = -0.032$) for the number of alternatives were significant.

### 2.4.3.3 Discussion for Experiment 3

To summarize, when the pain of payment is magnified via increasing the payment magnitude, both the cash and plastic purchasing curves display the classic inverted U-shaped function. When the pain of payment is sufficiently reduced via decreasing the payment magnitude, both the cash and plastic curves do not show decreased purchasing at high numbers of alternatives. Thus, when the pain of payment is reduced or heightened due to payment magnitude, payment form no longer leads to significant differences in the proportion buying in high choice conditions. Conversely, when the payment magnitude is moderate, the impact of payment form significantly impacts the costs and subsequent buying in choice sets with many alternatives. Thus, the propensity for choice overload effects to occur is driven by the pain of payment, both in terms of magnitude and form, rather than just payment form alone.

### 2.5 General Discussion

The effect of changes in the number of alternatives offered to consumers is of keen interest to consumer researchers, marketers, and policy makers alike. Offering more options potentially can allow for a better match with consumer preferences and thus allow firms to meet the needs of a larger segment of customers. However, this doesn’t come without a cost. Choosing from more variety can be frustrating, anxiety-
producing, and can increase the conflict consumers feel during the decision process, leading to less buying and greater regret (Chernev 2003a, b; Iyengar and Lepper 2000; Schwartz 2004; Shah and Wolford 2007). The present research suggests that experiencing more (less) pain of payment can magnify (mitigate) the negative effects associated with larger assortments. Thus, the choice overload effect is not simply a result of an increasing alternative set, but rather the interaction between the pain of payment associated with the purchase decision and an increasing number of alternatives. In this section, I will review the key findings and discuss theoretical and practical implications of this work.

The present research makes two main empirical points. First, I found strong evidence of a reliable choice overload effect. I found the inverted U-shaped pattern in the two experiments (1 and 3) that have a consistent control group – a $1.00 cash price per option. Second, I demonstrated that this overload effect could be moderated. In particular, I found that the pain of payment had a robust effect on the relationship between number of alternatives and purchasing. In Experiment 1, I manipulated the pain of payment through payment form, demonstrating that consumers paying with a less painful form of payment (student purchasing cards) do not show choice overload effects in high choice conditions as compared to those paying by cash. In Experiment 2, I demonstrated that holding the total number of options fixed, but increasing the number of assortment categories into which the options are divided, may moderate how
payment form influences the likelihood of purchasing. Experiment 2 also provided mediation evidence that pain of payment was driving the effect of payment method on buying behavior in larger choice sets. Finally, in Experiment 3, I investigated whether this effect occurred due to payment form alone or whether payment magnitude, another manipulation of my proposed mediator, pain of payment, can influence the inverted U-shaped relationship between an increasing choice set and the likelihood to purchase. I demonstrated that when the pain of payment is lowered through payment magnitude, then regardless of the payment form, buying does not decrease as greatly as a function of the number of options in the choice set. Similarly, when the pain of payment is increased through price magnitude, buying decreases as a function of an increasing number of alternatives, regardless of the payment form used for purchase.

Taken together, the results from these three experiments, involving purchases of real products with participants’ own money, demonstrate that choice overload is highly contingent on the pain of payment associated with the decision. By increasing (decreasing) the pain of payment either psychologically, by using a more psychologically proximal (distant) form of payment, or economically, by increasing (decreasing) the payment magnitude, I find that the negative effects associated with a larger number of options were subsequently magnified (attenuated). Thus, it is the interactive relationship between the pain of payment and the number of alternatives that
affects choice overload, rather than the number of alternatives alone. These results address Chernev et al.’s (2010) call for systematic moderators of overload.

2.5.1 Implications, Future Directions, and Conclusions

Credit and debit cards are slowly replacing cash as the most popular currency used. Additionally, online shopping and spending (for the self and for others) has also increased by over 200% annually since 2000. Consumers can enjoy endless variety, which can allow for more precise preference matching, with the added convenience of paying with both a less painful form of money (i.e., debit, credit, or gift card) and in some cases (e.g., holiday sales) with less pain of payment due to lower price magnitudes (or at least perceived lower price magnitudes). Such changes could lead to increased spending and financial difficulties. Thus, it is of immediate theoretical and substantive interest to elucidate how the pain of payment can affect consumer behavior in response to an increasing number of options.

I show that under some conditions, an increasing number of options reliably leads to decreased buying and a higher propensity to defer choice. However, I argue and find empirical evidence that decreasing the pain of payment can lead to increased purchasing. That is, although the benefits associated with variety are increasing and positive, the costs associated with a larger number of options can be mitigated (or magnified) through decreased (increased) pain of payment. When an item is less painful to purchase, either because it has been discounted or because a store encourages the use
of plastic (or alternatively, if the store’s customer base typically uses plastic), purchasing levels will not decrease as much with greater numbers of options.

The most direct managerial implication of this work pertains to how many products firms might offer as a function of payment characteristics and customer segmentation. When considering how many products to offer, companies should consider the predominant payment form of their customer base. For example, older individuals (65+) are considerably less likely to use a credit or debit card, preferring cash for basic transactions in comparison to younger individuals. As a result, this work suggests that companies or company product lines that target older individuals should cut down on the amount of products offered. Also, more rural settings tend to rely predominantly on cash in comparison to urban settings, where individuals use plastic more frequently. Tailoring the number of alternatives offered as a function of the predominant payment form used may prove beneficial for companies looking to maximize consumer utility. Similarly companies working with cash-based cultures, such as India or Japan, should also offer fewer alternatives than more plastic-based cultures.

Related to the above, when deciding how many alternatives to offer, companies are able to decide whether the product domain is relatively more expensive or cheaper. For example, buying a laptop will require more money and thus has more pain of payment associated with the purchase than if the purchase involved simply buying a pen. Therefore, it may be beneficial to the company (and the consumer) to reduce the
number of product offerings within the laptop domain in comparison to the pen domain.

Another potential implication of this work is in the online and mobile shopping sector. Online shopping and mobile shopping are increasing in popularity. The psychological process of paying without even a physical proxy for money decreases the pain of payment even further, meaning that companies could offer more alternatives through online and mobile mediums in comparison to brick and mortar stores, where consumers are more likely to pay via plastic or cash. This interaction between the effect that the pain of payment can have on the number of alternatives and the likelihood to purchase is of keen interest to researchers, marketers and policymakers alike, and thus the importance of understanding the interplay between these two factors is of central interest.

One very interesting area for future research would be to apply the ideas developed above about the effects of the pain of payment to the notion of the benefits of choice sets. That is, I have focused entirely on how the pain of payment influences the cost side of the utility function. However, given that utility is based on the benefits as well as the costs, research on what factors affect the benefit side of the function and how the pain of payment may influence the value side of the function, subsequently influencing choice overload effects, could also be fruitful.
In addition, I have implicitly assumed that if two items cost the same using the same payment mode and from the same assortment size, then the psychological and economic costs are also the same. However, it is possible that different items and product categories may have different pain of payment sensitivities even though the actual cost is identical. For example, suppose that a material good and an experience each are paid for with $100 in cash. Is the reaction to the pain of payment the same for both the material good and the experience? Given recent research on the differential effects of material goods versus experiences on consumer well-being (e.g., Dunn, Gilbert, and Wilson 2011; Carter and Gilovich 2012), understanding factors relating to differences in choice overload effects for material products versus experiences could have important implications for consumer well-being.

In summary, the present research adds to the existing evidence that choice overload is not simply a function of the information associated with more alternatives. Going beyond prior research, this research demonstrates how the pain of payment can either magnify or attenuate the negative effects of larger assortment. Thus, marketers will be well advised to consider the price of products and the payment mechanism used for purchase to determine how many alternatives to offer in a product line.
3. How We Pay Influences Product and Organization Connection

3.1 Introduction

When consumers pay for something, does the form of payment that they use—e.g., whether paying by cash, credit card, or debit card—change how much they value the product they bought or how committed they feel to the brand? From consumer research, consumer welfare, and managerial perspectives, this question lies at the intersection of two fundamental shifts in consumer culture: (1) the decreasing use of cash for payment transactions and (2) declining brand loyalty and product retention. In this paper, I investigate whether the type of payment used to make a purchase can increase how much people value their purchase and influence how connected people feel toward the associated brand/organization.

The past two decades have seen large changes in how frequently people use plastic instead of paper money during payment transactions (Foster, Schuh, and Zhang 2013). In 1999, paper payments (i.e., cash and checks) accounted for nearly 60% of in-store payments. By 2010, that number shrank to a little over 40%, as plastic cards (i.e., debit, credit, and gift cards) became the preferred form of payment for a majority of in-store payments (Foster, Schuh, and Zhang 2013). The trend away from paper seems to be advancing, with mobile and online transactions also gaining momentum.

Over the same time period, product life cycles have shortened substantially, a trend that will likely continue due to rapid technological innovation (Bayus 1994, 1998;
Khessina and Carroll 2008; Klepper 2007). Consumers today have many more brands and products to choose from in any given product category. Consequently, the product turnover rate has increased and brand loyalty has decreased (Van Bellegem 2013). An ‘out with the old, in with the new’ mentality has led to a more competitive marketplace, giving nascent brands an opportunity to succeed, but also making brand commitment and loyalty harder to achieve (Simonson and Rosen 2014).

In this paper, I argue that these two fundamental shifts in consumer culture may be related. In particular, I argue that the way consumers pay can significantly influence their post-transaction connection to the product they purchase and/or to the organization their purchase supports. Drawing on the pain of paying literature (e.g., Prelec and Loewenstein 1998; Raghubir and Srivastava 2008) and theories of dissonance and self-perception (e.g., Bem 1967; Festinger 1957), I argue that consumers justify using more painful forms of payment (e.g., paying by cash or check versus debit/credit card or voucher) by increasing both their post-transaction psychological and behavioral commitment. I test our proposed hypotheses by employing a multi-method approach across four studies. Data from a field experiment, a lab experiment, an online experiment, and an archival data analysis suggest that consumers who use more painful forms of payment are more psychologically connected to their chosen alternative, less connected to their non-chosen alternatives, and are more likely to showcase their behavioral commitment either by publicly signaling support for a cause (i.e., wearing a
lapel pin) or by making a repeat donation, in comparison to those who pay using less painful forms of payment.

3.2 Theoretical Development

In this section, I will review the two lines of literature that provide theoretical development and support for my predictions.

3.2.1 Payment Form and Pain of Payment

Classic economic theory states that the utility of a consumption experience is determined by the sum of the experience’s benefits minus the associated costs (e.g., Deaton 1992; Hicks 1946; Marshall 1920; von Neumann and Morgenstern 1944). Classic theory defines these costs as economic in nature; they are a function of the price paid for the specific good or experience. For example, paying less money overall—e.g., $10 versus $20 for a pair of headphones—decreases the costs associated with an item, subsequently increasing overall utility, whereas paying more money increases costs and decreases utility (e.g., Doob et al. 1969; Hicks 1946).

Recent research on the pain of paying suggests that the benefits and costs of a transaction are not solely economic: subtle nuances of the payment experience can also make a consumption experience more or less attractive. When consumers make purchases, they typically experience a pain of paying, which refers to the negative affective reaction that consumers experience when parting with their money (Zellermayer 1996). This pain is psychological rather than physical in nature (Mažar,
Plassman, Robitaille and Lindner 2015) and depends on factors other than payment magnitude.

The form of payment used for a transaction (e.g., cash, check, credit/debit card) is one such factor influencing the pain associated with paying (Raghubir and Srivastava 2008; Soman 2001, 2003; Thomas, Desai, and Seenivasan 2011). Payment forms vary in terms of the degree of transparency of the payment. The greater the transparency, the more painful and aversive it is for the consumer to part with money. Cash, the legal tender of money, is considered the most transparent and psychologically proximal form of payment. Consumers must physically part with cash in a transaction, so they can easily feel the money they are spending during that transaction and can also easily see the amount being spent (Soman 2003). Subsequently, cash is the most painful form of payment (Raghubir and Srivastava 2008). Paying by check or voucher is less transparent and thus less painful than paying by cash. Whereas checks and vouchers easily show the amount or value of a transaction, no physical money changes hands, leading to consumers feeling less pain of payment in comparison to when they pay by cash (Soman 2001). Credit cards, debit cards, and other forms of plastic money are even less transparent; the ritual of swiping a card obscures the cash value of the transaction, divorcing people further from its economic reality (e.g., Feinberg 1986; Raghubir and Srivastava 2008; Soman 2003; Thomas, Desai, and Seenivasan 2011). Finally, some recent technological developments in consumer payment, such as automatic payroll
deductions or mobile payments, have introduced payment forms that are even less transparent than credit or debit card, as consumers may not even know the payment has occurred.

Though not the focus of the present research, in addition to payment form and payment magnitude, Prelec and Loewenstein (1998) argue that the extent to which individuals experience pain of paying also depends on when they pay for the experience. They argue that paying later for an experience and avoiding debt in that given moment tends to feel less painful than paying at the time of the experience or before the experience has occurred, even if the objective cost remains fixed (Prelec and Loewenstein 1998). Although this theoretical account is consistent with the notion that cash is more psychologically painful than check or credit card, this account also implies that a debit card—which, like cash, also immediately drains one’s resources—should be psychologically no different than cash—and distinct from credit card payments. However, research by Thomas, Desai, and Seenivasan (2011) demonstrates that this is not the case. They find that individuals report less pain of paying with debit cards in comparison to cash. Moreover, to the best of my knowledge, there is no empirical support, published or otherwise, that finds behavioral or psychological differences between debit, credit, and gift cards, which is consistent with the theoretical conceptualization that the pain of payment is caused by the payment form and not by payment decoupling or time discounting of delayed payment (Thomas, Desai, and
Thus, my research centers on the argument that the physical form of payment can influence the disutility or psychological aversion to parting with money, creating varying levels of pain of payment for the consumer, above and beyond the psychological pain experienced from the economic magnitude of the purchase.

The insight that different payment forms are associated with different levels of pain has implications for understanding and predicting real-world consumer behavior. Scholars have shown that using less painful and less transparent forms of money reduces the barrier to spending, increasing (a) the probability of making a purchase from a consideration set, (b) the decision speed and (c) the amount spent while making a purchase from a consideration set (Feinberg 1986; Raghubir and Srivastava 2008; Shah, Bettman, and Payne 2015). Soman (2001) showed that consumers who paid for a past expense using a relatively low-pain credit card were more likely to purchase an additional discretionary product (e.g., a boxed set of CDs from an artist that they liked) than those who paid for the same past expense using a relatively higher-pain check. Similarly, Prelec and Simester (2001) find that individuals will bid nearly twice as much money for an item in an auction setting when using a credit card than when using cash. Interestingly, even priming the notion of cash prior to a product evaluation leads people to focus on a product’s costs and negative attributes, whereas priming debit/credit cards prior to a product evaluation leads to a focus on the product’s benefits and positive attributes (Chatterjee and Rose 2012). In addition, feeling more pain of payment can
decrease immediate post-purchase satisfaction with a product (Soster, Gershoff, and Bearden 2014). These results, along with other prior work in the pain of payment literature, suggest that less painful forms of payment are associated with positive outcomes during consumer deliberation and purchase (e.g., increased willingness to purchase a product, higher willingness to pay for an item, greater point-of-purchase satisfaction).

However, what happens after the purchase has occurred? Although past research has demonstrated that attenuating the pain of payment can increase spending, purchasing, and positive evaluations during the consumer deliberation and purchase process, it remains largely silent on the important question of implications for post-purchase outcomes. To the best of my knowledge, Kamleitner and Erki (2013) have conducted the only scholarly research that investigates the role that payment form may have on product relationships. Specifically, they examined how payment form affects attachment and psychological ownership of a given product. In one study, they found correlational evidence that those who paid for an item of clothing with cash report feeling more ownership at time of payment, attachment, and pain of payment than those who paid for the item with a credit or debit card; however, pain of payment did not influence the effect of payment mode on ownership when added as a covariate. In a second study, they measured whether there are differences in feelings of psychological ownership as a function of (a) whether individuals spend replica cash or a replica plastic
card to pay for a pen and (b) race of participants (Asian vs. non-Asian). In this study, they found no main effects of payment mode or cultural background on psychological ownership, attachment, or pain of payment, but did find a significant interaction for ownership. Non-Asian students immediately experienced a stronger sense of psychological ownership for the pen when they paid by replica cash than if they had paid by replica card; however, Asian students did not show a difference, which the researchers hypothesized might be due to Asians viewing credit cards as a source of investment and debt rather than as a source of convenience. The role of cultural meanings of different forms of payment is a very interesting topic that deserves further research, although it is not the focus of my present work.

This research goes beyond Kamleitner and Erki (2013) and other previous work in several key ways. First, I systematically manipulate the payment forms used across studies (i.e., cash, plastic, voucher, or check) to determine whether the form of the payment has a causal role in significantly influencing an individual’s connection to a purchased product. As discussed earlier, previous research has demonstrated that experiencing less pain of payment can have a positive impact on consumers during the deliberation and point of purchase process (e.g., Chatterjee and Rose 2012; Soster, Gershoff, and Bearden 2014); thus, it is important to determine whether experiencing increased pain of payment can lead to beneficial effects on post-transaction relationships. Second, whereas past research has focused on ownership and attachment to products, I
examine the impact that payment form can have on both product and organizational relationships. Third, Kamleitner and Erki (2013) find an immediate difference of payment form on psychological ownership in their correlational study. I look to fill a void in prior pain of payment literature by investigating how different forms of payment influence long-term psychological and behavioral connection. In particular, across studies, I vary the time periods after the transaction has occurred in order to examine the robustness of the payment effect on downstream consumer relationships. Fourth and finally, I examine the theoretical mechanism of the effect more deeply by looking at the role of pain of paying in the relationship between how one pays and how connected one feels post-transaction. Thus, in the sections that follow, I extend the pain of payment literature by addressing the potential long-term consequences of paying with more or less painful forms of payment on post-transaction psychological and behavioral connection to a product, brand, and organization.

### 3.3.2 Pain, Value, and Commitment

I ground my hypotheses about the relationship between payment form and post-transaction commitment in research on the long-term effects of painful experience. Theory and research in multiple disciplines support the idea that painful experiences lead, somewhat paradoxically, to increased value and commitment (e.g., Bem 1967; Brehm and Self 1989; Festinger 1969; Kivetz and Simonson 2002; Mischel, Cantor, and Feldman 1996). Research on effort justification and dissonance reduction suggests that
people justify prior feelings of investment by valuing the chosen outcome more (Aronson 1997; Aronson and Mills 1959; Cooper and Fazio 1984; Festinger 1957; Kahneman, Knetsch, and Thaler 1991). Gross (1998) argues that people who experience physical or emotional pain to obtain a particular goal or outcome tend to justify the pain of their experience psychologically by seeing more value in the outcome they achieve. This psychological connection between pain and value is consistent with the price-quality heuristic, wherein consumers value expensive products more than cheap products of the same quality (Scitovsky 1945; Stiglitz 1987; Rao and Monroe 1989). More expensive products are more painful to purchase and, to justify this pain, are more valued by consumers. Research by Koo and Fishbach (2010) suggests that even perceived costs can affect consumer expectations and enjoyment.

Applying this theoretical framework to pain of payment and purchasing, I argue that people who pay with more painful forms of money will be both more psychologically and more behaviorally committed to their chosen alternative. There is empirical evidence that certain types of pain can influence commitment. Regarding psychological commitment, Aronson and Mills (1959) found that participants who underwent a more painful and severe initiation to join a group expressed more liking and affiliation for the group than those who had a milder initiation or no initiation at all. Similar effects have also been noted in consumer research (Sheth 1968). Cardozo (1965) demonstrated that exerting more effort in order to acquire a product during a shopping
task produced more favorable initial evaluations of the product. In a recent and related example, Mochon, Norton, and Ariely (2012) found that exerting effort to create a product disproportionately increased consumers’ valuation for the product. Experiencing pain when making a decision not only increases the attractiveness of the chosen alternative, but can also decrease the attractiveness of a rejected alternative (Harmon-Jones and Harmon-Jones 2007). Brehm (1972) conducted an experiment where participants rated the desirability of different products (e.g., toaster or coffeemaker). The participants were then given either a difficult decision (i.e., choosing between two highly rated alternatives) or an easy decision (i.e., choosing between one alternative that was rated high and another that had a low rating). After making their choice, participants rerated the desirability of the products. Individuals who made a psychologically easier or less painful decision did not change their ratings between the alternatives. In contrast, individuals who made a psychologically more difficult or painful decision rated the chosen option as more attractive and the non-chosen alternative as less attractive, a phenomenon known as spreading of alternatives.

Regarding behavioral commitment, the attitudes literature suggests that psychological shifts are associated with subsequent behavioral change congruent with this shift (Ajzen 1991; Fishbein and Ajzen 1975). Evidence for such attitude-behavior consistency between psychological and behavioral commitment can be found in, among others, research on the relationship between commitment to one’s organization and
altruism toward members of that organization (Organ and Ryan 1995) and research by Smith and Swinyard (1983) demonstrating that even a small direct commitment, such as a product trial, can increase purchase behavior. Given the close relationship between psychological and behavioral commitment, we argue that increased pain of payment will, via its effect on psychological commitment, lead to increased behavioral commitment as well. Supporting this assertion, Doob and colleagues (1969) found that introducing a product at a promotional price—effectively lowering the pain of payment—may drive initial sales, but ultimately leads to decreased behavioral commitment, as represented by lower long-term sales.

**Overall Model**

Figure 4: The Impact of Payment Form and Payment Magnitude on Psychological and Behavioral Commitment Through Pain of Paying

Integrating the previous arguments, Figure 4 shows my conceptual framework regarding the downstream consequences associated with the painful elements of a transaction. I hypothesize that using a more psychologically proximal form of payment increases the psychological pain of paying, just as increasing the magnitude of payment makes the transaction feel more painful. I further hypothesize that the pain of paying will increase post-transaction connection, first psychologically in terms of how much
consumers value their experiences and how committed they feel toward the entity they supported with their purchase, and then behaviorally, in terms of how likely they are to publicly signal support for a cause or make a repeat donation. Regardless of whether one increases pain of payment by paying with a more painful form of payment (while keeping the objective payment value constant) or by paying more money overall (and, in turn, keeping the form of payment constant), I argue that increased pain of payment leads the consumer to be more psychologically and behaviorally committed to a given product or organization.

3.3.3 Overview of Experiments

I conducted four studies to investigate how the psychological pain associated with different payment forms affects psychological connection and subsequent behavioral commitment following an economic transaction. I use a multi-method approach, testing my hypotheses using a field experiment, a lab experiment, an online experiment, and archival data. I also operationalize psychological commitment and behavioral commitment in multiple ways, emphasizing the broad applicability of our findings. I categorize any measure that encompasses feelings and intentions as psychological value and commitment. This includes emotional attachment or feelings of connection to a given product or brand, willingness to accept, or estimated likelihood of engaging in a future behavior (e.g., likelihood to recommend a product or brand). I operationalize behavioral commitment as any measure that captures an actual
observable behavior. In the present research, behavioral commitment specifically refers to wearing a lapel pin and making a repeated donation to one’s alma mater.

In Experiment 4, I manipulate the form of payment used for purchase in a controlled field experiment. I examine whether paying for a mug increases the psychological connection to the mug when the mug is purchased with one’s own cash compared to when the mug is purchased with one’s own plastic (i.e., debit/credit or student card). Experiment 4 also examines whether the effect of payment method on post-transaction psychological connection is mediated by pain of payment. In Experiment 5, a laboratory experiment, I rule out the potential alternative explanations that income effects, transaction costs, or halo effects drive the results. Experiment 5 examines whether the pain of paying effect can influence post-transaction psychological connection and behavioral commitment even when the individual is spending someone else’s money and when the objective dollar amount is held constant. This study also assesses whether paying with a more painful form alters the psychological connection for non-chosen alternatives. In Experiment 6, an online experiment, I manipulate the process by which these effects occur by increasing the pain of payment via both payment form and payment magnitude, in order to determine whether an increase in people’s psychological commitment is due just to differences in the payment form or more broadly to pain of payment from any source (e.g., higher payment amount, holding form constant). Finally, in Study 7 I use archival donation data to investigate how the
pain of payment influences post-transaction behavioral commitment in a real-world setting on a longer time horizon by measuring repeat donation likelihood as a proxy for post-transaction connection. Specifically, I examine whether (1) donating in year $t$ by check, a more painful form of payment, versus donating using a credit/debit card or (2) donating a larger amount of money in year $t$, increases the likelihood of donating in year $t + 1$. Study 7 also tests whether the pain of paying effect is robust over time in a domain that has meaningful economic consequences. Figure 5 provides a graphical summary of the theoretical paths that the different studies test.
3.4 Experiment 4: Mug Field Experiment

Experiment 4 investigates whether paying with a more painful form of payment increases how much consumers value a product after the transaction is completed. To establish that there is a causal relationship between payment form and post-transaction
psychological value and connection, I manipulate whether consumers pay for a mug using cash or plastic card. I then examine whether paying by cash increases the perceived value of the mug as measured by the participant’s subsequent willingness to accept amount for the purchased mug (i.e., the endowment effect) and by purchasers’ rated post-transaction psychological connection as measured by their emotional attachment toward the mug. I also examine whether the psychological pain associated with payment mediates the relationship between payment form and post-transaction perceived value and connection.

3.4.1 Method for Experiment 4

3.4.1.1 Procedure and design

The study experimenter approached ninety-eight employees of a private Southeastern university, asking each if they would like to purchase a mug. The mug was dark blue and contained a university logo. Individuals were informed that the mug normally sold for $6.95, but was discounted to $2 as part of a promotion. Individuals were randomly assigned to one of two experimental conditions. In the ‘Pay by Cash’ condition, individuals were told that they could only purchase the mug with cash. In the ‘Pay by Plastic’ condition, individuals were told that they could only purchase the mug with a credit card, debit card, or a pre-paid university card commonly used on campus. The experimental manipulation did not significantly affect the proportion of the 98 potential participants who chose to purchase a mug (PropCash = 60%, PropPlastic = 67%, Chi-
square(1) = .26, \( p = .61 \), which I attribute to the mug’s deeply discounted price (Shah, Bettman and Payne 2015). A total of sixty-three people purchased a mug, 32 in the Pay by Card condition and 31 in the Pay by Plastic condition. Approximately two hours after the transaction, the experimenter approached everyone who purchased a mug and asked them to complete a follow-up survey.

3.4.1.2 Measures

The independent variable in our analysis is Paid by Cash, a dummy variable that indicates whether the participants used cash (Paid by Cash = 1) or a form of plastic (Paid by Cash = 0) to pay for their purchase. As described above, participants were randomly assigned to pay by cash or by plastic; they did not choose their form of payment. Individuals who were instructed to pay by plastic were allowed to pay using a debit, credit, or pre-paid university card, which was commonly accepted across campus. I asked the follow-up questionnaire to all participants who purchased a mug (n=63), excluding the 35 participants who did not make a purchase.

The dependent and mediating variables were measured on a post-transaction questionnaire. I measured Psychological Connection with two questions. First, I asked participants “How emotionally attached are you to the mug (1=Not at all, 7=Very Attached)?” Second, I asked the participants about the minimum price that they would demand to give up their mug (e.g., their “willingness to accept”). I standardized and
then averaged these measures to produce an index of psychological value and connection (r = .404, p = .001).

The mediating variable is Pain of Payment. Pain is traditionally measured, in both medical and non-medical settings, with single-item measures (see, e.g., Christian, Eisenkraft and Kapadia 2015; Soster, Gershoff, and Bearden 2014; Thomas, Desai and Seenivasan 2011; Wong and Baker 1988). Accordingly, participants described their pain by answering the question: “How painful was paying for the mug when you originally bought it?” (1=Not at all, 7=Very Painful). Data from a separate online sample confirmed that responses to this question correlate very highly (r = .72; n = 201; p < .001) with responses to an adapted form of the widely-used Wong and Baker (1998) Faces Pain Rating scale, where people identify the cartoon face that best corresponds to their current feeling of pain (Soster, Gershoff and Bearden 2014; Thomas, Desai and Seenivasan 2011).

### 3.4.2 Results for Experiment 4

I analyze the data in two stages. I first investigate whether the experimental manipulation had the predicted effect on the Psychological Connection dependent variable. I then test whether the manipulation affected Pain of Payment and whether Pain of Payment mediates the experimental manipulation’s effect on Psychological Connection.
3.4.2.1 Effects of Payment Form

Payment form significantly influenced post-transaction valuation. Individuals who paid with cash expressed more Psychological Connection in comparison to those who paid with plastic ($M_{\text{Cash}} = 0.46$, $SD_{\text{Cash}} = 0.71$, $M_{\text{Plastic}} = -0.48$, $SD_{\text{Plastic}} = 0.68$, $t(61.0) = 5.33$, $p < .001$; see Figure 6). This effect is both significant and relatively large in terms of economic impact. To illustrate the size of this effect, consider the willingness to accept question, which was measured in dollars. The participants in the cash condition asked for an average of $6.71$ ($SD = 1.63$) to sell the mug back, while the participants who paid with plastic asked for only $3.83$ ($SD = 1.79$).

Figure 6: Psychological Commitment as a Function of Payment Form, Experiment 4
3.4.2.2 Pain of Payment

Before testing for mediation, I assessed whether the experimental manipulation influenced the participant’s subjective Pain of Payment ratings. As expected, participants who paid by cash self-reported more pain than individuals who paid by plastic (\(M_{\text{Cash}} = 4.09, SD_{\text{Cash}} = 1.45, M_{\text{Plastic}} = 2.10, SD_{\text{Plastic}} = 1.47, t(60.9) = 5.44, p < .001\)).

3.4.2.3 Mediation Analysis

I assessed whether Pain of Payment mediates the relationships between payment form — the experimental manipulation — and the Psychological Connection dependent variable. I used structural equation models and bootstrap analysis to test the significance of the mediation (Zhao, Lynch, and Chen, 2010). A 1,000-draw bootstrap suggested that Pain of Payment significantly mediates the effect of paying by cash on Psychological Connection (Indirect effect of paying by cash = 0.31, SE = 0.11, \(z = 2.76, p = .006\); Direct effect = 0.62, SE = 0.21, \(z = 3.03, p = .002\)). Using the language of Zhao, Lynch, and Chen (2010), this pattern of results provides evidence of “complementary mediation.”

3.4.3 Discussion of Experiment 4

Experiment 4 suggests that payment form influences the psychological connection individuals feel towards their chosen option. The subjective pain associated with paying mediated this effect. Holding the price of the item constant, the psychological pain of payment increased the psychological connection consumers felt toward the product they purchased.
Experiment 4 has several limitations. First, I used self-report measures of post-transaction psychological connection and was not able to assess the behavioral consequences of payment form. Second, the participants had to spend their own money in order to participate in Experiment 4. Although $2 should be too small to create wealth and income effects, I do not know whether having people pay for the mugs created a biased sample of participants given that I only measure those who chose to purchase the mug. In other words, I do not know anything about people who did not want a mug. In addition, there may also be economic differences across payment forms. For example, credit card users who have rewards points or have cash back programs may, in fact, be paying less than $2. Similarly, it is possible that cash users may have limited cash available in their wallet and thus might have to incur an automatic teller machine (ATM) fee or might perceive additional transaction costs by making an additional trip to the ATM in order to make the cash payment. For these cash users, $2 may feel greater than $2 due to these additional costs. Third, halo effects might also be driving the results; individuals may not feel more connected to their purchases per se, but rather may simply have a more positive impression of their purchase (Nisbett and Wilson 1977). To overcome these limitations, Experiment 5 uses a controlled laboratory experiment to examine whether donating someone else’s money increases psychological connection, in turn increasing behavioral commitment. Experiment 5 also tests whether increasing the
pain of payment affects connection to just the chosen alternative or whether the pain of payment also influences connection to the non-chosen alternatives.

### 3.5 Experiment 5: Charity Laboratory Experiment

In Experiment 5, I test whether having individuals use more or less painful forms of payment (i.e., $5 cash or a $5 voucher) affects psychological connection to a chosen charity and subsequently influences behavioral commitment, even when the donated money is not their own. In addition, I test whether psychological connection to the non-chosen alternatives is influenced by payment form. I hypothesize that increasing the pain of payment will (1) increase both psychological connection and behavioral commitment to the chosen alternative and (2) decrease psychological connection to the non-chosen alternatives. I measure psychological connection by asking participants to complete self-report measures. I measure behavioral commitment by measuring whether participants wear a ribbon lapel pin from their chosen charity one week following their initial donation (Baca-Motes et al. 2013).

#### 3.5.1 Method for Experiment 5

**3.5.1.1 Participants**

Ninety-four undergraduates (61.7% female) from a Southeastern University participated in this between-subjects experiment.
3.5.1.2 Experimental Manipulation

The participants were randomly assigned to one of two payment form conditions. Half of the participants donated to one of three charities using a five-dollar bill, while the other half donated using a five-dollar voucher. The five-dollar voucher had the same dimensions as the five-dollar bill (6.14 inches long \(\times\) 2.61 inches wide \(\times\) .004 inches thick) so as to limit potential confounds due to differences inferred from the size of the payment modes.

In order to rule out wealth effects, none of the participants in this study donated their own money. However, I hypothesize that transactions conducted with another person’s money will still lead people to experience feelings of pain, although the effect is likely to be smaller. This belief is grounded in research showing that conscious and nonconscious primes influence downstream behavior (Lang et al. 1998; Leventhal and Tomarken 1986; Zemack-Ruger et al., 2007). According to this literature, concepts may be strongly linked with specific feelings and behaviors. Invoking those concepts activates the associated memories and behaviors, regardless of whether the concept was consciously or subjectively experienced. Extending this paradigm to the present study, I argue that the concept of paying money is automatically associated with pain of payment feelings. Therefore, I expect that individuals who spend other people’s money—even though they do not personally experience an economic loss—will still
experience pain via the automatic association between payment and the subjective pain associated with a particular payment form.

3.5.1.3 Procedure and design

Participants arrived at the lab and were informed that they would be taking part in a two-part study involving problem-solving and evaluating three different charities. Upon entering the lab, participants were given $7 (in the form of a $5 bill and two $1 dollar bills) as payment for their participation in the study plus either an additional $5 cash or a $5 voucher, which they were told explicitly would be given to one of three charities of their choice during the second part of the experiment on behalf of the school. Having participants donate money that was not theirs reduced concerns that wealth effects or transaction costs were driving the relationship between the pain of payment and post-transaction connection.

Following the completion of the unrelated filler task, participants were told that they would have a chance to donate the $5 cash/voucher to one of three charities: Cancer Research Institute, Earthworks Environmental Organization, or Elizabeth Glaser Pediatric Aids Organization. All charities are real and recently received an “A” rating from an annual charity review (http://www.charitywatch.org/toprated.html); thus, they did not differ in terms of quality or effectiveness. Individuals were then given three clasp envelopes with a one-page description pasted on the front for each charity. The
description for each charity was provided in order to ensure that the information was similar across choices (see Appendix A for descriptions).

Participants were instructed to donate to their preferred charity by placing their $5 cash/voucher into the associated envelope. They could not give any more (or less) than $5 and could not split the money up between one or more charities. The participants were then given a questionnaire asking them about their feelings toward the charity. The questionnaire measured the participant’s post-transaction psychological connection and positivity (see below for details).

After completing the questionnaire, individuals were given a small ribbon lapel pin as a token of appreciation from the charity organization. The ribbon lapel pins were identical in shape and size but varied by color. A purple lapel pin corresponded to a donation to the Cancer Research Institute, a green lapel pin corresponded to a donation to the Earthworks Organization, and a red lapel pin corresponded to the Elizabeth Glaser Pediatric AIDS Foundation.

One week after the experiment, all participants were emailed a follow-up questionnaire. The email again thanked the participants for their participation. Participants were also informed that the charity (which remained unspecified so that everyone could receive the same email) had a few follow-up questions. This follow-up questionnaire included our behavioral measures of commitment.
3.5.1.4 Measures

There are two sets of measures in this study. The psychological variables were measured in the post-donation questionnaire; the behavioral variables were measured in the follow-up questionnaire that participants received one week after the experiment.

The post-donation questionnaire measured several items using seven-point scales (1 = Strongly Disagree; 7 = Strongly Agree). First, the participants described their Psychological Connection with a three-item scale. The scale items asked about the participant’s connection to the charity’s values and mission, their estimated likelihood of recommending the charity to a friend, and their estimated likelihood of donating in the future to the charity (Cronbach’s alpha = .93). I consider the questions that refer to an “estimated likelihood” to be measures of psychological, rather than behavioral, connection because even the most sincere intentions do not always translate into actual behaviors. Second, the participants described the Positivity of the charity with a four-item scale. The items on this scale asked participants about the charity’s competence, genuineness, efficiency, and whether it will fulfill its goals (Cronbach’s alpha = .933). I measured the positivity rating of each charity to rule out the alternative explanation of a halo effect regarding the participant’s chosen charity (Nisbett and Wilson 1977). These two scales exhibited discriminant validity as per Fornell and Larcker’s (1981) test: the average variance extracted (AVE) for the two latent constructs (AVE for commitment = 0.75; AVE for positivity = 0.70) is greater than the variance shared by those latent
constructs (Shared variance = 0.48). Participants completed these two scales three times, once for each of the three charities.

The follow-up questionnaire asked about the participant’s post-experiment behavior. To measure post-transaction behavioral connection, I asked participants if they wore their lapel pin during the last week (Binary outcome: Yes/No) and how many days they wore the pin (1 = 1 Day, 2 = 2-3 Days, 3 = 4-5 Days, 4 = 6+ Days). Unrelated to the present research, I also asked the participant if they thought the charity should continue giving out ribbon pins to donors (Binary outcome: Yes/No).

3.5.2 Results for Experiment 5

3.5.2.1 Post-Donation Questionnaire

First, looking at Psychological Connection, I found that individuals who donated to charity using $5 cash felt significantly more psychological connection to their chosen charity than participants who donated using a $5 Voucher (M\text{Cash} = 5.81, SD\text{Cash} = 0.88, M\text{Voucher} = 5.32, SD\text{Voucher} = 1.29, t(81.0) = 2.15, p = .034). I also found that individuals who donated using $5 Cash felt significantly less committed to their non-chosen alternatives (using the average of the two non-chosen alternatives) than those who donated to charity using a $5 Voucher (M\text{Cash} = 3.89, SD\text{Cash} = 1.10, M\text{Voucher} = 4.56, SD\text{Voucher} = 1.27, t(90.2) = -2.77, p = .007, see Figure 7). Second, I used the Positivity measure to investigate whether payment form influences post-transaction psychological connection, rather than producing a more generalized halo effect. Unlike the psychological connection measure,
I found no evidence that individuals who donated via cash viewed their chosen charity more positively than those who donated by voucher ($M_{\text{Cash}} = 5.86$, $SD_{\text{Cash}} = 0.85$, $M_{\text{Voucher}} = 5.76$, $SD_{\text{Voucher}} = 1.11$, $t(86.3) = .46$, $p = .64$). Payment form also did not significantly influence positivity measures for the non-chosen alternatives, ($M_{\text{Cash}} = 5.28$, $SD_{\text{Cash}} = 0.92$, $M_{\text{Voucher}} = 5.36$, $SD_{\text{Voucher}} = 1.06$, $t(90.3) = -.403$, $p = .69$).

![Figure 7: Psychological Connection for Chosen and Non-Chosen Alternatives as a Function of Payment Form, Experiment 5](image)

3.5.2.2 Post-Transaction Behavioral Commitment

Out of the initial ninety-four participants, sixty-eight responded to the email survey ($n_{\text{Cash}}=39$, $n_{\text{Voucher}}=29$). Consistent with my hypothesis, individuals who donated by cash instead of voucher were both significantly more likely to report wearing the
lapel pin after one-week ($\chi^2(1) = 8.66, p = .003; M_{Cash} = 51.3\%, M_{Voucher} = 13.8\%$) and reported wearing the lapel pin more frequently ($M_{Cash} = 1.31, SD_{Cash} = 1.64, M_{Voucher} = 0.48, SD_{Voucher} = 1.27, t(65.8) = 2.33, p = .023$, see Figure 5). Finally, a mediation analysis suggests that increased Psychological Connection toward the chosen alternatives mediated the effect of payment method on the post-transaction behavioral commitment measure ($Direct\ effect = 0.23, SE = 0.12, z = 1.84, p = 0.065; Indirect\ effect = 0.15, SE = 0.07, z = 2.13, p = 0.033$). This result suggests that payment form influenced post-transaction psychological connection, which then influenced the likelihood to demonstrate post-transaction behavioral commitment via publicly signaling support for the charity.

![Figure 8: Proportion Wearing a Lapel Pin After One-Week as a Function of Payment Form, Experiment 5](image-url)
3.5.3 Discussion of Experiment 5

The results of Experiment 5 suggest that a more transparent payment form (cash) increases the degree of connection to the chosen alternative beyond that associated with a less transparent form (voucher), even when people pay with someone else’s money. Furthermore, paying with cash increased the propensity to publicly signal their connection and decreased the psychological connection towards the non-chosen alternatives. Experiment 5 also ruled out two potential alternative explanations for the relationship between payment form and post-transaction connection. First, since participants were donating someone else’s money, wealth effects or transaction costs are not driving the relationship between pain of payment and post-transaction connection. Second, given that payment form did not lead to significant differences between positivity measures, the pain of payment effects cannot be attributed to a halo effect.

One of the limitations of Experiment 5 is that I did not measure pain of payment, the mediating variable that could better reveal whether the participants in the cash condition were more committed because they experienced more pain. This is a limitation because the participants in Experiment 5 were spending someone else’s money and, therefore, may not have experienced as much pain as people who spend their own money. I thank the anonymous reviewers for pointing out this oversight. Thus, I do not have direct evidence for the role of pain of payment in this study, and my conclusions regarding the process therefore must be more speculative for Experiment 5. However, I
do have direct evidence for the role of pain of payment in both Experiment 4 and
Experiment 6.

3.6 Experiment 6: Online Experiment Manipulating Form and
Magnitude

In Experiment 6, I examine whether post-transaction connection is driven by an
effect specific to payment form or, rather, as I theorized, by any variable that increases
the pain of payment. Specifically, Experiment 6 tests whether post-transaction
connection increases when pain of payment is manipulated via either changes in
payment form (as in the previous two studies) or changes in payment magnitude. As I
previously argued that post-transaction connection is related to pain of payment, I
hypothesize that paying with cash (versus a debit card) and paying more money ($20
versus $10) will both increase the pain of paying, thereby increasing the psychological
connection to a chosen alternative.

3.6.1 Method for Experiment 6

3.6.1.1 Participants

I recruited one hundred eighty-nine paid volunteers (42.3% female) using
Amazon’s Mechanical Turk online-survey sampling site to participate in this between-
subjects experiment. All participants were over the age of 18 and were citizens of the
United States.
3.6.1.2 Experimental Manipulation

This study had a 2 (payment form: cash or Visa debit card) × 2 (payment magnitude: $20 or $10) between subjects design. Participants were given a scenario where they chose a pair of headphones to use for a business trip. They were then randomly assigned to one of four payment conditions describing what form was used and the amount of money that s/he paid for the headphone purchase: $20 using cash, $20 using a Visa debit card, $10 using cash, or $10 using a Visa debit card.

3.6.1.3 Procedure and design

All participants were told to imagine that they would be purchasing a new pair of headphones to use on an upcoming business trip; they then went through a detailed picture-book style vignette. Participants were presented with information on three pairs of identically priced headphones with different features. They chose one pair to purchase. Participants were then told to imagine bringing their chosen pair of headphones to the checkout counter to pay for the purchase. At this point, participants were randomly assigned to one of the four payment conditions: $20 using cash, $20 using a Visa debit card, $10 using cash, or $10 using a Visa debit card. Participants in different experimental conditions saw an image showing the form of payment and amount of money associated with their experimental condition. All participants were then asked, “How painful was paying for the headphones (i.e., how painful was giving up your money)?” (1=Not at all Painful, 5=Very Painful). After answering this question,
all participants clicked through the same picture-book style vignette, where they were told that they used their headphones while running errands prior to their trip, while they were in the airport and during the flight as they were heading to their business trip, and when they returned home from their business trip. At the conclusion of the vignette, participants completed a purchase experience questionnaire regarding their headphones. The purchase experience questionnaire measured the participant’s post-transaction psychological connection.

3.6.1.4 Dependent Variable

In addition to the pain measure described above (the proposed mediator), participants rated how emotionally attached they were to their headphones (1=Not at all Attached, 5=Very Attached) and how likely they were to recommend the headphones to a family member or friend (1=Very Unlikely, 7=Very Likely). I created a measure of Psychological Connection by standardizing and then averaging the responses from the two items ($r = .43$, $p < .001$).

3.6.2 Results for Experiment 6

I analyzed the data in two stages. I investigated whether the experimental manipulations had the predicted effect on the dependent variable of Psychological Connection, whether the manipulation affected the Pain of Payment mediator, and whether Pain of Payment mediates the experimental manipulation’s effect on the dependent variable.
3.6.2.1 Effects on Psychological Connection

The experimental manipulations of payment form and payment magnitude both significantly influenced Psychological Connection. Regarding payment form, individuals who imagined paying with cash reported significantly higher Psychological Connection than participants who paid with ‘plastic,’ regardless of payment magnitude (M_{Cash} = 0.16, SD_{Cash} = 0.84, M_{Plastic} = -0.15, SD_{Plastic} = 0.84, F(1,185) = 4.50, p = .009). These effects are consistent with my hypothesis and replicate the results from the first two experiments of this essay. Regarding payment magnitude, individuals who imagined paying more money ($20), regardless of payment form, reported significantly higher levels of psychological connection than participants who paid less money (M_{$20} = 0.22, SD_{$20} = 0.95, M_{$10} = -0.23, SD_{$10} = 0.66, F(1,185) = 14.98, p < .001). The interaction effect of payment form and payment magnitude on Psychological Connection was not significant, F(1,185) = 1.59, p = .12; M_{Cash/$20} = 0.28, M_{Plastic/$20} = 0.15, M_{Cash/$10} = 0.02, M_{Plastic/$10} = -0.48).

3.6.2.2 Effects on Pain of Payment

Before testing for mediation, I assessed whether the experimental manipulation influenced the participant’s subjective Pain of Payment ratings. As predicted, participants who paid by cash reported more pain than individuals who paid by plastic (M_{Cash} = 1.98, SD_{Cash} = 1.07, M_{Plastic} = 1.56, SD_{Plastic} = .73, F(1,185) = 12.1, p < .001). Also, consistent with classic economic theory, participants who paid more money self-
reported experiencing more pain than individuals who paid less money (M$_{20}$ = 2.13, SD$_{20}$ = 1.00, M$_{10}$ = 1.37, SD$_{10}$ = .66, F(1,185) = 39.2, p < .001). As with Psychological Connection, the interaction between payment form and payment magnitude did not have a significant effect on Pain of Payment, F(1,185) = 1.33, p = .25; M$_{Cash/20}$ = 2.41, M$_{Plastic/20}$ = 1.86, M$_{Cash/10}$ = 1.51, M$_{Plastic/10}$ = 1.23).

### 3.6.2.3 Mediation Analysis

I assessed whether Pain of Payment mediates the relationships between the two manipulated variables—Pay by Cash and Payment Magnitude—and Psychological Connection. I used structural equation models and bootstrap analysis to test the significance of the mediation (Zhao, Lynch, and Chen, 2010). A 1,000-draw bootstrap suggested that Pain of Payment significantly mediates both the effect of Pay by Cash on Psychological Connection (Indirect effect of paying by cash = 0.10, SE = 0.04, z = 2.62, p = .009; Direct effect = 0.21, SE = 0.12, z = 1.76, p = .078) and the effect of Payment Magnitude (Indirect effect of increased payment magnitude = 0.17, SE = 0.05, z = 3.25, p < .001; Direct effect = 0.28, SE = 0.14, z = 2.06, p = .040). Using the language of Zhao, Lynch, and Chen (2010), there is evidence of an “indirect-only mediation” for the relationship between Payment Form, Pain of Paying, and Psychological Connection and a relationship of “complementary mediation” between Payment Magnitude, Pain of Paying, and Psychological Connection.
3.6.3 Discussion of Experiment 6

The results of Experiment 6 replicate and extend the results of the previous studies in three ways. First, I provide additional evidence that the relationship between payment form and post-transaction psychological connection is mediated by feelings of subjective pain. Second, I find that manipulating payment form and payment magnitude have a similar effect on ratings of pain and post-transaction psychological connection. These results suggest that manipulating the pain of payment—either through payment form or payment magnitude—increases post-transaction psychological connection. Thus, the effect on post-transaction connection is not unique to payment form.

Experiment 6 also shares some of the limitations of Experiment 4 and Experiment 5. Specifically, all of these studies looked at relatively low-value purchases and relatively short time-horizons. The participants in Experiment 4 purchased a $2 mug and were surveyed a few hours later; the participants in Experiment 5 donated $5 to charity and were surveyed a week later; the participants in Experiment 6 imagined paying for headphones and were asked about their psychological connection approximately ten minutes later. The goal of Study 7 is to provide real-world evidence that people who pay with a more painful form of money tend to exhibit longer-term connection and commitment, demonstrated by their likelihood to make a repeat transaction.
3.7 Study 7: Archival Donation Data Analysis

Study 7 investigates the relationship between how alumni pay for a charitable donation to their alma mater and their probability of making future donations. Specifically, I use an archival data set of alumni donations to assess whether increasing the pain of payment by paying with a more painful form of payment or by paying more money in year $t$ is associated with an increased probability of donating again in year $t + 1$. Alumni donations provide a suitable context for testing my hypothesis about the relationship between pain of payment and post-transaction connection because making a repeat donation is a clear measure of behavioral commitment to one’s organization.

3.7.1 Data and Variables

The alumni donations database includes information about all of the donations alumni contributed to a top-ranked business school between 2005 and 2013. Across these nine years, 9,482 alumni had 71,110 opportunities to make a yearly donation to their alma mater and made a total of 35,113 donations. The total number of donation opportunities is 71,110 rather than 85,338 (9,482 alumni * 9 donation years) because alumni do not enter the database until after they graduate.

3.7.1.1 Alumni Information

The data set includes information about alumni who donated to their business school. The dummy variable $Male$ equals 1 if the donor is male, $Graduating Class$ indicates the year that the donor graduated from the university, and the dummy
variable *Attends Reunions* indicates whether the alumnus(a) attended any of the school’s reunions. I include this reunion information in my analysis as a control variable because previous research suggests that people who attend reunions are more likely to donate to their university (Netzer, Lattin, and Srinivasan 2008).

### 3.7.1.2 Donation Opportunity Information

The data set also includes information about what the 9,482 alumni did during the 71,110 opportunities they had to make a yearly donation. For each donation opportunity, I use a dummy variable *Donated in Year t* to indicate whether or not the alumnus(a) made a donation during that fiscal year, the logarithm plus one of the total *Donation Value* the alumnus(a) contributed during that year, and a series of dummy variables to indicate the *Donation Year*. The outcome variable is *Future Donation*, a dummy variable that indicates whether the donor made a donation in Year \( t + 1 \).

Importantly, I also have information about how the donors paid for each donation. In this dataset, the more painful form of donation payment is paying by check, whereas the less painful form is paying by debit or credit card (Soman 2003). Although this database does not distinguish whether a debit or credit card (i.e., plastic) was used to make a particular card donation, prior research suggests that both types of card payments are relatively low pain forms of payment in comparison to checks (Soman 2003). A small percentage of the donations were also made using other non-traditional payment forms (e.g., wire transfer, stock gifts, etc.).
3.7.1.3 Analytical Strategy

I had to make a series of decisions about how to best test my hypotheses. To be as transparent as possible, I discuss all of the analytical strategies I considered and why I eventually settled on our chosen alternative.

The initial analytical strategy considered was to study how more painful forms of payment influence future donation behavior with panel analysis. Panel analysis would allow me to assess the relationship between within-person variations in payment forms and variations in future donation behavior, while also controlling for any individual differences that may create between-person differences in the predictor or outcome variable (Hagenaars 1990; Kessler and Greenberg 1981). Unfortunately, the archival data are not amenable to this analytical strategy. My review of the data revealed that most alumni always used the same payment form—greatly reducing the power of my analysis—and the few alumni who switched tended to make their early donations with checks and then switch to some form of plastic for their later donations. This trend suggests that any changes in payment form decision may be a proxy for a third unmeasured variable that may also be related to donation behavior. Thus, with a restricted sample and endogeneity concerns, I concluded that the data were not amenable to studying whether within-person changes in payment form cause changes in future donation behavior. However, with causality established by the experiments in Experiments 4, 5, and 6, I felt that the archival data could still provide a real world
replication of the relationship between payment form and post-transaction behavioral commitment.

I test my hypotheses by comparing the future donation behaviors of the 2,057 alumni who make all of their donations via check to the 4,041 alumni who make all of their donations via plastic. As every donation is nested within an alumnus, these analyses required a multilevel model. Specifically, the model must assess whether a characteristic of the alumni—i.e., whether they pay by cash or card—influences the loyalty created by making a donation while also accounting for the interdependence inherent in the data. How to best model this interdependence is not a trivial question as different communities of scholars recommend different approaches to multilevel data. Econometricians often put extensive thought into how to properly model the interdependence among the error terms, to improve the robustness of the estimators, and to correct potential issues of endogeneity. Scholars from this tradition would most likely recommend that we test our hypotheses with fixed effect models; they would only recommend random effects when a Hausman-style test (Hausman 1978) confirms that the random effects are uncorrelated with the predictors (Mundlak 1978). Statisticians, in contrast, are more likely to use “mixed-effects” models that use random effects to model interdependence and fixed-effects parameters to estimate the relationships between the predictors and the outcome (Gelman and Hill 2006). In this tradition, the decision to model interdependence with random, rather than fixed, effects is often based on
whether the people in the data can be considered a suitably random sample of a larger population of interest (Pinheiro and Bates 2000). Interdependence between the predictors and the random effects is not necessarily a limitation of mixed-effects models. Instead, one of the features of these models is that they allow researchers to estimate the effects of predictors that both do and do not vary within-person.

Given these differences, I decided to use a mixed-effects model for three reasons. First, I would like to model how the individual-level characteristics of the donors influence donation behavior, as these associations will replicate the findings of previous studies. Second, I would like to use this sample of data to make inferences about the larger population of alumni at similar institutions, rather than restrict my estimate to the population at hand. Third, I am not interested in trying to establish causality with these data, the primary focus of most econometrics approaches. However, I acknowledge that other researchers may strongly prefer a fixed effects approach. Therefore, I also test whether fixed-effects models produce similar results to those from the mixed-effects model.
3.7.2 Results

Table 3: Descriptive Statistics for Donor and Donor Characteristics, Study 7

<table>
<thead>
<tr>
<th>Donor Characteristics</th>
<th>All Alumni</th>
<th>Alumni Who Use Plastic</th>
<th>Alumni Who Use Checks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>73%</td>
<td>74%</td>
<td>72%</td>
</tr>
<tr>
<td>Graduating Class</td>
<td>1999.5</td>
<td>2002.4</td>
<td>1993.8</td>
</tr>
<tr>
<td>Attends Reunions</td>
<td>18%</td>
<td>20%</td>
<td>18%</td>
</tr>
<tr>
<td>Donor Uses Checks</td>
<td>34%</td>
<td>0%</td>
<td>13%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Donation Characteristics</th>
<th>All Alumni</th>
<th>Alumni Who Use Plastic</th>
<th>Alumni Who Use Checks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log(Donation Value + 1)</td>
<td>2.23</td>
<td>2.34</td>
<td>2.02</td>
</tr>
<tr>
<td>Donates in Year $t + 1$</td>
<td>36%</td>
<td>35%</td>
<td>36%</td>
</tr>
<tr>
<td>Donates in Year $t + 1$ after donating in Year $t$</td>
<td>59%</td>
<td>57%</td>
<td>62%</td>
</tr>
<tr>
<td>Donates in Year $t + 1$ after not donating in Year $t$</td>
<td>21%</td>
<td>22%</td>
<td>19%</td>
</tr>
</tbody>
</table>

Table 3 shows the descriptive statistics for the alumni who donate via check and via plastic. In addition to highlighting some of the differences between these groups of alumni—e.g., the alumni who use checks tend to be older and less likely to attend reunions—these descriptive statistics are consistent with both prior research on pain of payment and my hypotheses. I see that the pain of payment reduces the likelihood of initiating a donation: compared to donors who use plastic, donors who use checks to make donations are less likely to start making donations in Year $t + 1$ if they have not made a donation in Year $t$ (Plastic Probability = 21.6%, Check Probability = 18.9%, Chi-squared(1) = 23.1, $p < .001$). Consistent with my hypothesis, the descriptive statistics also suggest that more painful forms of payment have a positive effect on future financial commitment. Figure 9 reflects the percentage of people donating in Year $t + 1$ after donating via check or card in Year $t$. Alumni who donate by check in year $t$ are significantly more likely to donate in year $t + 1$ (Check probability = 62.3%) than those who donate by plastic (Plastic probability = 56.7%, Chi-squared(1) = 47.3, $p < .001$),
suggesting that people who choose to pay with a more painful form of payment tend to also be more financially committed in the following year.

![Proportion Donating the Following Year as a Function of Payment Form, Study 7](image)

**Figure 9: Proportion Donating the Following Year as a Function of Payment Form, Study 7**

I formally test my hypothesis with a mixed effects logistic regression model. In this model, the outcome variable is whether the donor made a donation in Year $t + 1$.

The predictor variables are then organized in terms of their level of analysis. At the level of the donation opportunity—i.e., Level 1 variables in the language of hierarchical linear modeling (HLM; Raudenbush 2002)—I include information about whether the donor *Donated in Year t*, the total *Donation Value*, and the dummy variables indicating the
Donation Year. The donor level—i.e., Level 2—predictors describe whether the donor is Male, whether he or she Attends Reunions, and most importantly, whether the donor consistently donates via check or card, as measured with the dummy variable Donor Uses Checks (1 if check used, 0 if card used). I then test our hypothesis by studying the cross-level interaction between the Level 1 variable Donated in Year t and the Level 2 variable, Donor Uses Checks. My hypothesis predicts that this cross-level interaction term will be positive and significant.
Table 4: Mixed Effects Model, Study 7

<table>
<thead>
<tr>
<th></th>
<th>Model 1A</th>
<th>Model 1B</th>
<th>Model 1C</th>
<th>Model 1D</th>
<th>Model 1E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-3.04 ***</td>
<td>8.29 ***</td>
<td>7.31 ***</td>
<td>6.00 ***</td>
<td>6.30 ***</td>
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<tr>
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<td>(0.23)</td>
<td>(0.23)</td>
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<td>Donor-Level Variables</td>
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<td></td>
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<tr>
<td>Male</td>
<td>0.02</td>
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<td>0.01</td>
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</tr>
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<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Graduating Class</td>
<td>0.0013 ***</td>
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<td>-0.0041 ***</td>
<td>-0.0045 ***</td>
<td>-0.0009 ***</td>
</tr>
<tr>
<td></td>
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<td>(0.0001)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Attitude Toward Class</td>
<td>0.41 ***</td>
<td>0.26 ***</td>
<td>0.26 ***</td>
<td>0.22 ***</td>
<td>0.32 ***</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Donor Uses Checks</td>
<td>0.01</td>
<td>-0.01</td>
<td>-0.15 *</td>
<td>0.60</td>
<td>-0.13 **</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Donation-Level Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Donation Year t = 2006</td>
<td>-0.16 **</td>
<td>-0.07</td>
<td>-0.07</td>
<td>-0.08</td>
<td>-0.08</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Donation Year t = 2007</td>
<td>-0.20 ***</td>
<td>-0.05</td>
<td>-0.05</td>
<td>-0.09</td>
<td>-0.09</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Donation Year t = 2008</td>
<td>-0.547 ***</td>
<td>-0.32 ***</td>
<td>-0.32 ***</td>
<td>-0.33 ***</td>
<td>-0.33 ***</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Donation Year t = 2009</td>
<td>-0.50 ***</td>
<td>-0.30 ***</td>
<td>-0.30 ***</td>
<td>-0.29 ***</td>
<td>-0.29 ***</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Donation Year t = 2010</td>
<td>-0.37 ***</td>
<td>-0.16 **</td>
<td>-0.16 **</td>
<td>-0.15 **</td>
<td>-0.14 **</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Donation Year t = 2011</td>
<td>-0.37 ***</td>
<td>-0.19 ***</td>
<td>-0.19 ***</td>
<td>-0.18 ***</td>
<td>-0.17 **</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Donation Year t = 2012</td>
<td>-0.45 ***</td>
<td>-0.26 ***</td>
<td>-0.25 ***</td>
<td>-0.26 ***</td>
<td>-0.25 ***</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Donation Made in Year t</td>
<td>0.96 ***</td>
<td>0.87 ***</td>
<td>0.12</td>
<td>-0.03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.04)</td>
<td>(0.09)</td>
<td>(0.09)</td>
<td></td>
</tr>
<tr>
<td>Log(Donation Value + 1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.17 ***</td>
<td>0.18 ***</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
</tr>
<tr>
<td>Cross-Level Interaction</td>
<td>Donation Made in Year t * Donor Uses Checks</td>
<td>0.25 ***</td>
<td>0.30 ***</td>
<td>(0.06)</td>
<td>(0.06)</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
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</tr>
<tr>
<td>AIC</td>
<td>4231.5</td>
<td>41281.5</td>
<td>41262.0</td>
<td>41155.9</td>
<td>41126.5</td>
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<tr>
<td>BIC</td>
<td>4242.6</td>
<td>41400.9</td>
<td>41389.8</td>
<td>41283.8</td>
<td>41262.9</td>
</tr>
</tbody>
</table>

Table 4 shows the results of the multilevel logistic regression models I use to investigate my hypothesis. Model 1A regresses the binary variable of future donations against all predictor variables except the variables related to the year’s donation.
behavior. As expected, I find that people are significantly more likely to donate when they are reunion attendees ($b = 0.41$, $SE = 0.06$, $z = 9.73$, $p < .001$). I find that donation likelihood varied across the years. This baseline model also reveals no difference in future donation likelihood between donors who use checks and donors who use plastic ($b = 0.01$, $SE = 0.05$, $z = 0.10$, $p = .91$).

Model 1B adds the dummy variable *Donation Made in Year* $t$ into the regression model. As expected, I find that making a donation in year $t$ increases the donor’s likelihood of donating again in year $t + 1$ ($b = 0.96$, $SE = 0.03$, $z = 29.87$, $p < .001$).

Model 1C incorporates the cross-level interaction term that I use to test my hypothesis. Consistent with my hypothesis, the cross-level interaction effect ($b = 0.25$, $SE = 0.06$, $z = 4.31$, $p < .001$) indicates that donors who make a donation in Year $t$ are more likely to make a donation in Year $t + 1$ when the donor donates with checks rather than with plastic. To ensure the robustness of my results, Model 1D and Model 1E include the same predictor variables as Model 1B and 1C respectively, but also include the value of the donor’s donations during the fiscal year. In both models, donors who donate more money in a given year are more likely to make a donation in the following year (Model 1D: $b = 0.17$, $SE = 0.02$, $z = 10.19$, $p < .001$; Model 1E: $b = 0.18$, $SE = 0.02$, $z = 10.59$, $p < .001$). Controlling for the donation value does not change the direction or significance of the cross-level interaction effect, the primary result of interest ($b = 0.30$, $SE = 0.06$, $z = 5.19$ $p < .001$).
As discussed above, I also tested my hypotheses using the fixed effects approach preferred by econometricians. These models are not able to estimate the simple effects of donor-level variables such as whether the donor is Male, whether he or she Attends Reunions, and whether the Donor Uses Checks; all of the variance that could be explained by these donor-level variables is already accounted for by the model’s fixed effects. The models can, however, estimate the effects of the donation-level variables and, most importantly, the cross-level interaction relevant to my hypotheses.

Table 5: Fixed Effects Model, Study 7

<table>
<thead>
<tr>
<th>Donation Level Variables</th>
<th>Model 2A</th>
<th>Model 2B</th>
<th>Model 2C</th>
<th>Model 2D</th>
<th>Model 2E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donation Year t = 2006</td>
<td>-0.17 ***</td>
<td>-0.17 ***</td>
<td>-0.17 ***</td>
<td>-0.18 ***</td>
<td>-0.18 ***</td>
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<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Donation Year t = 2007</td>
<td>-0.22 ***</td>
<td>-0.22 ***</td>
<td>-0.22 ***</td>
<td>-0.22 ***</td>
<td>-0.22 ***</td>
</tr>
<tr>
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<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Donation Year t = 2008</td>
<td>-0.53 ***</td>
<td>-0.52 ***</td>
<td>-0.52 ***</td>
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<td>(0.06)</td>
<td>(0.06)</td>
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</tr>
<tr>
<td>Donation Year t = 2009</td>
<td>-0.59 ***</td>
<td>-0.57 ***</td>
<td>-0.57 ***</td>
<td>-0.57 ***</td>
<td>-0.57 ***</td>
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<tr>
<td></td>
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</tr>
<tr>
<td>Donation Year t = 2010</td>
<td>-0.47 ***</td>
<td>-0.45 ***</td>
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<td>(0.06)</td>
<td>(0.06)</td>
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</tr>
<tr>
<td>Donation Year t = 2011</td>
<td>-0.50 ***</td>
<td>-0.48 ***</td>
<td>-0.48 ***</td>
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</tr>
<tr>
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<td>(0.06)</td>
<td>(0.06)</td>
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<tr>
<td>Donation Year t = 2012</td>
<td>-0.65 ***</td>
<td>-0.61 ***</td>
<td>-0.61 ***</td>
<td>-0.62 ***</td>
<td>-0.61 ***</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Donation Made in Year t</td>
<td>0.13 ***</td>
<td>0.08 ***</td>
<td>-0.23 *</td>
<td>-0.32 *</td>
<td>-0.32 *</td>
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<td>(0.03)</td>
<td>(0.04)</td>
<td>(0.11)</td>
<td>(0.12)</td>
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</tr>
<tr>
<td>Log(Donation Value + 1)</td>
<td>0.07 ***</td>
<td>0.08 ***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cross-Level Interaction

<table>
<thead>
<tr>
<th>Donation Made in Year t * Donor Uses Checks</th>
<th>Model 2A</th>
<th>Model 2B</th>
<th>Model 2C</th>
<th>Model 2D</th>
<th>Model 2E</th>
</tr>
</thead>
<tbody>
<tr>
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AIC: 20683.2 20667.9 20665.7 20658.3 20654.5
BIC: 20742.8 20736.1 20742.4 20735.0 20739.7

98
Table 5 shows the results of the fixed effect models. As in the previous analyses, I find support for my hypothesis using models that both do and do not include the size of the donation. Model 2C does not include a donation size control. Following a donation in Year $t$, the results of this model suggest that check-using donors are significantly more likely to make a Year $t + 1$ donation than card-using donors ($Donation$ in Year $t$ * Donor Uses Checks: $b = 0.13$, SE = 0.06, $p = .041$). I find the same pattern of results in Model 2E, the model that includes the donation size control. Controlling for the size of the donation, I again find that check-using donors are more likely than card-using donors to follow up a donation with a second donation ($Donation$ in Year $t$ * Donor Uses Checks: $b = 0.15$, SE = 0.06, $p = .016$). It is worth noting that making a larger donation in year $t$ (i.e., increasing the payment magnitude of the donation) is also associated with an increased likelihood of donating in the following year, which is consistent with our hypotheses and prior evidence from Experiment 6.

### 3.7.3 Discussion of Study 7

Study 7 extends the experimental findings from the first three studies by providing a real-world replication of the relationship between payment form, payment magnitude and behavioral commitment via repeat donation likelihood. Compared to people who use a less painful form of payment (i.e., card), we found that people who use a more painful form of payment (i.e., check) show increased post-transaction connection through greater financial commitment and loyalty over time. It is important
to note that in any given year check-using donors are less likely to donate in comparison to plastic-using donors. However, after check-using donors choose to make a donation, their commitment to the organization increases in subsequent years (as measured by future willingness to donate) in comparison to plastic-using donors, who are less likely to make a repeat donation. The results suggest that the pain of payment may have an economic upside: while more pain of payment may deter initial donation likelihood, after making a donation, more pain of payment may help instill the loyalty and financial commitment that charitable organizations depend on over time.

### 3.8 General Discussion

In the 1970s, consumers could choose between about five payment forms for most transactions, with cash being the dominant choice (Foster, Schuh, and Zhang 2013). However, the financial landscape has changed dramatically. In today’s marketplace, there are more than twenty potential methods of payment (Foster, Schuh, and Zhang 2013), many of which are psychologically detached from the economic experience of immediately spending money, and thus are less psychologically painful to use. As society continues its evolution toward a ‘cashless economy,’ it is important to understand whether the way we pay influences how much we value and feel psychologically connected to what we spend our resources on, and how likely we are to remain product and brand loyal. In this essay, I sought to fill a gap in current research by examining whether payment form can influence post-transaction connection. Across
field, lab, online, and archival studies and across a variety of purchase contexts (i.e., purchasing a mug or headphones as well as donating to a charity or to one’s alma mater), I demonstrated that the pain of paying significantly influences post-transaction psychological and behavioral connection in a persistent and pervasive manner.

In Experiment 4, I used a field experiment selling mugs in order to show that paying by cash, a more painful form of payment, increases the psychological connection to the mug. In Experiment 4, I also found that the pain of paying fully mediates the relationship between payment form used for purchase and psychological connection. In Experiment 5, I demonstrated that donating to a charity using a more painful form of payment ($5 cash versus $5 voucher) increases the psychological connection and subsequent behavioral connection (i.e., wearing the lapel pin) to the chosen alternative, while decreasing psychological connection to the non-chosen alternatives. Experiment 5 also ruled out two potential confounds. First, individuals were asked to choose a charity to which they would donate $5 cash (voucher) using someone else’s money, ruling out the possibility that wealth and income effects are driving the results. Second, Experiment 5 ruled out the possibility that a positivity bias, or halo effects, could be driving the results. By measuring both general positivity ratings as well as psychological connection, I demonstrated that paying by a more painful form increases only psychological and subsequent behavioral connection measures. In Experiment 6, I showed that increasing the pain of payment either through payment form or payment
magnitude ($10 versus $20) can increase psychological connection, demonstrating that this effect is not due simply to a payment form effect, but rather due to this broader pain of paying construct. Finally, in Study 7, I replicated my results using archival donation data. I found that paying by check (a more painful form of payment) in comparison to a debit/credit card in year $t$ increases the likelihood of making a donation in the following year by 9.9% (i.e., 62.3% versus 56.7%) in year $t+1$. Thus, Study 7 demonstrated the robustness of our results on long-term behavioral commitment.

From a theoretical perspective, these findings lend support to the notion that the pain of payment affects not only decision-making during the purchase context, but also how much value and commitment are experienced post-purchase. My findings suggest that this psychological pain of paying can influence how much individuals value their chosen product, how connected they feel to it, and how committed they are over time. Although increasing the pain of payment may decrease purchasing initially, as Study 7 and prior work indicates, my work highlights the potential downstream benefits of increasing the psychological pain of payment for both organizations and individuals. Individuals are more financially, psychologically, and behaviorally committed to an organization and value products more when they pay with a more painful form of payment. While Kamleitner and Erki (2013) showed correlational evidence that payment form can affect feelings of ownership of an object, my work is the first to show a causal
relationship between payment form and psychological commitment to an organization and between payment form and downstream psychological and behavioral connection.

In addition to the pain of payment literature, the notion that the pain of payment can influence value and commitment contributes to psychological and behavioral research on how value and commitment are influenced by physical and emotional pain, such as research on cognitive dissonance and self-perception (Bem 1967; Festinger 1969; Gross 1998). My results suggest that psychological pain can influence value perceptions and subsequent commitment, even when the individual is donating money on behalf of someone else. Although it is beyond the scope of the present essay to attempt to discriminate between dissonance and self-perception, I note that experiencing more psychological and behavioral commitment despite donating money on behalf of someone else (Experiment 5) may be more consistent with self-perception. Individuals were not donating their own money, so there was no reason to believe that the donation created dissonant thoughts or a negative drive state that needed to be reconciled through increased psychological connection and behavioral commitment.

One issue that remains unclear is whether increasing the pain of payment will always lead to positive outcomes. Might the effects presented in this essay reverse if individuals were forced to part with their money for potentially unfavorable goods such as insurance or taxes? In addition, previous research has found that decreasing the pain of payment has positive effects on the consumer deliberation and purchase process, yet I
find that in the long-term, *increasing* the pain of payment has positive effects on post-transaction psychological and behavioral connection. At what point in time does this shift occur? And furthermore, does this shift occur consciously?

Another interesting question for future work is whether the pain of payment can influence interpersonal commitment. Individuals spend more than 4% of their household budget on gifts for others (Davis 1972; Garner and Wagner 1991) and about one-third of their income on goods/experiences that are used for shared consumption (U. S. Bureau of Labor Statistics 2008). Is it possible that the way people pay for another person can influence the affiliation and connection they feel for that other person? Would it affect how the recipient feels about the relationship? As noted earlier, Kamleitner and Erki (2013) find no role of pain of payment in their results. Future research might examine conceptual differences between ownership and psychological connection to attempt to understand these differences in results for pain of payment.

### 3.8.1 Implications for Policy

From a consumer welfare perspective, the results from this essay suggest that individuals create longer lasting connections and value what they purchase more if they pay using a more painful form of money. Prior research has found that decreasing the pain of payment can lead to overspending. I find that decreasing the pain of payment also leads to less commitment and value even after the purchase has occurred. The implications, when taken together, are that decreasing the pain of payment can not only
increase overspending immediately because the costs are not as immediately felt, but can also lead to greater product disposal or abandonment, with individuals feeling less satisfied with what they purchase. This is a particularly interesting implication because there has been a tenfold rise in ‘product waste’ over the last century (e.g., packaging and old products), from 92 pounds of product waste per person in 1905 to 1,242 pounds in 2005. Product waste accounted for three-fourths of what people throw away (Morse 1908; Spiegelman and Sheehan 2005). Some old products are thrown away because they are broken beyond repair, whereas others have been discarded in favor of a newer product. Given that the marketplace is moving towards less painful forms of payment, this trend may have contributed to the increase in product waste and product turnover. Therefore, future research might also examine how to increase the perceived pain of payment for less tangible forms of money in order to increase perceptions of value and commitment and potentially reduce product waste.

Technological advancements with regard to payment (e.g., credit/debit card, Google wallet, Paypal, and other mobile and online payments) are ever-increasing the psychological distance from payment, making spending less and less painful. Technological innovation can quite foreseeably be used to increase the pain of payment as well. For example, financial planning websites such as Mint consolidate a consumer’s spending patterns across payment devices and can serve as reminders of money spent on an item or product category, thus potentially increasing the psychological pain of
payment and value for what was already purchased. While this may decrease consumer spending at the point of purchase, consumers may benefit in the long-term by both saving more money and finding more value in/being more committed to what they have already purchased.

3.8.2 Implications for Marketers and Managers

Substantively, this research contributes to our understanding of how different forms of payment can impact sales and customer loyalty. The number of brands in any given product category has increased roughly tenfold over the last twenty years, making customer retention a top priority (Deloitte 2013). A recent study conducted by Deloitte LLP argues that brand loyalty is in decline. Individuals are more likely to switch brands to get the best deal or the newest technology. Consumers are also less likely to display their brand loyalty or share their favorite brands with others in comparison to five years ago (Mindshare 2015). Not surprisingly, many firms are prioritizing customer loyalty and commitment, especially in the increasingly competitive current marketplace.

The present research makes a contribution to the issues surrounding customer loyalty and commitment by furthering our understanding of the psychological impact that payment type can have on (a) how committed individuals feel to products, brands, and organizations and (b) how much they value what they have. The results from the four studies in this essay demonstrate the pros and cons of consumers using more painful forms of payment. If a firm is interested in obtaining the highest number of
customers without any regard for potential loyalty (e.g., fast-food chains at airports or locations with high tourist traffic), encouraging payment via less painful forms of payment will be best. However, if a firm is more commitment-focused and interested in increasing the number of brand loyal customers that it can rely on (e.g., luxury products, high-end or specialty retailers), increasing the pain of payment may be more beneficial. One way to increase the pain of payment is to encourage cash payments. For example, retailers could nudge patrons to pay with cash, which will encourage patrons to use more painful forms of payment or increase the accessibility of painful forms of money (Chatterjee and Rose 2012).

Some interesting questions for further research for marketers and managers also emerge from this work. My results indicate that while credit and debit card users may be more likely to purchase an item initially, they are less committed to the product in the long run. Future research could investigate whether the form of payment influences product returns and repurchase rates.
4. How We Pay Influences Interpersonal Connection and Rapport

4.1 Introduction

If one could wish for two gifts that would make life substantially better, having money and forming close-knit relationships would be ideal candidates. Money and relationships, while being able to improve life outcomes, do so by dramatically different routes and mechanisms, yet also have significant overlap. For example, there are many instances where we use money as a means to form or strengthen our ties to one another. Often, we treat our friends to a meal or are treated to a meal by someone we know. Individuals spend more than 4% of their yearly budget paying for gifts for others (Davis 1972; Garner and Wagner 1991) and about one-third of their income on goods or experiences that are used for shared consumption (U.S. Bureau of Labor Statistics 2008). However, money has also been shown to change people’s behavior for the worse, leading individuals to be more antisocial and selfish and less prosocial and thoughtful of others (Amato and Rogers 1997; Bhattacharjee, Dana, and Baron 2014; Vohs, Mead, and Goode 2006).

While the concept of money has been present since 2000 BC, the physical form of money has shifted dramatically over time (Foster, Schuh, and Zhang 2013). Throughout the past few decades, we have seen large shifts in how consumers pay for transactions. In 1999, cash and checks dominated over any other form, accounting for nearly 60% of all in-store payments. By 2010, that number shrank to around 40%, as plastic (i.e., debit,
credit, and gift cards) became the payment form of choice (Foster, Schuh, and Zhang 2013). Past research has found that more psychologically proximal forms of payment, such as cash, create more pain of payment, in comparison to more distant forms of payment, such as a debit card or gift voucher (Gourville and Soman 1998; Soman 2001). Thus, the type of payment used can alter the pain associated with a given amount paid.

Research in social psychology and consumer behavior has looked at how activating the concept of money affects behavior. Could the form of payment used in a social interaction—e.g. whether one treats another person using cash or debit card—influence the pain of payment and subsequently affect how connected individuals feel to one another? More particularly, in what circumstances could more painful forms of payment strengthen our ties to others, and in what cases could they distance us from another person? Finally, can observing how a person pays for someone else change our perceptions of how close they are to one another, or is this limited to cases where we are directly involved in the transaction (i.e., as a spender or as a recipient)? This essay discusses the consequences that using different payment forms can have on our own relationships and our perceptions of other people’s relationships.

In particular, I argue that how consumers pay for someone else (or alternatively, how someone else pays for them) can influence interpersonal connection and rapport. Drawing on research in social psychology, sociology, and consumer behavior, I argue that individuals using more painful forms of payment to pay for another person (e.g.,
using cash versus a debit card or gift voucher) feel increased connection to that person. However, I argue that this only occurs when individuals are in collaborative relationships. When individuals are in competitive relationships, the pain of paying will be used as a cue to distance individuals from one another. Such distancing can occur both physically, by putting more distance between themselves and the other person, as well as relationally, in terms of how connected they feel to one another. I test these predictions in a quasi-field experiment with dyads, using multiple measures of interpersonal connection and rapport to ensure robustness. I also demonstrate that this result is not limited only to situations where individuals are directly involved as either a spender or a recipient, but can also influence observers’ perceptions of the interpersonal closeness characterizing other people’s relationships.

4.2 Conceptual Framework

In this section, I review the two lines of literature that provide theoretical development and support for my predictions.

4.2.1 Money and Interpersonal Closeness

Money has arguably been the most powerful medium of exchange and economic tool in the development and growth of economies and has become a pervasive force in modern society. Historically, money became a major factor for growth in early economies, as it overcame many of the limitations of the barter system, a rudimentary form of exchange. Unlike the barter system, money acted as a store of value, fostering
trade and exchange beyond just the scope of the small, mostly kin-based economic interactions (Lea and Webley 2006). As Vohs and Baumeister (2015, pg. 1) note, “money enabled more diverse goods to be exchanged at farther distances and in larger amounts than ever before.” As a result, money served as an important tool for developing cooperative and mutually beneficial relationships with non-kin (Weatherford 1998).

One implication of forming beneficial non-kin relationships is that money allowed individuals to foster and develop relationships with instrumental others. In other words, money became instrumental for achieving one’s own goals, shifting individuals toward viewing objects and even people as a means to a purposeful end (Weatherford 1998; Zelizer 1989). A second implication from forming beneficial relationships with non-kin, and one central to this paper, was that individuals weakened their ties with those who were not as beneficial to their goals (Fiske 1991; Zelizer 1989). The use of money, therefore, triggered a psychological state that led individuals to think more about their own desires and needs and care less for others (Fiske 1991; Vohs and Baumeister 2015).

Vohs, Mead, and Goode (2006) provide initial evidence for this shift toward individualistic self-orientation and away from an interpersonal orientation. In nine experiments, they demonstrated that the mere activation of money led individuals to act in less prosocial ways. Individuals did not help others as frequently, preferred to play and work alone, and put more physical distance between themselves and a new
acquaintance than those who were not primed with any form of money. Mogilner and Aaker (2009) find further evidence that individuals may place greater focus on oneself and less on others. They show that money primes increased people’s use of first person pronouns relative to neutral primes, thus showing that participants became more self-focused. Researchers in France also looked at the effect of how just having money in one’s hands can influence prosocial behavior (Guégueen and Jacob 2014). Individuals were asked to help out another person by taking part in a study. However, in one case individuals were asked while the individuals were passing an ATM machine, while others were asked after taking money out. Those who had their money in hand were significantly less likely to help (by agreeing to take the survey) than those who were merely passing the ATM machine (Guégueen and Jacob 2014). Finally, Mogilner (2010) demonstrates that exposure to money decreases the individual’s motivation to socialize with others. Effectively, money takes on a very functional role for the individual (Lea and Webley 2006; Vohs, Mead, and Goode 2006).

However, could money serve as a social tool in cases where others are considered functional and instrumental to one’s goals? If money is a cue for instrumentality to one’s own goals, than individuals who view others as serving a functional benefit should in fact behave more prosocially and feel more connected when exposed to money than when they are not exposed to money. Preliminary work by Mogilner and colleagues (2015) provides evidence that money can increase individuals’
tendencies to act prosocially when the act is functional in nature. For example, participants who were primed with money actually socialized better when the socialization was framed as being functional (i.e., a networking opportunity) than individuals who were not exposed to money. This provides initial evidence that money can be seen as a tool to increase connection with others, at least under certain conditions.

While there has been substantial research focused on the effect money, very broadly, can have on interpersonal relationships, what has not been examined is how different forms of money might affect our interpersonal relationships. For instance, might less painful forms of payment (i.e., paying with a voucher versus cash) lead individuals to act more prosocially, even if individuals are in a more competitive or self-focused mindset? The next section discusses the pain of payment to gain a better understanding of the mechanism by which interpersonal connection may be affected by the payment form used.

4.2.2 Payment Form and Pain of Payment

Classic economic theory states that the utility of a consumption experience is determined by the sum of the experience’s benefits minus the associated costs (e.g., Deaton 1992; Hicks 1946; Marshall 1920; von Neumann and Morgenstern 1944) and defines these costs as economic in nature; they are a function of the price paid for the specific good or experience. However, recent research on the pain of paying suggests that the benefits and costs of a transaction are not strictly economic: subtle nuances of the
payment experience can also make a consumption experience more or less attractive. When consumers make purchases, they typically experience an immediate pain of paying, which refers to the negative affective reaction that consumers experience when parting with their money (Prelec and Loewenstein 1998; Zellermayer 1996). This pain is psychological rather than physical in nature (Mažar, Plassman, Robitaille and Lindner 2015).

Recent research suggests that different forms of payment—the focus of the present research—are associated with different levels of pain, with more psychologically proximal forms of money (e.g., cash) associated with the most pain (Raghubir and Srivastava 2008; Soman 2001, 2003). The most painful form of payment is cash (Raghubir and Srivastava 2008; Soman 2003); the psychological pain decreases as the payment form becomes more abstract and therefore more psychologically distant. Paying by check or voucher is less painful and more psychologically distant than paying by cash because, although checks and vouchers show the value of a transaction, no physical money changes hands (Raghubir and Srivastava 2008; Soman 2001). Credit cards, debit cards, and other forms of plastic money are even less painful and more psychologically distant; the ritual of swiping a card obscures the cash value of the transaction, divorcing people further from its economic reality (e.g., Feinberg 1986; Raghubir and Srivastava 2008; Soman 2001). Thus, the form of payment can influence the disutility or psychological aversion to parting with money, even when the timing of the payment is held constant.
The insight that different payment forms are associated with different levels of pain and psychological distance has implications for understanding and predicting real-world consumer behavior. In Essay 2, I demonstrate that this pain of payment can have consequences for post-transaction psychological and behavioral connection to a product, brand, or organization. Specifically, I show that, in congruence with research in cognitive dissonance and self-perception, experiencing more pain when paying for a purchase leads individuals to justify this feeling of investment by valuing the chosen outcome or option more (Aronson 1997; Aronson and Mills 1959; Cooper and Fazio 1984; Festinger 1957; Kahneman, Knetsch, and Thaler 1991; Shah et al. 2016).

Figure 10: The Impact of Payment Form on Interpersonal Connection and Rapport, Driven Through Pain of Paying, Essay 3

Figure 10 depicts my predictions for how the pain of paying can influence interpersonal connection. I hypothesize that using a more psychologically proximal form
of payment increases the psychological pain of paying. I further hypothesize that the 
pain of paying will increase post-transaction interpersonal connection and rapport, both 
implicitly (i.e., physical distance) and explicitly (e.g., ratings of interpersonal connection) 
with another person. This will occur particularly when the other person is seen as 
having a functional benefit to the individual, such as being part of a team. However, this 
effect will reverse if the other person is seen as a competitor, serving no functional 
benefit. In this case the pain of paying will decrease post-transaction interpersonal 
connection and rapport. Finally, I argue that this effect will extend both to situations 
where the individual is directly involved (i.e., as a spender or a recipient) and in 
contexts where they are merely observing a relationship interaction.

4.3 Experiment 8: Manipulating Payment Form and Relationship Type

4.3.1 Method for Experiment 8

4.3.1.1 Participants

One hundred sixty-two participants from a southeastern university participated 
in this between-subjects experiment.

4.3.1.2 Experimental design

This study was a 2 (Relationship Frame: Collaborative or Competitive) x 2 
(Payment Form: Cash or Voucher) between subjects design.
4.3.1.3 Procedure and design

Participants came to the lab in groups of two and were told that they would be taking part in an anagram task. Half of the groups were told that they would be taking part in a collaborative task where they would be competing with others in teams of two people. The team of two with the highest number of anagrams solved would win a $25 gift card to Amazon for each person. The other half of participants were told that they would be taking part in a competitive task where they would be competing with other individuals in the study. The two individuals with the highest number of anagrams solved would each win a $25 gift card to Amazon. Rewarding the highest two individuals controlled the amount of people who would win across conditions, also ensuring that participants could feasibly view the other person in the experiment with them as a potential resource just as in the collaborative frame. Participants were then told that before they took part in the anagram task, they would have a chance to get to know one another for 10 minutes at the student café. They were given either a $10 bill (cash condition, i.e., more painful form of payment) or a $10 voucher (voucher condition, i.e., less painful form of payment) to spend between the two of them on a snack and/or drink of their choice. They could not keep any extra money.

The cash or voucher was given to one of the two people. This randomly selected spender—the focus of our study—was responsible for the money, the receipt, and any corresponding change; the other person was assigned to the role of receiver. The
spender and receiver went to the student café together, purchased snacks, and spent ten minutes eating and interacting with each other.

After the ten-minute time period, individuals returned to the Behavioral Lab. They were given instructions that they had to solve as many anagrams as they could as a team (individually) in ten minutes. After the ten-minute timer rang, individuals were instructed to fill out a questionnaire regarding their experience and were then paid for their time and thanked for their participation in the study.

4.3.1.4 Measures

I took measures of both pain and psychological connection. Spenders completed scales that measure the two psychological states that we hypothesized are related to using cash instead of vouchers. Spenders reported the pain of payment they experienced when they purchased snacks for themselves and for their counterpart (1 = Not at all; 7 = Very Painful). I used the same single-item scale that I validated in Essay 2. Second, spenders described the affiliation they felt toward their counterparts using a five-question scale (1 = Not at all; 7 = Very Much So; Cronbach’s alpha = 0.86). Sample items included how much they enjoyed their time with the spender, how smooth the interaction was, how likeable the spender was, and how much they would like to spend time in the future interacting with the spender.
Although I did not propose hypotheses regarding the effect of spending cash on receivers, the receivers reported their feelings of affiliation using the same scale that the spenders used. I use this measure for exploratory analyses.

4.3.2 Results for Experiment 8

![Bar chart](image)

**Figure 11: The Impact of Payment Form and Relationship Type on Interpersonal Affiliation for the Spender and Recipient, Experiment 8**

Figure 11 demonstrates the effect of payment method and relationship type on interpersonal affiliation, separated by whether the participant was a spender or a recipient. I hypothesized that using a more psychologically proximal form of payment increases the psychological pain of paying. Consistent with that hypothesis, spenders who paid with cash reported significantly more pain than spenders who paid with voucher (M_{cash} = 3.74, SD_{cash} = 1.37; M_{voucher} = 2.02, SD_{voucher} = 1.19; t(75.3) = 5.97, p < .001).
There is no evidence that the pain associated with using cash is affected by whether the participants are in a collaborative or competitive context ($F(1) = 0.86, p = .46$).

I hypothesized that using a more painful form of payment would influence feelings of affiliation differently depending on the context. In a collaborative context, spenders who paid with cash felt more affiliation toward their counterparts ($M_{\text{cash}} = 6.26$, $SD_{\text{cash}} = 0.63$; $M_{\text{voucher}} = 5.32$, $SD_{\text{voucher}} = 1.03$; $t(31.3) = 3.48$, $p = .001$). In a competitive context, paying cash has a negative effect on thespender’s feelings of affiliation ($M_{\text{cash}} = 4.73$, $SD_{\text{cash}} = 0.93$; $M_{\text{voucher}} = 5.78$, $SD_{\text{voucher}} = 0.79$; $t(35.5) = 3.81$, $p < .001$). Being in a collaborative versus competitive context significantly moderates the relationship between payment form and affiliation ($F(1) = 26.8$, $p < .001$).

I proposed that pain of payment mediates the relationship between payment form and feelings of affiliation. For this mediation to occur, the collaborative or competitive nature of the context must moderate the relationship between pain of payment and affiliation. As expected, we found a positive relationship between pain of payment and affiliation in collaborative contexts ($r(38) = .66$, $p < .001$) and a negative relationship between pain of payment and affiliation in competitive contexts ($r(38) = -0.55$, $p < .001$).

I formally test whether moderated mediation occurs using a multi-group structural equation model. In this model, the independent variable is Cash Condition (0 = pay by voucher, 1 = pay by cash), the mediating variable is Pain of Payment, and the
outcome is Affiliation. The groups in the structural equation model are defined by whether the participants are in a collaborative context or a competitive context. I use 1,000 sample bootstraps to estimate the significance of the indirect effects and to compare the effects across the two groups.

**Figure 12: Actor-Partner Interdependent Model with Distinguishable Dyads, Experiment 8**
Figure 12 shows the results of the mediation analyses. In the collaborative condition, pain of payment mediates the positive relationship between paying with cash and affiliation (Indirect effect = 0.59, SE = 0.21, z = 2.74, p = .006); in the competitive condition, pain of payment mediates the negative relationship between paying with paying with cash and affiliation (Indirect effect = -0.42, SE = 0.21, z = -1.97, p = .049). There is a significant difference between these indirect effects (Difference = 1.01, SE = 0.31, z = 3.28, p = .001) because the collaborative versus competitive nature of the context significantly moderates the relationship between pain of payment and affiliation (Competitive context: b = 0.41, SE = 0.10, z = 4.09, p < .001; Collaborative context: b = -0.21, SE = 0.10, z = -2.04, p = .042; Difference = 0.62, SE = 0.15, z = 4.22, p < .001).

Although I did not propose any hypotheses regarding the receiver’s feelings of affiliation, I conducted exploratory analyses to see how the experimental conditions would influence the receiver’s affiliation. ANOVA analysis revealed no evidence of a significant effect for the cash condition (F(1) = 0.31, p = .58), a significant effect for the collaborative versus competitive context condition (F(1) = 6.03, p = .016) and a significant interaction effect (F(1) = 10.40, p = .002). Like the spenders, paying by cash leads to increased affiliation for receivers in a collaborative context (M_{cash} = 6.26, SD_{cash} = 0.59; M_{voucher} = 5.66, SD_{voucher} = 0.62; t(37.9) = 3.12, p = .003). There are no significant differences between paying by cash and paying by voucher in the competitive context (M_{cash} = 5.34, SD_{cash} = 1.01; M_{voucher} = 5.77, SD_{voucher} = 0.53; t(26.4) = 1.63, p = .11).
4.3.3 Discussion of Experiment 8

Experiment 8 demonstrates that the form of payment can affect the pain associated with paying, thereby driving interpersonal connection and rapport.

Experiment 8 extends the experimental findings from Essay 2, showing that when people are in collaborative or more desirable settings, paying by cash and increasing the pain of payment leads individuals to collaborate more and increase their affiliation to one another. However, this experiment also serves to provide an important boundary condition for how pain of payment affects connection. Specifically, when individuals are in a competitive or more undesirable setting, paying by cash and increasing the pain of payment leads individuals to decrease affiliation to one another. These results suggest that the pain of payment might be used as a strategic tool: using payment methods that will increase the pain of payment may lead to greater connection and rapport in cases where the individuals have a desire to affiliate, but in situations where this is not the case, using payment methods that decrease the pain of payment may be the preferred in order to enhance connection and rapport.

In Experiment 8 as well as all of the experiments in Essay 2, individuals were directly involved in the transaction, either as the spender or the recipient. A major question remains: Must individuals experience pain or benefit directly from the pain of payment in order for payment method affect connection? Or, can pain of payment affect connection and closeness perceptions when individuals are merely observing a
relationship? In Experiment 9A and 9B, I investigate whether individuals alter perceptions of how close they think two people are to one another based on the way they pay for a meal. In effect, Experiment 9A and 9B serve to extend the findings from the previous experiments, determining whether payment method can influence perceptions of closeness even when consumers are not directly involved with the transaction.

4.4 Experiment 9A: How Payment Influences Perceptions of Closeness When Observing Others

In Experiment 9A, I examine whether the pain of payment via payment form influencing interpersonal connection is solely limited to experiences where individuals are directly involved in the transaction (i.e., as a spender or recipient) or whether the pain of payment can also perceptions of relational closeness between two people. Specifically, Experiment 9A tests whether individuals think that two people are implicitly and explicitly closer to one another as a function of how the couple pays for the meal. I hypothesize that, even when not being directly involved in a transaction (i.e., observing a relationship), individuals will think that the couple is sitting closer together when told that the couple paid by cash than if told the couple paid by card.

4.4.1 Method for Experiment 9A

4.4.1.1 Participants

I recruited two hundred eighty-nine paid volunteers using Amazon’s Mechanical Turk online-survey sampling site to participate in this between-subjects
experiment. All participants were over the age of 18 and were citizens of the United States.

4.4.1.2 Experimental design

This study was a 2 (Payment Form: Cash or Voucher) x 2 (Covariate: Male Paid or Female Paid) between subjects design.

4.4.1.3 Procedure and design

Individuals were asked to assess a dinner scenario involving two people, Jonathan and Sarah. Individuals saw a visual vignette scenario about Jonathan and Sarah meeting after work. They go into a nice restaurant that recently opened up in town, are seated, and are given a menu. They order some wine and some appetizers. All participants then see a picture of Jonathan and Sarah seated at a table, and are told that as they finish up their appetizers, they notice the restaurant filling up with people. This is the only picture where participants see Jonathan and Sarah. The scenario continues on and describes how they eat their entrees, get dessert, and finally get the bill. In the Pay by Cash condition (i.e., a more painful form of payment), participants see a picture of a bill with cash sticking out and read that either Jonathan or Sarah paid for the bill entirely using cash. We counterbalanced who paid for the meal in order to control for any potential that the gender of the spender would be driving results. In the Pay by Card condition (i.e., a less painful form of payment), participants see a picture of the bill with a card sticking out and read that one of the two individuals in the scenario paid for the
bill entirely using his/her debit card. All participants are told that the two individuals
finish their wine, walk downstairs, and thank each other for a lovely evening.

4.4.1.4 Measures

I asked participants to rate their perception of the interpersonal connection of the
diners using two measures. For the first measure of interpersonal connection, we asked
participants to pick the approximate size of the table that Jonathan and Sarah were
sitting at during their meal. Tables were arranged vertically from shortest to longest
(1=shortest, 5=longest). For the explicit measure of interpersonal connection, we asked
participants to rate how physically close they believed Jonathan and Sarah were sitting
using a slider bar. Specifically, they were told to imagine that the slider bar represented
Sarah’s seating position, such that sliding the bar to the left meant that Jonathan and
Sarah were sitting closer together, while sliding the bar to the right meant that they were
sitting farther away from one another. The slider bar measured a distance ranging from
zero to ten feet, though participants could drag the bar in between any of the numbers to
represent non-whole integer values.

4.4.2 Results for Experiment 9A

First, I found that individuals who were told that the couple Paid by Cash
believed that the diners sat at a table of shorter length than those who were told that the
couple Paid by Card (M_{Cash} = 2.89, SD_{Cash} = 1.34; M_{Card} = 3.24, SD_{Card} = 1.42, F(1, 286) = 4.82, p
= .03). There was neither a significant main effect of the gender of the spender (M_{Male}=

3.06, SD_{Male} = 1.42; M_{Female} = 3.07, SD_{Female} = 1.38, F(1, 286) = .002, p = .88) nor a significant
two-way interaction of payment form and the gender of the spender (F(1, 286) = 2.61, p = .11), meaning that the gender of the spender did not drive perceptions of closeness using this measure.

Second, I found that individuals who were told that the couple Paid by Cash believed that the diners sat closer than those who were told that the couple Paid by Card (M_{Cash} = 3.09, SD_{Cash} = 1.24; M_{Card} = 4.02, SD_{Card} = 1.85, F(1, 286) = 25.18, p < .001). There was neither a significant main effect of the gender of the spender (M_{Male} = 3.56, SD_{Male} = 1.53; M_{Female} = 3.56, SD_{Female} = 1.74, F(1, 286) = .004, p = .95) nor a significant two-way interaction of payment form and the gender of the spender (F(1, 286) = .533, p = .47), meaning that the gender of the spender did not drive perceptions of closeness using this measure.

4.5 Experiment 9B: How Payment Influences Perceptions of Closeness When Observing Others, Controlling for Gender of Diners

In Experiment 9A, I find that individuals believe that two people are sitting closer together, both implicitly and explicitly, when told that the couple paid by cash than if told the couple paid by card, despite the fact that the individuals are merely observing a relationship and are not directly involved. However, Experiment 9A used a couple where one person was male and another person was female. Despite controlling for the gender of the spender, it is quite possible that have a mixed gender couple elicited dating or romantic notions. In Experiment 9B, I check for robustness of this
result by having same gender couples. I once again manipulate the form of payment used by the couple, while also varying whether the couple is all male or all female.

**4.5.1 Method for Experiment 9B**

**4.5.1.1 Participants**

I recruited three hundred paid volunteers using Amazon’s Mechanical Turk online-survey sampling site to participate in this between-subjects experiment. All participants were over the age of 18 and were citizens of the United States.

**4.5.1.2 Experimental design**

This study was a 2 (Payment Form: Cash or Voucher) x 2 (Covariate: Male Paid or Female Paid) between subjects design.

**4.5.1.3 Procedure and design**

Just as in Study 9A, individuals were asked to assess a dinner scenario involving a same gender couple, either Jonathan and Tim or Lauren and Sarah. Individuals read a visual scenario about the two diners meeting after work. They go into a nice restaurant that recently opened up in town, are seated, and are given a menu. They order some wine and some appetizers. Once again, all participants see a picture of the two diners seated at a table, and are told that as they finish up their appetizers, they notice the restaurant filling up with people. This is the only picture where participants see the two diners. The scenario continues on and describes how they eat their entrees, get dessert, and finally get the bill. In the *Pay by Cash* condition (i.e., a more painful form of
payment), participants see a picture of a bill with cash sticking out and read that either Jonathan (for the all male condition) or Sarah (for the all female condition) paid for the bill entirely using cash. In the Pay by Card condition (i.e., a less painful form of payment), participants see a picture of the bill with a card sticking out and read that one of the two individuals in the scenario paid for the bill entirely using his/her debit card. All participants are told that the two individuals finish their wine, walk downstairs, and thank each other for a lovely evening.

4.5.1.4 Measures

I asked participants to rate their perception of the interpersonal connection of the diners using two measures. For the first measure of interpersonal connection, I asked participants to pick the approximate size of the table that either Jonathan and Tim [Lauren and Sarah] were sitting at during their meal. Tables were arranged vertically from shortest to longest (1=shortest, 5=longest). For the second measure of interpersonal connection, we asked participants to rate how physically close they believed Jonathan and Tim [Lauren and Sarah] were sitting using a slider bar. Specifically, they were told to imagine that the slider bar represented Tim’s [Sarah’s] seating position, such that sliding the bar to the left meant that Jonathan and Tim [Lauren and Sarah] were sitting closer together, while sliding the bar to the right meant that they were sitting farther away from one another. The slider bar measured a distance ranging from zero to ten
feet, though participants could drag the bar in between any of the numbers to represent non-whole integer values.

4.5.2 Results for Experiment 9B

First, I found that individuals who were told that the couple Paid by Cash believed that the diners sat at a table of shorter length than those who were told that the couple Paid by Card (M\text{Cash} = 2.97, SD\text{Cash} = 1.34; M\text{Card} = 3.26, SD\text{Card} = 1.37, F(1, 286) = 3.42, p = .050). There was neither a significant main effect of the gender of the couple (M\text{Both Male} = 3.04, SD\text{Both Male} = 1.27; M\text{Both Female} = 3.12, SD\text{Both Female} = 1.45, F(1, 286) = .160, p = .689) nor a significant two-way interaction of payment form and the gender of the spender (F(1, 286) = .947, p = .331), meaning that the gender of the spender did not drive perceptions of closeness using this measure.

Second, I found that individuals who were told that the couple Paid by Cash believed that the diners sat marginally closer than those who were told that the couple Paid by Card (M\text{Cash} = 3.26, SD\text{Cash} = 1.45; M\text{Card} = 3.59, SD\text{Card} = 1.51, F(1, 173) = 2.99, p = .085). There was neither a significant main effect of the gender of the spender (M\text{Both Male} = 3.49, SD\text{Both Male} = 1.36; M\text{Both Female} = 3.40, SD\text{Both Female} = 1.65, F(1, 173) = .209, p = .648) nor a significant two-way interaction of payment form and the gender of the spender (F(1, 286) = .240, p = .624), meaning that the gender of the spender did not drive perceptions of closeness using this measure.
4.5.3 Discussion of Experiments 9A and 9B

The results of Experiments 9A and 9B extend the results of the previous experiment in two ways. First, I provide evidence that the relationship between payment form and post-transaction interpersonal connection is not limited to just transactions where the individual is directly involved as either a spender or a recipient. This extension is important because it suggests that individuals need not be directly experiencing pain or receiving pain in order for payment to have an effect on how they evaluate relationships. Second, by demonstrating that the pain of payment can influence perceptions of interpersonal closeness, I also provide evidence that the influence of pain of payment is pervasive and can influence both behavior (Experiment 8) as well as perceptions (Experiments 9A and 9B). Across Experiments 9A and 9B, I was also able to demonstrate the robustness of this effect across various gender compositions of the dyad.

4.6 Discussion of Essay 3

In Essay 3, I ask whether experiencing more pain of payment during a transaction influences feelings of interpersonal connection and rapport. I demonstrate that paying with a more painful form during a transaction increases interpersonal affiliation. More specifically, I demonstrate that spenders use the pain of payment as a cue of how much they like the other person, increasing their affiliation. Recipients on the other hand, use the pain as a cue for how much pain the other person went through for
them, increasing their affiliation for the spender. However, this is not always the case. I find that this positive relationship between pain of payment and interpersonal connection and affiliation only holds in settings where the two individuals have the goal to collaborate. Experiencing more pain of payment decreases affiliation, particularly for the spender, in settings where the goal is more competitive and self-oriented. Therefore I demonstrate that experiencing more pain of payment can increase interpersonal affiliation in collaborative settings but can decrease affiliation in competitive settings.

Finally, Experiment 9A and 9B demonstrate that this effect is not limited just to interactions where individuals are directly involved. Rather, even as observers, paying by cash increases perceptions of interpersonal closeness in comparison to paying by card.

From a theoretical perspective, these findings extend the previous literature in several ways. First, this is the first piece of evidence to date that has examined how different forms of payment influence interpersonal connection and affiliation. Previous research has typically used money primes that were either specific to cash, such as having cash bills floating in the back of the computer screen, or more generally priming wealthy states, such as having participants write a paragraph about a time where they felt that they had an abundance of money or using a word scramble task to activate the notion of money (e.g., “high a salary paying” unscrambling to “a high paying salary”) (e.g., Chatterjee and Rose 2012; Gasiorowska, Zaleskiewics, and Wygrab 2012; Mead,
Caruso, Baumeister, and Vohs 2011; Roberts and Roberts 2012; Vohs, Mead, and Goode 2006; Zhou, Vohs and Baumeister 2009). Thus, the findings from this essay advance the understanding of how pain of payment influences consumer experiences and perceptions of interpersonal relationships. Second, I also extend previous understanding of how the pain of payment affects relationships by examining an important boundary condition to our findings from Essay 2. In Essay 2, I focus my attention to domains where individuals spent money on items that they desired (i.e., purchasing a mug or donating to charity of their choice or alma mater). I found that increasing the pain of payment had a positive affect on post-transaction connection. However, it remained unclear whether this was always true. In this essay, I demonstrate an important boundary condition, finding that increasing the pain of payment can decrease affiliation under certain conditions. I find that for individuals in desirable or collaborative relationships, experiencing more pain of payment can increase post-transaction connection. However, for individuals who are in undesirable or competitive relationships, experiencing more pain of payment creates greater distance and reduces post-transaction connection.

4.6.1 Managerial and Policy Implications

Substantively, this research contributes to our understanding of the role of payment salience in encouraging individuals to collaborate and work together. People spend more time at work than they do at home and thus even small perturbations in
encouraging more positive interpersonal dynamics could have a substantial impact on people’s well-being. This essay demonstrates the impact of how much payment can influence interpersonal connection during a task, leading to greater affiliation and rapport. Furthermore, there are many cases where workplace environments depend upon teams working together to reach particular goals. If this is the case, my research suggests that perhaps structuring sales force bonuses in such a way where cash is more salient may encourage individuals to collaborate and work together more. There are other instances where individuals may feel like they are competing as individuals. If this were the case, then structuring bonuses in such a way where non-cash or less painful payments are more salient might encourage individuals to collaborate more, despite being competitors.
5. Conclusion: How the Payment and the Pain of Paying Can Influence Choices and Relationships

Understanding how the payment experience shapes our choice and relationships is a central component of consumer behavior. Yet, little research has delved into how the way individuals can pay can impact whether individuals make a choice from a consideration set and in turn, how this affects their long-term relationships post-transaction. These three essays are the first to examine the impact of pain of paying on choice overload and product, organizational, and interpersonal relationships. As a whole, this dissertation demonstrates the impact of pain of paying on consumer behavior. At the point of purchase and decision processing stage, pain of paying can increase the psychological and cognitive costs of a decision, leading individuals to avoid choice altogether when faced with larger assortments. Effectively, increasing the pain of payment exacerbates the negative effects associated with choice overload. However, after the purchase, the pain of payment can be beneficial for the consumer in the long-term. Individuals value what they purchased more, are more attached, and are more committed to their chosen option, both psychologically and behaviorally. These findings also extend to how connected individuals are to one another. Paying with more painful forms of payment increases interpersonal collaboration, connection, and rapport, bringing individuals closer together. However, this is not always the case. Increasing the pain of paying may have detrimental effects to interpersonal collaboration and connection when individuals are spending money in settings where they may not have a
desire to affiliate, such as spending money on a competitor. Thus, the pain of paying may be used strategically by both firms and individuals, to enhance relationships and consumer well-being overall.
Appendix A: Description of Charities, Experiment 5

Cancer Research Institute Mission:
The Cancer Research Institute (CRI) is the world's only nonprofit organization dedicated exclusively to harnessing the immune system's power to conquer all cancers. This important work has led to a promising new class of cancer treatments called cancer immunotherapy. These treatments mobilize, strengthen, and sustain the immune system's natural ability to destroy cancer cells, wherever they are in the body.

CRI awards research grants and fellowships to support scientists at leading research universities and clinics around the world. Funding decisions are guided by a Scientific Advisory Council composed of renowned immunologists and tumor immunologists, including three Nobel Prize winners, 26 members of the National Academy of Sciences, and 20 members of the Academy of Cancer Immunology. To accomplish this, the Cancer Research Institute relies on generous support from individuals, corporations, and foundations who have a desire to become partners in our effort to conquer cancer through immunology. Join with us in advancing the next breakthrough in cancer treatment.

How We Work
We are proud to count many of the world's leading immunologists and tumor immunologists among our community of scientific leaders. These include three Nobel laureates and 27 members of the National Academy of Sciences, as well as clinical oncologists with expertise in cancer immunotherapy, and industry leaders versed in the challenges of drug development. Together, these experts ensure that our programs continue to achieve the most impact possible and that CRI remains at the cutting-edge of the science of tumor immunology and cancer immunotherapy.

The History of Cancer Research Institute
CRI was founded in 1953 by Helen Coley Nauts (1907-2001) and her friend Oliver R. Grace (1909-1992) with a $2,000 grant from Nelson Rockefeller. Ms. Nauts established the institute in honor of her father William B. Coley, an early pioneer of non-surgical, immunological treatments for cancer.

Effectiveness of Cancer Research Institute
We turn donations into direct research and educational support for the world’s top cancer scientists and medical professionals. CRI grants and fellowships help to provide crucial resources for laboratory work and clinical trials, including personnel, equipment, and supplies. We also host conferences and meetings for the global scientific community. CRI donations also are used for cancer immunology awareness and education for patients and the public. Open disclosure of our financial information is essential for maintaining the trust donors place in the Institute. Since its founding, CRI has upheld the highest standards of fiscal responsibility and integrity. When you give to CRI, you can be sure your charitable investment will be spent wisely and will make the most impact possible in our efforts to conquer cancer.

- See more at:  
  http://www.cancerresearch.org/about#sthash.LkMpEq6H.dpuf
Earthworks' Mission

Earthworks is a nonprofit organization dedicated to protecting communities and the environment from the impacts of irresponsible mineral and energy development while seeking sustainable solutions. Earthworks stands for clean water, healthy communities and corporate accountability. We’re working for solutions that protect both the Earth’s resources as well as our communities.

How We Work

We fulfill our mission by working with communities and grassroots groups to reform government policies, improve corporate practices, influence investment decisions and encourage responsible materials sourcing and consumption. We expose the health, environmental, economic, social and cultural impacts of mining and energy extraction through work informed by sound science.

The Genesis of Earthworks

Earthworks evolved from the work of two organizations: Mineral Policy Center and the Oil & Gas Accountability Project. Mineral Policy Center was founded in 1988 by Phil Hocker, Mike McCloskey and former Secretary of the Interior Stewart L. Udall to help reform mining laws and practices. Mineral Policy Center’s track record of success includes: protecting Yellowstone National Park from the proposed New World gold mine, protecting 400,000 acres of the scenic Rocky Mountain Front, preventing mineral development near Yosemite National Park and helping to defend Argentina’s pristine Patagonia region from another proposed open-pit gold mine, and requiring mining companies to report their toxic releases in the United States. In 1999, the Oil & Gas Accountability Project (OGAP) was founded to work with people in rural, tribal and urban communities to protect their homes and environment from the devastating impacts of oil and gas development — bringing together such diverse partners as Native Americans, ranchers, sportsmen and environmentalists. OGAP’s accomplishments include: the permanent protection of New Mexico’s Valle Vidal, the passage of precedent setting reforms for landowner rights and environment from oil and gas wastes in New Mexico, the first-ever governmental requirements for disclosure of gas drilling chemicals in Colorado, and the local government adoption — in eight states — of OGAP-initiated best practices. In 2005, these two organizations joined forces.

Collaboration, Efficiency and Effectiveness

Earthworks partners with local affected communities, national and international advocates to respond to and solve the growing threats to the earth’s natural resources, clean water, biodiversity, special places and communities from irresponsible mining, drilling, and digging. Earthworks is dedicated to mobilizing the public, and governmental and corporate decision makers to take action against the destructive impacts of extraction. See more at: http://www.earthworksaction.org/about - sthash.NRbVsAET.dpuf
Elizabeth Glaser Pediatric AIDS Foundation's Mission

The Elizabeth Glaser Pediatric AIDS Foundation seeks to prevent pediatric HIV infection and to eradicate pediatric AIDS through research, advocacy, and prevention and treatment programs. EGPAF’s program implementation efforts seek to extend HIV prevention, care, and treatment services to at least 80 percent of children, women, and families affected by HIV in the countries where we work. Strengthening of health systems, and integration of HIV care within maternal and child health services in particular, is critical to achieving this goal.

How We Work

Key programmatic areas that EGPAF supports include:
- Preventing Mother-to-Child Transmission of HIV
- Care and Treatment for Children, Women, and Families Living With and Affected by HIV
- Health Systems Strengthening
- Community Engagement
- Strategic Information and Evaluation
- Research: http://www.pedaids.org/pages/current-research-activities

The History of the Foundation

The foundation that began as three mothers around a kitchen table in 1988 is now the leading global nonprofit organization dedicated to eliminating pediatric HIV and AIDS. Since 2000, EGPAF has supported expanded access to comprehensive HIV prevention, and later to HIV care and treatment services, in regions of the world deeply affected by HIV and AIDS. Our dedicated staff work in close partnership with local governments and like-minded organizations to halt the spread of the virus, especially among children, and to ensure those living with HIV receive the care and support they need to live long and healthy lives.

Collaboration, Efficiency and Effectiveness

EGPAF is currently supporting more than 7,300 sites around the world. Since its international efforts began, EGPAF-supported programs have provided more than 18 million women with services to prevent transmission of HIV to their babies, tested nearly 16 million women for HIV, enrolled more than 2.1 million individuals, including nearly 165,000 children, into HIV care and support programs; and started more than 1.1 million individuals, including nearly 99,000 children under the age of 15, on antiretroviral treatment. See more at: http://www.pedaids.org/pages/health-system-strengthening-impact
Appendix B: Dinner Scenario, Experiments 9A and 9B

Jonathan and Sarah decide to try a new Italian restaurant in the city called Del Posto. They agree to meet up after work and walk over to the restaurant together. They see the sign for the restaurant and walk across the street.
Jonathan and Sarah open the door to the restaurant and are greeted by the warm ambience of the lobby.
They head up the marble staircase. They spot the hostess and walk towards the main dining area.
The hostess informs Jonathan and Sarah that they will be seated at a prime table on the second level, overlooking the rest of the restaurant. They follow the hostess up the stairs.
The hostess places them at their table and hands them the menu. Jonathan and Sarah peruse the Antipasti menu first.
While they are deciding on appetizers, the server places a warm basket of Italian bread accompanied by fresh whipped butter on their table.
Jonathan decides on the Insalata Primavera appetizer, while Sarah selects the Beef Carpaccio.
Jonathan and Sarah polish off their appetizers and wait for their main course. They notice the restaurant slowly filling up as the evening progresses.
While Jonathan and Sarah wait for their main course to arrive, they decide to order a bottle of red wine. After each sampling a couple of different options, they settle on a Malbec from Spain.
The main course arrives. Jonathan gets the Roasted Lamb Rack with Sage and Sarah has the Beef Ribeye with French Potatoes and Buttered Lettuce.
After they finish their main course, their server brings over a wooden dessert box filled with petit fours. The day’s selection are olive oil chocolate gelato pops coated in brioche crumbs, miniature bomboloni (donuts) filled with vanilla custard, and lemon tarts with blackberries; inside the box are candied grapefruit filled with caramel.
The server brings them the bill as they finish dessert.
Jonathan [Sarah] pays for the bill with cash and hands it back to the server.
Jonathan [Sarah] pays for the bill with his [her] credit card and hands it back to the server.
They finish up the last bit of wine, get up from their table, and head down the stairs.
Jonathan and Sarah exit the restaurant. They agree that it was a lovely evening and head home.
Appendix C: Dinner Scenario Measures, Study 9A and 9B

What was the approximate size of the table that Jonathan and Sarah were sitting at? The tables are arranged from shortest (top choice) to longest (bottom choice).

Please drag the slider to reflect how much distance there was between Jonathan and Sarah. Imagine that the slider bar represents Sarah’s seating position. Sliding the bar to the left means that they are sitting closer to one another, while sliding the bar to the right means they are sitting further away from one another.

Distance Between Jonathan and Sarah (in Feet)

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<td>Jonathan</td>
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Biography

Avni Shah was born in Plainfield, NJ on March 24, 1985. She grew up in Basking Ridge, New Jersey and attended high school at Newark Academy, where she was a three sport athlete playing soccer, basketball, and track. Avni received her A.B. from Dartmouth College in 2003, graduating cum laude and with high honors. She was a double major in Psychological and Brain Science and Religion and had a minor focus in Theatre Arts. Part of her honors thesis was published in Psychological Science. After graduation, she served as a research assistant in marketing, social neuroscience, and rheumatology, while also fulfilling a lifelong goal of running her own entertainment company, Third World Entertainment, and being a somewhat successful disc jockey under the pseudonym DJ Lunchbox.

Prior to joining Duke University, she received a post-baccalaureate pre-medical degree from Bryn Mawr College and was awarded an Institutional Research Training Award from the National Institutes of Health, where she held a one-year fellowship looking at how socioeconomic status and education could impact the likelihood for individuals to comply and adhere to their medication and treatment regimes.

Avni began attending Duke University for her PhD in 2010. She has published the following articles: 1) “Buying Behavior as a Function of Parametric Variation in Number of Choices” in Psychological Science (2007) with George Wolford; 2) “Surcharges Plus Unhealthy Labels Reduce Demand for Unhealthy Menu Items” in the Journal of