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## Essays on Mental Accounting and Consumers' Decision Making

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Essays on Mental Accounting and Consumers' Decision Making

by

Ali Besharat

A dissertation submitted in partial fulfillment  
of the requirements for the degree of  
Doctor of Philosophy  
Department of Marketing  
College of Business  
University of South Florida

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## **Dedication**

I have truly lived a blessed life filled with many loving and supportive people. This dissertation is dedicated to the lovely people who shared with me the effort and sacrifices required to complete it.

First, I dedicate this work to my immediate family: my parents, Mehdi and Shokouh, and my sister, Nasim, for their endless love, support, sacrifice, and patience throughout my life. I could not have accomplished this without you.

Second, I dedicate this dissertation to my girlfriend, Andrea Doty, who is the love of my life, my strength, and support. You always expressed interest and pride in my endeavors and without you this journey might not have been successful.

Finally, I dedicate this dissertation to my mentors, Dr. Sajeev Varki, Dr. Anand Kumar, Dr. Stock, and Dr. Ortinau, who believed in me, encouraged me to have confidence in myself, pushed me to think and write more scholarly, and supported my intellectual growth.

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## Abstract

This dissertation is structured in the form of two empirical essays, each investigating one type of irrational decision caused by mental accounting. The first essay, titled “*Managing the Cost of Multiple Debt Accounts: A Behavioral Perspective*”, explores why many people pay off credit cards’ with the lowest rate first when rationally speaking they should repay the debt with the highest rate most quickly. This essay suggests that irrationality emerges when people seek to close ‘mental accounts’ associated with their credit cards and reduce the total number of outstanding loans rather than decrease the amount of total debt among all credit cards. Consumers want to be debt free. If they can get rid of debt, on even one credit card, they feel a sense of accomplishment which psychologically helps them manage remainder of their debt better. The second essay, titled “*Saving by Overspending*”, explores consumers’ over-expenditure and indulgent consumption when they make prepayments in the form of time, effort, or money toward a consumption goal. This essay proposes that people subconsciously try to get their prepayments’ worth, but in fact they may be spending their money irrationally. In addition, contrary to common knowledge, this essay suggests that when a prepayment is unanticipated, the loss of self-control is often more prominent when prepayments are made with behavioral resources (e.g., time or effort) than equivalent monetary resources.

## **Essay 1:**

### **Managing the Cost of Multiple Debt Accounts: A Behavioral Perspective**

#### **1.1 Overview**

This essay, employing three experiments, suggests that customers who own multiple credit cards may irrationally pay off the debt with the lowest interest first instead of paying off the debt with the highest interest. The first experiment confirms that individuals have a tendency to allocate their income toward the debt with the smallest balance and the lowest APR when they can pay off the entire or a major portion of the balance. The second experiment determines that debt repayment decisions are influenced by the nature of the debt (hedonic vs. utilitarian) and the timing of consumption benefits (past vs. future). That is, when consumption benefits occurred in the past (future), individuals were more willing to pay off the debt with the smallest balance and the lowest APR when it was associated with hedonic (utilitarian) rather than utilitarian (hedonic) consumption. Finally, our final experiment reveals that debtors tend to pay their debt more rationally when the number of debt accounts is increased or savings as opposed to other types of income such as windfall or reward-based are used toward the debt payment. Individuals' motivation to reduce the number of debt accounts is shown to be the underlying mechanism for our findings.

## 1.2 Introduction

Credit cards play an important role in consumer finances, especially in the current economic downturn where most customers have liquidity constraints. The convenience of use and the instant access to money are two reasons why a credit card is an attractive method of payment for both offline (e.g., in store) and e-commerce transactions. As the number of credit card transactions has radically increased in recent years, so has the credit card debt of consumers. Many consumers struggle to fully pay off their credit card balances each month and they revolve debt (e.g., the growth of debt when consumers' rate of repayment slows). Recent credit card statistics report that 56% of the United States population carries a balance equal to \$801 billion (Federal Reserve Report, 2012). The debt repayment decision becomes even more complex when consumers own multiple credit cards. For instance, industry reports indicate that American customers, on average, have five credit cards and the average balance per open credit card is \$1,157 (Credit Card Report, 2012).

Classic principles of economics suggest that consumers are rational and they should repay the debt with the highest rate most quickly. However, evidence from the behavioral finance literature indicates that individuals do not always employ normative principles in debt management (Navarro-Martinez, Salisbury, Lemon, Stewart, Matthews, and Harris, 2011; Amar, Ariely, Ayal, Cryder, and Rick, 2011). For instance, Navarro-Martinez et al. (2011) find that presenting the minimum required payment information and disclosing supplemental debt information have no significant impact on debt

repayment decisions. Amar et al. (2011) indicate that individuals often make suboptimal financial decision in the form of debt account aversion. That is, debtors manage a debt portfolio by allocating most of their budget toward their small debt balances. When individuals were not able to pay off their smallest balance, however, their attention was drawn more to the financial costs of their debt accounts.

This paper extends the stream of research on the psychology of debt payment by investigating how people manage multiple credit card debt and how they prioritize their debt repayment. In particular, we demonstrate that people under certain circumstances may mismanage their credit card debt, ultimately delaying their ability to become debt free. Loan borrowers' motivation to reduce the number of debt accounts underlies the intention to pay off the debt with the smallest balance and the lowest APR (i.e., the least expensive loan). We propose that the negative thoughts of payment caused by the segregation of debt (e.g., segregated losses) create a psychological burden that eventually leads borrowers toward reducing the number of debt accounts, regardless of their interest rates (APR). In the case of multiple debt accounts, when the complexity of debt is reduced, individuals perceive a sense of psychological progress (Amar et al., 2011). The perception of progress toward a goal has been shown to work as a self-imposed psychological reward (Kivetz et al., 2006) and this may help borrowers to better deal with the remainder of their debt accounts.

We suggest that the complexity of debt management in the case of multiple credit cards may cause debtors to behave irrationally by paying off the smallest debt with the lowest APR first. For example, a person with a \$300 loan with a 6% interest rate and a \$3,000 loan with 12% interest may decide to pay off the \$300 loan with their first

paycheck, rather than the \$3,000 loan. Therefore, customers with multiple credit card debts tend to reduce the number of debt accounts rather than to decrease the total cost of debt across all accounts. This notion is supported by research that finds that consumers discount future interest rates (Stango and Zinman, 2009) and underestimate the exponential growth of interest compounding (McKenzie and Liersch, 2011), especially when they are not obligated to pay off their debt within a certain period. Although eliminating one of the debt accounts may give consumers an impression of progress toward the end goal (e.g., becoming debt free) and may offer short-term psychological benefits, this behavior costs borrowers in the long run by delaying their ability to become debt free.

In addition, this paper examines the role of additional factors such as the purpose of the debt (e.g., whether the loan is used for hedonic or utilitarian consumption), the timing of the debt benefits (e.g., whether the benefits of the loan are realized in the past or future), the number of credit cards, and the source of income used to pay off the debt (e.g., savings, reward-based, or windfall) on credit card debt management. The topic of the current research is relevant not only to consumer researchers and policy makers trying to help consumers repay debt more efficiently, but to lenders as well, as they assess the average time for their loans to be repaid based on the credit portfolios of borrowers.

We begin this paper with a review of the relevant literature and use this information to formulate our hypotheses. Then, we report three experiments that examine these hypotheses. Finally, we conclude with a general discussion of the results and various theoretical, public policy, and managerial implications of our findings.

### 1.3 Literature Review

Mental accounting is a type of framing in which individuals form psychological accounts for the costs and benefits associated with their choices (Thaler, 1980). These accounts will remain open until a consumer has completed a transaction and obtained the consumption benefits (Thaler, 1985). Mental accounting helps people monitor their financial activities and regulate their consumption (Read, Loewenstein, and Kalyanaraman, 1999). Prelec and Loewenstein (1998) express the reciprocal interaction between the pleasure of consumption and the pain of payment (also known as “coupling”). Depending upon whether the positive utility of consumption surpasses the negative utility of payment, a consumer may evaluate the overall experience as pleasure (e.g., labeled “black”) or pain (e.g., labeled “red”).

When people make a payment, they feel the pain of the incurred cost that may mitigate the positive feelings associated with future consumption. Similarly, the pleasure derived from consumption may be reduced when negative thoughts of the future payment are primed (Gourville and Soman, 1998; Siemens, 2007). “Sunk cost effect” is defined as individuals’ commitment to attain a planned decision when they have already devoted resources to its attainment (Thaler, 1985). When payment becomes decoupled from consumption benefits, the sunk cost effect of payment is reduced (Soman and Gourville, 2001). There are two ways that temporal separation (i.e., decoupling) of transaction costs and benefits may occur. First, it is possible that an individual pays for an item temporally prior to the consumption. Gourville and Soman (1998) propose that when a payment precedes benefits in a transaction, individuals pay more attention to the sunk costs.

However, this sunk cost effect disappears as time passes. The diminishing sunk cost effect over time is referred to as “payment depreciation.” Gourville and Soman (1998) found that people who paid for an annual gym membership in advance were less likely to use the gym facilities with the passage of time compared to those who paid monthly gym memberships.

Additionally, it is likely that a reverse process to payment depreciation may take place in which consumption benefits occur before investment costs. Gourville and Soman (1998) refer to this process as “benefit depreciation.” In this case, a consumer uses the product before making the payment. They propose that the hedonic impact of the benefit depreciates over time such that the future payment feels more like a pure loss. The use of credit cards is one of the prevalent methods for the decoupling of consumption benefits from the disutility of payment. This happens as consumers typically experience the consumption benefits prior to the billing cycle.

#### **1.4 The Smallest Balance with the Lowest APR is Paid First**

A majority of credit card users own multiple credit cards (Rysman, 2007) and almost half of them are mired in credit card debt (Bertaut, Haliassos, and Reiter, 2009). Evidence from the behavioral finance literature finds that individuals often deviate from normative principles in debt management and behave irrationally (Navarro-Martinez et al., 2011; Stango and Zinman, 2009). This paper proposes that borrowers with multiple credit card debt tend to simplify their debt management task by reducing the total number of credit cards instead of focusing on the goal of reducing the total cost of their debt (i.e.,



paying the debt with the highest APR first). For example, a person with a \$500 debt and 10% APR and a \$1,000 debt with a 15% APR may decide to pay off the \$500 loan (i.e. the least expensive debt to keep) first within the parameters of a constrained budget to eliminate one of the debt accounts. This decision provides debtors a feeling of accomplishment and positive progress toward total debt repayment.

Several theories could explain this irrational behavior in multiple credit cards debt management. First, payment is painful, especially when it is decoupled from consumption (Thaler, 1985; Gourville and Soman, 1998). When a consumer uses a credit card, the consumption benefits are typically decoupled from the cost of the payment as the consumption is experienced before the payment (Gourville and Soman, 1998). Therefore, credit card debt, which is also referred to as debt account, represents a potential loss at the time of payment because most of the benefits are depreciated in the past (Soman, 2001). When the number of debt accounts increases, the cost of debt becomes more salient as the disutility of segregated losses exceeds the disutility of aggregated losses (Kim, 2006; Kahneman and Tversky, 1979). Renewable resources theory (Linville and Fischer, 1991) posits that individuals have limited, but naturally renewable, loss buffering resources that are used to attenuate the aversive impact of negative events. When credit card users encounter multiple losses at the same time, the psychological burden of handling multiple losses requires borrowers to use a loss buffering (e.g., coping) mechanism to offset some of the pain associated with the immediate perceived losses (Tice, Bratslavsky, and Baumeister, 2001). Debt borrowers can partially discount the negative utility of the total debt by adding a psychological gain to it. In the case of multiple revolving accounts, reducing the debt on one of the revolving credit cards can

serve as a self-imposed psychological reward. Brenner, Rottenstreich, Sood, and Bilgin (2007) define possession loss aversion and assert that parting with a negative possession (i.e., an undesirable item such as debt) is a positive change and evokes pleasure. Hence, it is more desirable for people to change their status quo (e.g., eliminate one of the revolving balances) to experience the exaggerated “relief” from getting rid of an undesirable possession (i.e., a self-imposed reward system).

Additionally, people tend to divide an ongoing goal into many constituent sub-goals to monitor their actual actions (Fishbach and Shah, 2006). Particularly, when a superordinate goal is perceived to be difficult, people often try to attain the intended task by splitting it into smaller, more manageable parts (Newell and Simon, 1972). For example, people who want to stay in shape may pursue this goal via eating healthy, dieting, and exercising. Research indicates that the focus on sub-goal attainment inhibits the relationship between sub-goals and a superordinate goal. The reason is that sub-goal attainment creates a sense of accomplishment that justifies temporary disengagement from the superordinate goal (Fishbach and Dhar, 2005). Moreover, actions that are scheduled in the distant future are represented in more abstract terms, whereas decisions made for the proximal future are represented in more concrete forms (Trope and Liberman, 2003). The pursuit of sub-goals in the distant future is like focusing on a commitment to a superordinate goal and the pursuit of sub-goals in the proximal future is akin to focusing on sub-goal attainment (Fishbach and Shah, 2006). In the context of multiple credit cards debt management, a superordinate goal is to become completely debt free, while a sub-goal is to pay each credit card debt separately. Since borrowers owe many credit cards and they have limited financial resources, paying off multiple

debts is perceived to be difficult. Hence, borrowers may decide to break the intended task into smaller, more manageable sub-goals, each focused on paying off an individual debt. Meanwhile, debt revolvers visualize closing their mental accounts (e.g., being debt free) in the distant future, but closing mental accounts linked to a credit card debt in the proximal future. Therefore, they pursue this sub-goal because it is more achievable and justifiable in the short run, but it diminishes their motivation to attain their superordinate goal, which is to become debt free (Amir and Ariely, 2008; Fishbach and Shah, 2006).

Finally, consumers regularly calculate their relative distance to a goal (Simonson and Tversky, 1992) and compare it with a certain criterion (e.g., paying off the debt). When their rate of progress satisfies this criterion, they experience positive affects (Carver and Scheier, 1990). The goal-gradient hypothesis denotes the actual or the illusion of progress toward a goal increases effort acceleration. It proposes that customers accelerate and persist in their efforts as they approach a program's reward requirement (Kivetz et al., 2006). For instance, customers who had a café reward program increased their coffee purchases as they progressed toward earning a free coffee. When facing multiple debts on various credit cards, consumers may measure their distance to their ultimate goal and, subsequently, repay their debt in a manner that gives them an impression of progress toward the desired goal. Paying off individual loans rather than managing the overall debt account could evoke the perception of progress as it is easier to attain a smaller goal than a big goal.

Based upon the aforementioned theories, this research proposes that credit card users mitigate the negative thoughts of debt payments by reducing the number of their

credit cards. This results in paying off the smallest balance with the lowest APR and runs counter to rational considerations.

**H1:** *People allocate most of their budget toward the debt with the smaller balance and the lower APR when their budget meets (or is considerably close to) the smaller balance.*

### **1.5 Debt Repayment: The Timing and the Nature of Debt**

Research suggests that people are debt averse and they want to pay off debt that does not provide any further benefits (Prelec and Loewenstein, 1998). Gourville and Soman (1998) refer to this process as “benefit depreciation.” That is, when the consumption benefit depreciates over time, payment feels more like a pure loss. When people feel there is no future consumption benefits associated with a product acquired with a loan, they do not want to deal with the hassle of future payments. Hence, a consumer’s payment decision will depend upon the timing of future benefits. If consumers have loans for which the benefits have already been realized, they tend to pay them off with high priority (Prelec and Loewenstein, 1998).

In addition to the timing of the debt, the purpose of the debt may also influence the way people pay off their debt. Loans may be borrowed for either utilitarian or hedonic purposes. Utilitarian consumption provides consumers with functional benefits that are necessary and useful, whereas hedonic consumption is associated with fun and pleasure (Mishra and Mishra, 2011). Kivetz and Simonson (2002) demonstrate that the pain of

payment is more pronounced for hedonic consumption (e.g., vacation) than for utilitarian consumption (e.g., insurance) because, by definition, hedonic consumption is not essential and is more difficult to justify. Also, hedonic consumption is considered wasteful and may evoke guilt (Chen, Kalra, and Sun, 2009). Research shows that people quickly adapt to enjoyable consumption (e.g., consuming one's preferred ice cream) because hedonic experiences depreciate more quickly than utilitarian experiences (Kahneman and Snell, 1990; Wang, Novemsky, and Dhar, 2009). Therefore, this paper hypothesizes that people are more willing to pay off debt associated with hedonic consumption than utilitarian consumption when the consumption benefits have been realized in the past.

**H2a:** *People allocate most of their budget toward the debt with the smaller balance when it is associated with past hedonic consumption than when it is associated with past utilitarian consumption.*

Conversely, thinking about future hedonic consumption is more enjoyable than utilitarian consumption (Nowlis, Mandel, and McCabe, 2004). Due to the emotional attachment to hedonic consumption, people anticipate more enjoyment and satisfaction from using hedonic rather than utilitarian products in the future (Shiv and Huber, 2000). Similarly, Caplin and Leahy (2001) indicated that the expectation from future hedonic consumption has an additional positive impact on the overall evaluation of consumption. Loewenstein (1987) finds that people are willing to pay a greater amount of money if they receive a kiss from a movie star three days in the future instead of immediately. In

another study, Nowlis et al. (2004) report that people who wait to consume a chocolate bar for an unknown period of time enjoy the consumption more than people who consume it immediately. Since the anticipation of hedonic consumption in the future gives people pleasure, they will be reluctant to ruin their mood by making a payment. Soman and Gourville (2001) indicate that, ideally, consumption should be decoupled from payment so that it does not evoke negative feelings about the payment. Hence, this paper proposes that people are more willing to pay off debt associated with utilitarian consumption rather than hedonic consumption when the consumption benefits are expected in the future.

**H2b:** *People allocate most of their budget toward the debt with the smaller balance when it is associated with future utilitarian consumption than when it is associated with future hedonic consumption.*

## **1.6 Does the Number of Credit Cards Matter?**

The value function in prospect theory (Kahneman and Tversky, 1979) is defined as deviation from a reference point and is generally steeper in the loss domain than in the gain domain. This theory implies that the overall subjective utility from segregated gains is less than one aggregated gain, whereas the overall subjective disutility from segregated losses is more than one aggregated loss (Hsee, Hastie, and Chen, 2008). Therefore, prospect theory suggests that consumers would be motivated to reduce the number of debt accounts immediately to reduce the total cost of mental accounting. This theory also

reports that the value function in the domain of losses is steepest near zero and gradually becomes flatter when the number of losses increases (Thaler and Johnson, 1990). For example, the marginal utility (e.g., the relative reduction in the pain of payment) gained from reducing the number of debt accounts from two to one is significantly more than reducing the number of segregated debts from five to four. In other words, when the number of mental accounts increases, closing one of them would not give rise to enough noticeable psychological gain (e.g., positive emotions evoked from a reduction in the pain of total loss) for people to use it as a loss buffering mechanism (Linville and Fischer, 1991). Accordingly, this paper predicts that people will be more likely to pay debt in accordance with their APR when the number of debt accounts significantly grows. It is important to note that we arbitrarily chose the number of debt accounts to increase to five as credit reports show that American consumers, on average, own five credit cards (Credit Card Report, 2012).

**H3:** *People who own two debt accounts are more likely to allocate most of their budget toward the debt with the smaller balance than people who have five debt accounts.*

## **1.7 Debt Management and the Source of Income**

Prospect theory (Kahneman and Tversky, 1979) suggests that people are more sensitive to losses than to corresponding gains relative to their current reference point. That is, for the equivalent gain and loss, the loss will be accentuated relative to the

corresponding gain. When payment is loosely decoupled from consumption, it is a hedonic loss (Prelec and Lowenstein, 1998) such that people feel pain when paying. Research indicates that the “pain of payment” is caused by the nature of the payment. Prelec and Lowenstein (1998) indicate that paying in cash elicits greater pain of payment than paying by other modes of payment. Similarly, Soman (2001) finds that the pain of payment is immediate in the case of cash payments, whereas the pain is attenuated in the case of credit card payments.

Paying with windfall income reduces the pain of payment (Soman and Cheema, 2001). Windfall money is unexpected and thus, it is unbudgeted income. Parting with a resource that was earned with effort is more painful than windfall money that is received effortlessly. People also feel more ownership of the former resource than the latter (Soman, 2001). Windfall money is typically spent more frivolously than normal income (Thaler, 1985). Windfall money also evokes positive feelings and promotes self-gratification (Levav and McGraw, 2009). O’Curry and Strahilevitz (2001) demonstrate that people are more willing to buy hedonic products with a windfall gain than with ordinary income.

Accordingly, this paper proposes that people will pay their debt more rationally when they use effortful money rather than windfall money. That is, people are more likely to pay off the debt with the highest APR when they spend from their savings than when their income source is windfall money. Conversely, people are more inclined to pay off the smallest debt with the lowest APR when they spend their windfall money as opposed to their savings. Accordingly, the following hypothesis is set forth:



**H4a:** *People who use windfall money are more likely to allocate most of their budget toward the debt with the smaller balance than people who use the equivalent amount of money from their savings.*

Effort is often not available in a monetary format; however, people may convert it into a task that can be rewarded financially and psychologically in the future. For instance, a loyalty program allows people to earn reward points toward their future purchases. These reward points have both financial (e.g., when they are redeemed) and psychological (e.g., status) meanings to consumers (Hsee, Yu, and Zhang, 2003). Research indicates that “sunk cost effect” appear for the effort people invest into loyalty programs (Kivetz and Simonson, 2002), but it is of a weaker magnitude when compared to monetary investments (Soman, 2001). The reason is that individuals either fail to calculate the opportunity costs of effort when unstated (Neumann and Friedman, 1980) or they discount it when prompted (Hoskin, 1983). When people invest non-monetary resources, they notice the pain of investment, but they are less sensitive to their loss as compared to a monetary investment (Monga and Saini, 2009). In other words, parting with non-monetary income will be less painful than spending money that was earned with hardship. Kivetz et al. (2006) find that people feel they are entitled to indulge when they use their loyalty program points. When the disutility of payment appears less evidently, people will be more likely to spend their reward points irrespective of the true cost of the debt. Hence, this paper proposes that people are more likely to pay off the smallest debt with the lowest APR when the income source is reward points rather than money from their savings.

**H4b:** *People who use reward-based money are more likely to allocate most of their budget toward the debt with the smaller balance than people who use the equivalent amount of money from their savings.*

### **1.8 Why Does This Effect Occur?**

Past research findings suggest that people account for their costs and seek benefits to close their mental accounts. Heath and Soll (1996) indicate that individuals track the costs of their expenses and assign those costs to the relevant mental account. By doing so, a consumer may evaluate the overall experience as gain or loss depending upon whether the positive utility of consumption surpasses the negative utility of financial payment (Prelec and Loewenstein, 1998). Soman (2001) finds that people actively track the cost of their mental accounts and depending upon the nature of the cost (e.g., time vs. money), they demonstrate different sunk cost effects. Similarly, Soster, Monga, and Bearden (2010) confirm that mental cost tracking mediates the likelihood to seek benefits after a payment.

The notion of tracking the cost of multiple debt accounts, each being treated as a segregated loss, creates a cognitive and emotional burden for individuals (Soman, 2001). This is because the segregation of losses makes each loss appear independently and more saliently (Cheema and Soman, 2008). Dealing with segregated losses is distressing and may evoke strong negative emotions (Kahneman and Tversky, 1979). The renewable resource model (Linville and Fischer, 1991) asserts that individuals have limited, but renewable, loss buffering resources that are used to attenuate the aversive impacts of

negative events. When people monitor the cost of multiple debt accounts simultaneously, their loss buffering resources will be depleted immediately. Therefore, people need to substitute a coping mechanism to offset some of the costs associated with their total debt accounts. One strategy is to change the structure of segregated losses and eliminate one (or more) of the losses from the set. Brenner et al. (2007) show that people, arbitrarily, part with a loss so that they can keep their emotions under control. If borrowers know that their available budget can be used toward reducing (or eliminating) the total cost of the mental account, they will decide to close one of the mental accounts to attenuate the aversive impact of multiple losses. Therefore, we propose that individuals' motivation to reduce the number of debt accounts is the underlying rationale that explains why credit card users pay off their debt irrationally.

**H5:** *The interaction between the number of credit cards and the type of income on individuals' tendency to allocate their budget toward the smallest debt is fully mediated by their motivation to reduce the number of debt accounts.*

## **1.9 Overview of the Studies**

The core research question in this paper is whether people manage their debt rationally when they own multiple credit cards. Our research hypothesizes that people have a tendency to reduce the number of debt accounts rather than the total cost of debt. This is demonstrated by paying off the loan with the lowest balance, regardless of the

interest rate. In addition, we investigate how various factors, such as the nature of income (e.g., savings vs. reward-based vs. windfall), number of credit cards, type of debt (e.g., hedonic vs. utilitarian), and timing of loan benefits (e.g., past vs. future), may moderate the debt management anomaly. Three experiments are designed to examine these predictions. Experiment 1 uses a scenario-based study to illustrate the main effect (H1). Subjects read a scenario about owning two credit cards from different financial institutions. One of the credit cards has a debt equal to \$600 with a 12% (18%) APR, while the other card has a debt equal to \$1,200 with an 18% (12%) APR. Participants are informed that they have a balance of \$600 (\$400 or \$200) in their savings account after paying for their other monthly expenses. Then, they are told they must use their savings to pay off part of their debt. Participants are given the freedom to allocate their money toward one or both of their debt account(s).

The second experiment explores how the debt management is influenced by the joint effect of the nature (e.g., hedonic vs. utilitarian) and the timing of debt benefits (e.g., past vs. future). Akin to the first experiment, participants are told that they own two credit cards from two different financial institutions. However, unlike the first experiment, we did not manipulate the interest rate of the cards as the purpose of this study was to investigate how the debt management anomaly could be moderated. For all condition, the first credit card has a debt equal to \$600 with 12% APR, while the second card has a debt equal to \$1,200 with 18% APR. We propose that when the consumption for which the debt was incurred has been satisfied, people are more willing to pay off the smaller balance associated with hedonic consumption than utilitarian consumption (H2a). Conversely, when consumption benefits are expected in the future, borrowers are more

willing to pay off debt associated with utilitarian consumption than debt associated with hedonic consumption (H2b).

The third experiment examines whether people's debt repayment decision is conditioned on the number of credit cards and the nature of allocated income. In particular, we compare the likelihood of paying off the smallest debt (\$600) with the lowest interest rate (12%) by varying the number of credit cards individuals own (two vs. five) and the nature of income that individuals allocate toward debt payment (savings vs. windfall vs. frequent flyer). We hypothesize that people's irrational debt payment is attenuated when the number of credit cards increases (H3) and when individuals use their hard earned savings compared to either frequent flyer (H4a) or windfall money (H4b). We suggest that the motivation to reduce the number of debt accounts underlies these effects (H5). This mediating process reveals that people actively monitor the cost of multiple debt accounts and plan to close one of the mental accounts to sufficiently progress toward their end goal of becoming debt free.

### **1.10 Experiment 1**

This experiment tests the prediction that people are debt averse and they exhibit this tendency by reducing the number of debt accounts. This behavior is financially irrational when the smallest debt has the lowest interest rate because individuals neglect the opportunity cost of their income and they underestimate the financial cost of their total debt. Irrespective of the manipulation of the interest rates between credit cards, we expect subjects to overwhelmingly allocate their budget toward the smallest credit card

debt when they intend to pay the entire (i.e., actual progress) or a relatively major portion of the balance of the smallest debt (i.e., illusion of progress). However, this tendency diminishes when the budget covers a relatively minor portion of the balance of the smallest debt (i.e., no progress).

**1.10.1 Pretest.** This experiment involved scenarios where we manipulated the perception of debt payment fulfillment. The perception of actual progress toward the debt payment was created by informing subjects that they have a total of \$600 in their savings account to allocate to their existing debt. Since the balance of one of the credit cards was \$600 across all conditions, the presented budget matched the lowest debt amount and participants were able to completely pay off (close) one of the debt accounts if they desired to do so. It should be noted that any other budget that exceeds \$600 should conceptually create the same perception of actual progress toward the sub-goal, but we conservatively chose an income that matched, not exceeded, the smallest debt balance.

We conducted a pretest among a group of undergraduate students ( $n=22$ ) to identify the minimum income that induced the illusion of progress and the maximum income that created the perception of no progress toward the debt payment. We used the same credit card scenario from the main study in that subjects were told that they owned two credit cards from different, but equal, financial institutions. The first credit card carried a debt equal to \$600 with 12% APR and the second credit card carried \$1,200 in debt with 18% APR. Respondents imagined that they wanted to pay the smallest debt equal to \$600, but they had less than \$600 in their savings account. Then, they were presented with two questions with sliding scales, each ranging from \$0 to \$599. The

questions were: “By moving the slider to the left or right, please indicate the minimum [maximum] income that when used entirely would [not] give you the impression of progress toward the credit card debt payment”. We counterbalanced the order of these questions to eliminate any order bias. Our results indicated that, on average, people with a minimum of \$428.56 (SD=61.44) in their savings account formed an impression of progress, whereas individuals with a maximum of \$188.33 (SD=49.61) perceived no progress toward debt management. Using the one sample t-test, we compared these values to \$400 and \$200 correspondingly and they were not significantly different ( $t's < 1$ ,  $p > .05$ ). Thus, in the main experiment, we used \$400 in the savings account to manipulate the illusion of progress and \$200 in the savings account to manipulate the illusion of no progress toward debt payment.

**1.10.2 Design, participants, and procedure.** This experiment is a 2 (smallest debt APR: 12% vs. 18%) x 3 (budget limit: \$600 vs. \$400 vs. \$200) between subjects factorial design. Two hundred forty-six undergraduate students were recruited from a public, southern university in the United States to participate in this experiment in exchange for partial course credit ( $M_{age} = 22.36$  years,  $SD = 5.14$ ; males=119 and females=125). A total of five individuals were later excluded from the analyses as they either failed the manipulation check or they did not finish the survey completely. Subjects completed an online survey and were randomly assigned to the one of the six possible conditions. The first two pages of the study were common to all conditions. They described the purpose of the study and asked for consent to participate. The scenario asked participants to imagine that they had two credit cards from different financial

institutions, M and S. Depending upon the experimental condition, subjects were informed that they had a debt equal to \$600 with a 12% (18%) APR on credit card M and a debt equal to \$1,200 with an 18% (12%) APR on credit card S. We manipulated the interest rates assigned to the credit cards such that half of subjects associated the smallest debt with the highest APR, whereas another half associated it with the lowest APR. Participants were also informed that they had a balance of (\$600 or \$400 or \$200) in their savings account after paying for all their expenses. Then, they were asked to use their savings to pay off their existing debt the way they preferred. The aim was to see how participants allocated their income between two credit cards. The scenario for the smallest debt with the lowest APR is presented below. Please note that words in the brackets denote the conditions to which participants were randomly assigned.

*“Imagine that you have recently graduated and are in a new job making an after-tax salary of \$3,600 per month. You are keen to reduce the debt you incurred while in college, and after paying for rent, groceries, utilities, and entertainment, you have a balance of \$600 [\$400/\$200].*

*Currently, you have two credit cards, say, M and S. Credit card M has a debt of \$600 @ 12% [18%] APR and credit card S has a debt of \$1,200 @ 18% [12%] APR. Assume that you have paid the minimum balance of each credit card and you want to use \$600 [\$400/\$200] from savings to pay down your debt.*

*Please indicate how you would use the budget to reduce your existing debt. You may choose to allocate the budget to one of the accounts or spread your money across both accounts.”*

In the last page of the survey, we asked participants to answer manipulation check questions and to indicate their level of involvement and their overall knowledge of credit card terms.



### **1.10.3 Independent variables.**

*1.10.3.1 Smallest debt APR.* We chose two interest rates of 12% and 18% for this experiment. We manipulated the order of assignment of these interest rates between credit cards at two levels. First, we assigned 12% APR to credit card M which had the smallest balance (\$600) and 18% APR to credit card S which had the largest balance (\$1200). Additionally, we reversed the order of the APR assignment, meaning that credit card M with a \$600 balance was given 18% APR, while credit card S with \$1,200 balance was shown with 12% APR.

*1.10.3.2 Income level.* The amount of income that participants were allowed to use to pay down their credit card debt was manipulated at three levels. The first group was told that they had \$600 in their savings account. This income was equal to the debt balance on credit card M. The second group was given \$400 in their savings account to pay down their debt. Finally, the last group had \$200 in their savings account to be used for debt payment. This income was presented to all participants as the net savings after all expenses were deducted. We expect the \$600 income to create the impression of actual progress, the \$400 income to convey the illusion of progress, and the \$200 to be interpreted as no progress toward debt reduction. These values were chosen based upon the results of the pretest that we reported earlier.

**1.10.4 Dependent variable.** The dependent variable is was the proportion of budget allocated to the smallest balance. We presented a sliding scale next to each credit

card and asked participants how much of their existing budget they wanted to allocate to each debt account. Each scale was shown in \$20 increments and moving the slider to the right (left) increased (decreased) the allocated budget to the credit card debt. The system only allowed subjects to pay down debt across both credit cards up to their given budget. Next, we divided the amount money that each person allocated to the smallest balance (i.e., credit card M) by their income to calculate the proportion of budget allocated to the smallest balance. For example, this proportion for a person with \$600 income was .7 if he/she allocated \$420 to credit card M and \$180 to credit card S.

**1.10.5 Covariates.** We measured participants' overall knowledge of credit card terms by asking them to rate the following attributes on a 7-point semantic scale (1=one of the least knowledgeable and 7=one of the most knowledgeable): APR%, minimum balance, payment due date, credit card limit, and outstanding balance. An average of the five items was used as a measure of overall credit card knowledge (Cronbach's  $\alpha=.86$ ). The level of involvement with the task was also measured by averaging four 7-point semantic differential scales adapted from Wang and Calder (2006). In particular, we asked participants to indicate whether when they were reading the credit card scenario "they were very involved," "they were very interested," "they read the information carefully," and "they paid a lot of attention." These items were also found to be highly reliable (Cronbach's  $\alpha=.93$ ). Neither the overall knowledge nor the task involvement revealed significant effect on the dependent variables. Therefore, they were not controlled in subsequent analyses.

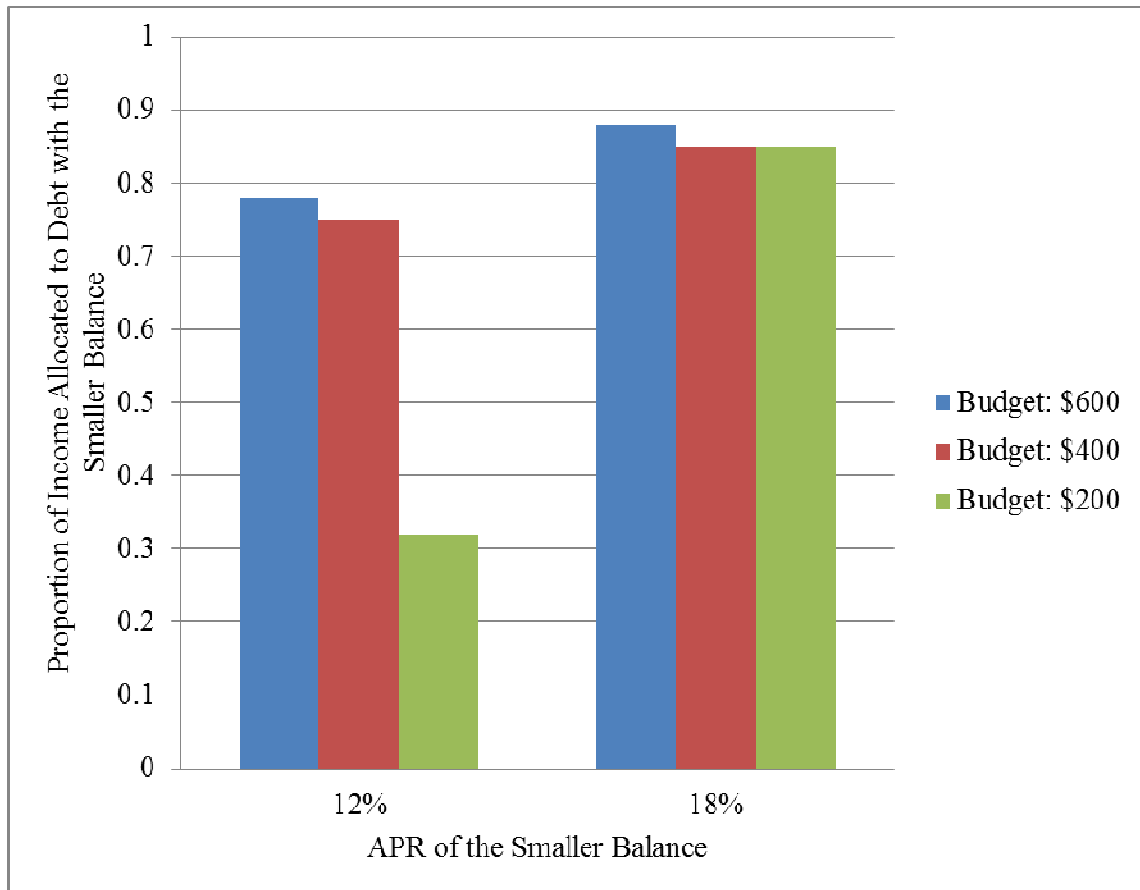
### **1.10.6 Results.**

*1.10.6.1 Manipulation check.* We assessed the success of the manipulation of the independent variables with three questions at the end of the survey. First, we asked people in a multiple-choice question to select the option that properly indicated the balance of credit card debt and their pertinent APRs. Consistent with the information presented in each condition, all but one chose the correct response. Next, we used a recognition task wherein people indicated the amount of budget that they allocated to the debt accounts. No respondents failed in this task either. Finally, we asked individuals to indicate on a 7-point asymmetrical scale to what extent their payment resembled progress toward being debt free (1=not at all and 7=very much). Overall, individuals who were assigned to the \$600 (M=5.42) and \$400 income (M=4.81) perceived greater progress toward their end goal when compared to the group with the \$200 income (M=3.09;  $t=4.36, p<.05$  and  $t=2.66, p<.05$ , correspondingly). No significant difference in the perception of progress toward the total debt payment goal was observed between the income levels of \$600 and \$400 ( $t=1.62, p>.05$ ). Therefore, a total of 241 responses that met the above criteria were kept for further analyses.

*1.10.6.2 Support for H1.* A 2 (smallest debt APR: 12% vs. 18%) x 3 (income level: \$600 vs. \$400 vs. \$200) ANOVA with the proportion of budget allocated to debt with the smallest balance as the dependent variable demonstrated significant main effects of smallest debt APR ( $F(1,235) = 358.63, p<.05$ ) and income level ( $F(2,235) = 125.47, p<.05$ ). More importantly, however, these main effects were qualified by a significant

interaction between the smallest debt APR and income ( $F(2, 235) = 126.99, p < .05$ ).

Figure 1 illustrates these results.



**Figure 1.** The influence of income and the interest rate on the proportion of income allocated to debt with the smaller balance and the lower APR.

Consistent with the classical economic models, planned contrasts showed that when the smallest balance had the highest APR, participants allocated a major proportion of their income to the smallest balance, irrespective of their income level. In other words, no difference was observed for the proportion of payment allocated to the smallest balance among the three income levels ( $F(2, 118) = 1.13, p > .05$ ).

In contrast, our results indicated that in the smallest balance with the lowest APR condition, and consistent with H1, the proportion of payment allocated to the debt with the smallest balance and the lowest APR for both people who had a \$600 income ( $M_{\$600 \text{ income}}=.78$ ) and a \$400 income ( $M_{\$400 \text{ income}}=.75$ ) were significantly higher than for those people who had a \$200 income ( $M_{\$200 \text{ income}}=.32$ ;  $F(1, 117) = 261.92, p < .05$ , and  $F(1, 117) = 270.80, p < .05$ , respectively). No difference was found between the proportion of payment allocated to the debt with the smallest balance and the lowest APR for both people who had a \$600 income and those who had a \$400 income ( $F(1, 117) = 1.51, p > .05$ ).

**1.10.7 Discussion.** A rational consumer should first pay off the debt with the highest interest rate. Once this debt has been paid off completely, then the second most expensive debt should be paid off, and so on. Our results indicated that this pattern only existed when the smallest balance had the highest APR. Interestingly, however, we found special conditions wherein borrowers departed from rational debt management. More specifically, in support of H1, our results determined that borrowers' tendency to reduce the number of debt accounts as opposed to the total financial cost of debt emerged when users passed a certain income level and the smallest balance had the lowest APR. Consistent with the goal-gradient hypothesis (Kivetz et al., 2006), our findings indicated that when people perceived actual progress toward debt account elimination by having \$600 income (i.e., they can pay off the entire debt on one of the credit cards) or they thought they had sufficiently progressed toward becoming debt free by spending a \$400 income toward their debt (i.e., the illusion of being so close to paying off the entire debt

on one of the credit cards), they allocated most of their income toward the debt with the smallest balance and the lowest APR. We suspect that this irrational decision took place because the total debt payment was in the distant future and people took an alternative route (e.g., attaining sub-goals) to reduce the number of their debt accounts.

Contrary to the classic economic models, Study 1 demonstrated that people do not always manage their credit card debt rationally. However, the experimental scenarios used in this study neither articulated the purpose of the loan nor did they refer to the timing of debt benefits. It would be insightful to explore whether the irrationality in debt payment is influenced by these factors. We designed the following study to investigate the concurrent effects of the nature (e.g., hedonic vs. utilitarian) and the timing of debt benefits (e.g., past vs. future) on borrowers' debt management.

### **1.11 Experiment 2**

Experiment 2 tests the prediction that people's decision in debt payment is often affected by the nature and the timing of debt benefits. In particular, this study examines the proposition that when consumption benefits have been realized in the past, people are more willing to pay off the debt with the smallest balance associated with hedonic consumption than utilitarian consumption (H2a). Conversely, when consumption benefits are expected in the future, borrowers are more willing to pay off the debt with the smallest balance associated with utilitarian consumption than hedonic consumption (H2b).

**1.11.1 Pretests.** We chose two vehicle upgrades to represent hedonic and utilitarian benefits based on the results of two pretests. First, a group of undergraduate students ( $n=26$ ) read information about two possible upgrade packages for a vehicle, namely luxury and technology packages. The luxury package included leather seats, seat warmers, and panoramic sunroof, while the technology package offered in-dash GPS, Tiptronic transmission, and an advanced suspension system. We told all participants that both upgrades cost approximately \$1,800. Then, subjects were asked to rate each upgrade package based on ten 7-point semantic differential scales developed by Voss et al. (2003): ineffective/effective; unhelpful/helpful, not functional/functional, unnecessary/necessary, impractical/practical, fun/not fun, exciting/dull, delightful/not delightful, thrilling/not thrilling, and enjoyable/unenjoyable. The first five items measured the utilitarian dimension, while the second five items measured the hedonic dimension of the upgrade package. Then, we subtracted the sum of the multi-item scale measures for hedonism from that of utilitarianism to create a composite hedonism index (Voss et al., 2003). We also counterbalanced the order of presentation of upgrade packages to prevent any bias in responses. Overall, the results from this pretest found that the luxury package, when compared to the technology package, had a higher composite hedonism index. Consequently, it was found to be more hedonic in nature ( $M_{\text{luxury package}}=3.18$  vs.  $M_{\text{technology package}}=-1.52$ ;  $t(1, 25) = 4.86$ ,  $p<.05$ ). Additionally, we asked participants to indicate to what extent these upgrade packages were attractive (1=very unattractive, 7=very attractive) and important (1=very unimportant, 7=very important) to them. Findings showed that the upgrade packages were perceived to be equally attractive and important to the subjects ( $F's<1$ ,  $p>.05$ ).

**1.11.2 Design, participants, and procedure.** This experiment is a 2 (nature of debt: hedonic vs. utilitarian) x 2 (timing of the consumption benefits: past vs. future) between subject factorial design. One hundred sixty-five undergraduate students from the same university participated in this experiment in exchange for partial course credit ( $M_{\text{age}}=22.48$  years,  $SD=4.02$ ; males=90 and females=75). A total of three responses were deleted from further analyses as they either failed the manipulation checks or they were incomplete.

An online survey with four scenarios was created and respondents were randomly assigned to one of the conditions. The first two pages of the study were common to all conditions. They described the purpose of the study and asked for consent to participate in it. Similar to Study 1, subjects were told that they owned two credit cards from different financial institutions, M and S. Credit card M had a debt of \$600 @ 12% APR and credit card S had a debt of \$1,200 @ 18% APR. Participants were informed that the total debt on both cards (e.g., \$1,800) was incurred due to an upgrade to their vehicle. When the type of debt was hedonic, the upgrade was presented as a luxury package that included leather seats, seat warmers, and panoramic sunroof. Conversely, when the type of debt was utilitarian, the upgrade was described as a technology package that included in-dash GPS, Tiptronic transmission, and an advanced suspension system. In addition, we manipulated the timing of debt benefits by telling one group of participants that the upgrade was on a vehicle that they don't own anymore (e.g., past consumption benefits), whereas the other group was told that the upgrade was on a vehicle that they will own in the near future (e.g., future consumption benefits). For example, the scenario for the



credit card debt with the past hedonic benefits was as follows. Please note that the words in the brackets denote the conditions in which the participants were randomly assigned.

*“Imagine that you have recently graduated and are in a new job making an after-tax salary of \$3,600 dollars per month. You are keen to reduce the debt you incurred while in college and, after paying for rent, groceries, utilities, and entertainment, you have a balance of \$600 dollars.*

*Currently, you have two credit cards, say, M and S. Credit card M has a debt of \$600 @ 12% APR and credit card S has a debt of \$1,200 @ 18% APR. Both debts were incurred for a luxury package upgrade (e.g., leather seat, heated seats, and panoramic sunroof) [a technology package upgrade (e.g., in-dash GPS, Tiptronic transmission, and an advanced suspension system] on your current vehicle that you will own in the near future [your old vehicle that you don’t own any longer].*

*Please indicate how you would use the budget to reduce your existing debt. You could choose to allocate the budget to one of the accounts or spread your money across both accounts.”*

Toward the end of the survey, we also collected responses pertaining to the manipulation check, level of involvement, and overall knowledge of credit card terms.

### **1.11.3 Independent variables.**

*1.11.3.1 Nature of debt.* The nature of debt was manipulated at two levels: hedonic and utilitarian. When the nature of the debt was hedonic, participants were told that they were in debt because they upgraded their vehicle with a luxury package that included leather seats, seat warmers, and panoramic sunroof. In contrast, when the debt was utilitarian in nature, we informed subjects that their total debt was incurred because they added a technology package including in-dash GPS, Tiptronic transmission, and an advanced suspension system to their car.

**1.11.3.2 Timing of the consumption benefits.** We framed the consumption benefits associated with debt to be experienced either in the past or in the future. We told one group of respondents that the debt was taken out for a consumption that was realized in the past. More specifically, we told individuals that the debt was used toward a package upgrade on a vehicle that they had already sold. In contrast, we told the second group of subjects that the debt was used toward a consumption that will be satisfied in the proximal future. More specifically, people who were assigned to this condition imagined that the package upgrade was on a vehicle that they will own in the near future.

**1.11.4 Dependent variable.** Similar to Study 1, we measured the proportion of budget allocated to the debt with the smallest balance to serve as the dependent variable. First, participants used a sliding scale to determine how much of their existing budget they wanted to allocate to each debt account. Then, the amount money that each person allocated to the smallest balance was divided by \$600 to calculate the proportion of budget allocated to the smallest balance.

**1.11.5 Covariates.** Similar to Study 1, we controlled for participants' overall knowledge of credit card terms and their level of involvement with the task. Again, these factors did not have any significant effect in the overall model and were not addressed in the subsequent analyses.

### 1.11.6 Results.

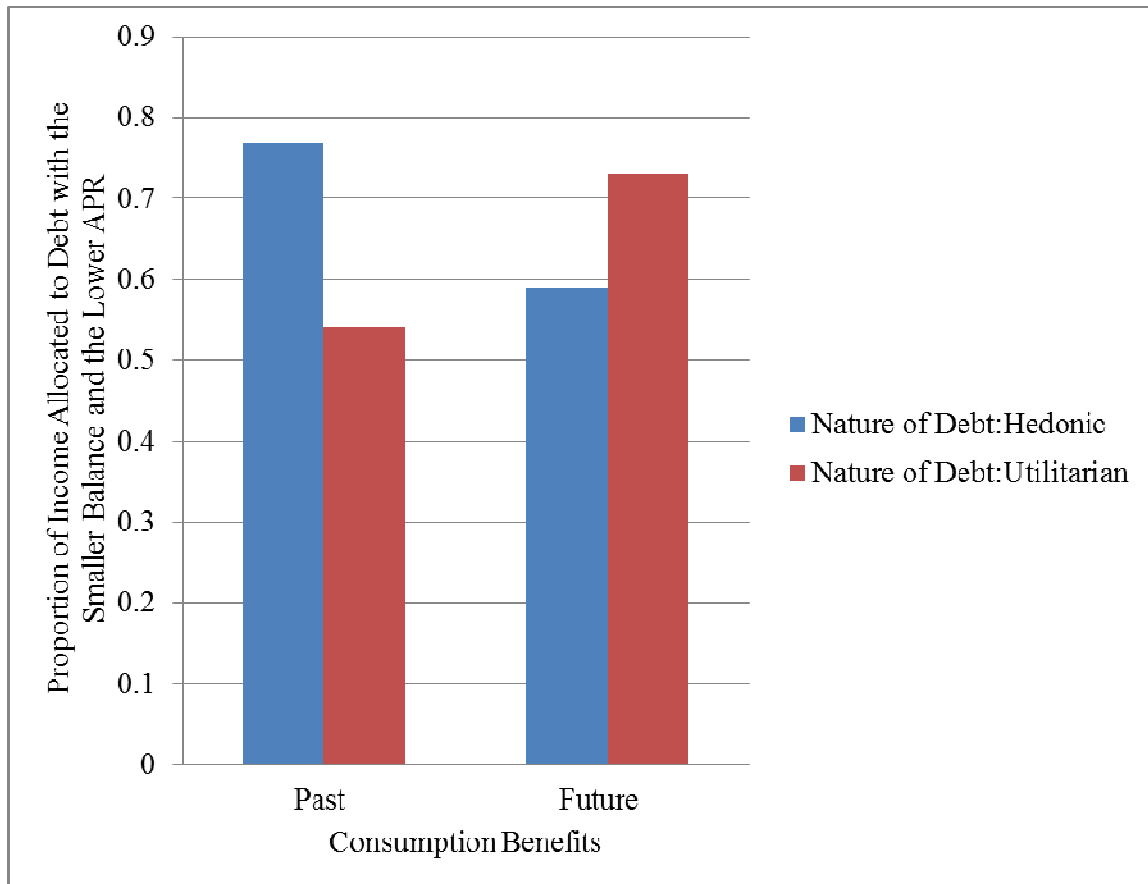
**1.11.6.1 Manipulation check.** We assessed the success of the manipulation of the independent variables with two questions. First, we examined the manipulation of the timing of debt benefits by asking respondents to rate the following question on a 7-point Likert scale (1=strongly disagree and 7=strongly agree): “I seek benefits in the debt associated with the vehicle package upgrade.” As was intended, subjects in the future debt benefits condition sought more benefits than did those in the past (expired) debt benefits condition ( $M_{\text{future}}=5.68$  vs.  $M_{\text{past}}=2.82$ ;  $t(1, 158) = 4.36, p<.05$ ). Additionally, we affirmed the hedonic nature of the luxury package and utilitarian nature of the technology package by using the single-item measures of hedonism and utilitarianism developed by Wertenbroch and Dhar (2000). In particular, at the end of the survey, subjects in each condition were asked to indicate how they rate the vehicle package upgrade on a single hedonic scale of zero (“not at all hedonic”) to six (“extremely hedonic”) and a single utilitarian scale of zero (“not at all utilitarian”) to six (“extremely utilitarian”). Then, we calculated a composite hedonism rating as the difference between each subject’s hedonic rating and the utilitarian rating. This measure was also adopted from the Wertenbroch and Dhar (2000) study. As was expected, the luxury package had a higher composite hedonism rating than did the technology package ( $M_{\text{luxury package}}=2.61$  vs.  $M_{\text{technology package}}=-.9$ ;  $t(1, 158) = 4.11, p<.05$ ).

**1.11.6.2 Support for H2a and H2b.** A 2 (nature of debt: hedonic vs. utilitarian) x 2 (timing of the consumption benefits: past vs. future) ANOVA with the proportion of budget allocated to the debt with the smallest balance as the dependent variable produced a significant interaction between two factors ( $F(1, 158) = 76.76$ ,

$p < .05$ ). However, neither the main effect for debt type ( $F(1, 158) = 3.70, p > .05$ ) nor the main effect for debt benefits ( $F(1, 158) = .09, p > .05$ ) on the proportion of budget allocated to the debt with the smallest balance were significant. Planned contrasts indicated that when benefits of consumption for which the debt was borrowed were realized in the past, participants allocated more budget toward the debt with the smallest balance when it was associated with the hedonic, as opposed to the utilitarian consumption ( $M_{\text{hedonic}} = .77$  vs.  $M_{\text{utilitarian}} = .54$ ;  $F(1, 79) = 74.10, p < .05$ ). This finding supports H2a. That is, among people who have debt on two credit cards, people manage the debt associated with prior hedonic consumption more irrationally than the debt associated with prior utilitarian consumption. On the contrary, when debt benefits were expected to occur in the future, we found the effect to be reversed. That is, participants allocated more budget toward the debt with the smallest balance when it was associated with utilitarian as compared to hedonic consumption ( $M_{\text{utilitarian}} = .73$  vs.  $M_{\text{hedonic}} = .59$ ;  $F(1, 79) = 18.42, p < .05$ ). Therefore, we support H2b which states that among people who have debt on two credit cards, people manage the debt associated with the future utilitarian consumption more irrationally than the debt associated with the future hedonic consumption. Figure 3 illustrates these findings.

**1.11.7 Discussion.** Although both hedonic and utilitarian consumption offer benefits to consumers and one is not superior than the other, our findings, in support of H2a and H2b, demonstrated that debt payment decisions varied based on the nature and the timing of debt benefits. More specifically, we found that when debt benefits were realized in the past, people were more inclined to allocate money toward the debt with

smallest balance and lowest APR when it was associated with hedonic consumption than utilitarian consumption.



**Figure 2.** The influence of the purpose of debt and consumption benefits on the proportion of income allocated to debt with the smaller balance and the lower APR

We argue that this effect occurred because consumption benefits were satisfied in the past and hedonic experiences depreciated faster than utilitarian experiences (Voss et al., 2003). Therefore, according to the “benefit depreciation” concept (Gourville and Soman, 1998), the debt associated with past hedonic consumption appeared as a larger loss than the equivalent debt attributed to past utilitarian consumption. However, we

demonstrated that people allocated more money toward the debt with the smallest balance and lowest APR when it was associated with hedonic consumption more so than utilitarian consumption when consumption benefits were expected in the future. Therefore, individuals were more likely to irrationally pay off the debt associated with the utilitarian consumption than the hedonic consumption when consumption was planned in the future. We think this reversal took place because people anticipated more enjoyment from hedonic than utilitarian consumption (Shiv and Huber, 2000) and they did not want to alter their emotional state by making a payment (Soman and Gourville, 2001).

This study in the context of debt management complements previous research efforts that demonstrate preference reversals between hedonic and utilitarian alternatives in decision contexts (Wertenbroch and Dhar, 2000) and presentation format (Okada, 2005). For example, Wertenbroch and Dhar (2000) found that a hedonic item, when compared to the same utilitarian item, is selected more frequently in forfeiture than in acquisition choices. Further, Okada (2005) determined that between two equivalent hedonic and utilitarian options, people preferred the hedonic alternative over the utilitarian one when each was presented singly. However, this preference was reversed when the utilitarian and hedonic alternatives were presented simultaneously. Our study extends this stream of research by showing that when the hedonic and utilitarian consumption is linked to a credit card debt, it may carry negative connotations and may imply a distinct perception of loss depending upon the timing of the consumption occurrence.

Study 1 and 2 explored the intrinsic attributes of debt (e.g., APR, timing, and the nature of debt benefits) and their subsequent impact on irrational debt management. Study 3 will examine the influence of external factors, such as the number of debt accounts and the nature of allocated income on people's irrational debt payment. In addition, Study 3 will introduce the motivation to reduce the number of debt accounts as the underlying mechanism for the effects we observed across all studies regarding individuals' tendency toward paying a debt with the smallest balance and the lowest APR.

### **1.12 Experiment 3**

This experiment examines the proposition that external factors, such as the number of debt accounts and the type of allocated income, may also influence credit card debt management. More specifically, this study tests the predictions that people tend to manage their debt more irrationally when they have fewer number of debt accounts or when they use their reward-based or windfall money for the purpose of debt payment. We demonstrate that the proportion of income allocated to the debt with the smallest balance significantly increases when people have two instead of five credit cards (H3) and when they use windfall (H4a) or reward money (H4b), as opposed to a comparable amount of savings, to pay off their debt. In addition, we provide a process evidence for these findings. We suggest the motivation to reduce the number of debt accounts to be the underpinning mechanism for the tendency toward irrational debt management (H5).

**1.12.1 Design, participants, and procedure.** This experiment is a 2 (number of credit cards: two vs. five) x 3 (type of income: savings vs. reward-based vs. windfall) between subject factorial design. Two hundred seventy-eight undergraduate students from the same university participated in this experiment in exchange for partial course credit ( $M_{age}=22.46$  years,  $SD=4.48$ ; males=127 and females=150). A total of eight responses were deleted from further analyses as they either failed the manipulation checks or they were incomplete. Subjects completed an online survey and were randomly assigned to one of the six possible conditions. The first two pages of the study were common to all conditions. They described the purpose of the study and asked for consent to participate in it.

In the scenarios, participants imagined that they had either two (e.g., M and S) or five (e.g., M, N, P, R, and S) credit cards from different financial institutions, and the total cost of recent home improvements were divided among these credit cards. In all experimental conditions, credit card M carried a debt of \$600 @ 12% APR and credit card S had a debt of \$1,200 @ 18% APR. In the five credit cards condition, credit cards N, P, and R had different debt equal to \$1,100, \$1,400, and \$1,000 @ 16% APR. Depending upon the experimental manipulation, respondents were informed that after they paid the minimum balance of their cards, they had a balance of \$600 in savings, or they had accumulated 6,000 reward points from an airline frequent flier program which was equivalent to \$600, or they received a bonus of \$600 on their paycheck. Then, they were asked to use their entire income, regardless of format, to pay off their existing debt in any way that they preferred. The outcome was to observe how participants allocate their budget among credit cards. The scenario for five credit cards and \$600 of reward



money is presented below. Please note that words in the brackets denote the conditions in which the participants were randomly assigned.

*“Imagine that you have recently graduated and are in a new job making an after-tax salary of \$3,600 per month. You are keen to reduce the debt you incurred while in college, and after paying for rent, groceries, utilities, and entertainment, you have a zero balance, but you have accumulated 6,000 reward points from an airline frequent flier program that allows you to cash in your points for \$600 [You have a zero balance, but you discover that you have received a bonus of \$600 on your paycheck/you have a balance of \$600].*

*Currently, you have five credit cards, say, M, N, P, R, and S [two credit cards, say M and S]. Credit card M has a debt of \$600 @ 12% APR. Credit cards N, P, and R have different debts of \$1,100, \$1,400, and \$1,000 @ 16% APR. Credit card S has a debt of \$1,200 @ 18% APR [Credit card S has a debt of \$1,200 @ 18% APR]. The total debt was incurred due to a home improvement project that you recently finished.*

*Please indicate how you would use the entire budget to reduce your existing debt. You could choose to allocate the budget to one of the accounts or spread your money across the accounts.”*

After participants finished the debt payment decision, they were presented with questions designed to measure participants’ motivation to reduce the number of debt accounts. Next, subjects responded to the manipulation check questions. Finally, they indicated their level of involvement and their overall knowledge of credit card terms.

### **1.12.2 Independent variables.**

**1.12.2.1 Number of credit cards.** We manipulated the number of existing debt accounts at two levels. The first group of respondents owned two credit cards from different financial institutions, M and S. Credit card M had a debt of \$600 @ 12% APR and credit card S had a debt of \$1,200 @ 18% APR. The second group of subjects owned

five credit cards from different financial institutions, M, N, P, R, and S. Credit card M had a debt of \$600 @ 12% APR credit cards N, P, and R had debt equal to \$1,100, \$1,400, and \$1,000 @ 16% APR, correspondingly , and credit card S had a debt of \$1,200 @ 18% APR.

**1.12.2.2 Type of allocated income.** The type of income that participants were allowed to use to pay down their credit card debt was manipulated at three levels. The first group was told that they had \$600 in their savings account. The second group was told that their savings account was empty, but they had accumulated 6,000 reward points from an airline frequent flier program that were worth \$600. Finally, the last group imagined that the balance of their savings account was zero, but they received a bonus of \$600 on their paycheck. We asked all participants to allocate their entire income toward reduction of their credit card debt.

**1.12.3 Dependent variable.** Similar to previous studies, the dependent variable was the proportion of income allocated to the debt with the smallest balance and the lowest APR. First, participants used a sliding scale to determine how much of their existing budget they wanted to allocate to each debt account. Then, the amount of money that each person allocated to the smallest balance was divided by \$600 to calculate the proportion of income allocated to the smallest balance.

**1.12.4 Process evidence.** We elaborate our findings by identifying the underlying cognitive process. We suggest that the tendency toward irrational debt management

would be mediated by individuals' motivation to reduce the number of debt accounts. To the best of our knowledge, to date, no study has yet to develop a psychometrically sound scale to measure this construct. We created an initial pool of six items to capture the definition of this construct in the context of multiple credit cards. Items' wordings were reviewed by two independent judges to minimize ambiguity and ensure face validity.

We administered this scale with the sample used in Study 1 (n=152). After participants allocated their budget toward debt payment, they were presented with six items developed for the motivation to reduce the number of debt accounts construct. All items were measured on a seven-point Likert scale (1= strongly disagree and 7=very strongly agree). Field (2009) indicates that an item should be deleted from a pool of items if it has an item-to-total correlation less than .5. One item did not meet this criterion and was dropped from the items' pool. Therefore, five items with a reasonable reliability index (Cronbach's alpha=.88) were retained for Exploratory Factor Analysis (EFA) to check the dimensionality of the scale. The maximum likelihood method as an inferential technique and an iterative principle axis factoring as a mathematical approach were used. Both methods conclusively found that this construct was one-dimensional, explaining 65% of the total variance. Therefore, the responses to the five items were averaged to form a single variable for individuals' motivation to reduce the number of debt accounts. The items for this scale are shown in the appendix.

**1.12.5 Covariates.** Similar to previous studies, participants' overall knowledge of credit card terms and their level of involvement with the task were measured. Again, these factors did not significantly influence the dependent variable and were not

controlled in forthcoming analyses.

### **1.12.6 Results.**

*1.12.6.1 Manipulation check.* We assessed the success of the manipulation of the independent variables with two questions at the end of the survey. First, we asked people in a multiple-choice question to select the option that properly indicated the balance of credit card debt and their pertinent APRs. A total of nine individuals failed in this task and were eliminated from the sample. Next, we used a recognition task wherein people chose the amount and the type of income that they allocated to the debt accounts. No respondents failed in this task. Therefore, a total of 269 responses which met the above criteria were kept for further analyses.

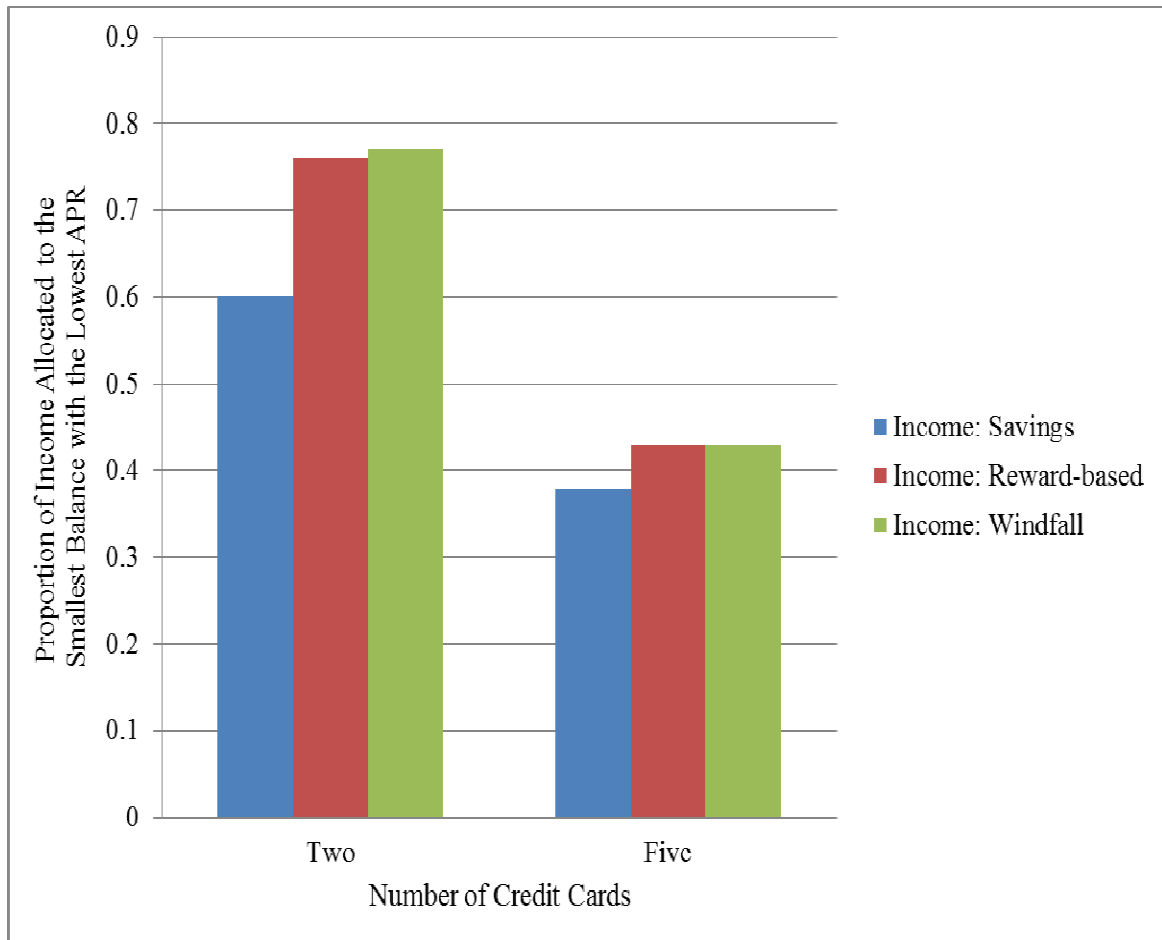
*1.12.6.2 Support for H3.* We conducted an ANOVA on the proportion of income allocated to the debt with the smallest balance and the lowest APR as a function of the number of credit cards and the type of allocated income. There was a significant main effect of the number of credit cards ( $F(1, 263) = 185.60, p < .05$ ) and a significant main effect of the type of allocated income ( $F(2, 263) = 12.19, p < .05$ ). These main effects were also qualified by a significant interaction of the number of credit cards and the type of income ( $F(2, 263) = 3.53, p < .05$ ).

Planned comparisons tested the effects of the number of credit cards on the proportion of income allocated to the debt with the smallest balance when the type of income was savings, windfall, and reward-based. These tests determined that the proportion of income allocated to the debt with the smallest balance declined

significantly from the two credit card condition ( $M=.60$ ) to the five credit card condition ( $M=.38$ ;  $F(1, 98) = 57.93, p < .05$ ), when savings were used. A similar pattern was also observed for reward-based and windfall income conditions. More specifically, when the income allocated to the debt payment was reward-based, there was a significant decrease in the proportion of income allocated to the debt with the smallest balance between the two and five credit card conditions ( $M_{\text{two credit cards}}=.76$  vs.  $M_{\text{five credit cards}}=.43$ ;  $F(1, 77) = 61.40, p < .05$ ). The proportion of income allocated to the debt with the smallest balance when participants allocated their windfall income toward debt payment also significantly dropped from the two credit card condition ( $M=.77$ ) to the five credit card condition ( $M=.43$ ;  $F(1, 88) = 78.45, p < .05$ ). Overall, these results support H4, stating that people who have debt on two credit cards manage their debt more irrationally than people who have debt on five credit cards.

**1.12.6.3 Support for H4a and H4b.** Additional follow-up planned contrasts compared the proportion of income allocated to the debt with the smallest balance for savings, windfall, and reward-based income at two different numbers of credit cards, two and five. In support of H4a, when people had two credit cards, the proportion of income allocated to the debt with the smaller balance for the windfall income ( $M=.77$ ) was significantly higher than that for the savings ( $M=.60$ ;  $F(1, 125) = 47.18, p < .05$ ). In other words, among people who have debt on two credit cards, people who use windfall money manage their debt more irrationally than those who use the equivalent amount of money from their savings. In addition, in the two credit card condition, we found that the proportion of income allocated to the debt with the smaller was significantly greater

when people used their reward-based income as compared to their savings ( $M_{\text{reward-based}}=.76$  vs.  $M_{\text{savings}}=.60$ ;  $F(1, 125)=41.38, p<.05$ ).



**Figure 3.** The influence of the number of credit cards and the type of income on the proportion of income allocated to debt with the smallest balance and the lowest APR

These results support H4b, which states that among people who have debt on two credit cards, people who use reward points manage their debt more irrationally than people who use the equivalent amount of money from their savings. By contrast, no significant difference was observed in the proportion of income allocated to the debt with

the smallest balance and the lowest APR among the type of allocated budget when people had five credit cards ( $F(2, 138) = .89, p > .05$ ). Figure 3 illustrates these effects.

**1.12.6.4 Process evidence.** We conducted a mediated moderation analysis with three regression models (Muller, Judd, and Yzerbyt, 2005). Since the proportion of income allocated to the debt with the smallest balance and the lowest APR did not differ for reward-based and windfall budget in either the two credit card condition ( $M_{\text{reward-based}} = .76$  vs.  $M_{\text{windfall}} = .77; F < 1$ ) or the five credit card condition ( $M_{\text{reward-based}} = .43$  vs.  $M_{\text{windfall}} = .43; F < 1$ ), to reduce the model's complexity, we combined these two levels in subsequent analysis. Hence, the type of income was coded as a dichotomous variable (0=savings; 1=other types), as was the number of credit cards (0=two credit cards; 1=five credit cards). Table 1 summarizes these regression models.

The first regression model revealed that the interaction between the number of credit cards and the type of income had a significant influence on the proportion of income allocated to the debt with the smallest balance and the lowest APR ( $t(1, 265) = -2.64, p < .05$ ). The second analysis determined that the interaction between the number of credit cards and the type of income in the presence of main effects had a significant influence on individuals' motivation to reduce the number of debt accounts ( $t(1, 265) = 2.34, p < .05$ ). The third model indicated that when the motivation to reduce the number of debt accounts (mediator), the main effects, and the interaction between the number of credit cards and the type of income concurrently predicted the proportion of income allocated the debt with the smallest balance and the lowest APR, the mediator was significant ( $t(1, 265) = 2.87, p < .05$ ) and the interaction term became insignificant ( $t(1, 265) = -1.91, p > .05$ ). In Support of H5, results across the three models supported the motivation to

reduce the number of debt accounts as a mediator of the effects of the number of credit cards and the type of income on irrational debt payment (Muller et al., 2005).

The Sobel test also confirmed that the moderated effect of the number of credit cards and the type of income on the proportion of income allocated the debt with the smallest balance and the lowest APR via the mediator was significant ( $z=2.31$ ,  $p<.05$ ).

**1.12.7 Discussion.** This study explored the role of the number of credit cards and type of income (e.g., savings, reward-based, and windfall) on irrational debt management. In support of H3, our findings demonstrated that people who had debt on two credit cards managed their debt more irrationally than people who had debt on five credit cards. Debt on credit cards represents a potential loss when benefits have been enjoyed in the past (Soman, 2001) and people generally close a mental account with a negative utility (e.g., loss) once consumption benefits are fully received (Prelec and Lowenstein, 1998). The explanation for our findings is derived from prospect theory (Kahneman and Tversky, 1979), which indicates that the value function in the domain of losses is steepest near zero and gradually becomes flatter when the number of losses increases. Therefore, the relative reduction in the perception of loss achieved from reducing the number of debt accounts from two to one is significantly more than reducing the number of segregated debt from five to four.

Further, we found that among people who had debt on two credit cards, people allocated more income toward the debt with the smallest balance and the lowest APR when they used either windfall money (H4a) or reward-based money (H4b) than did people who used the equivalent amount of money from their savings. We believe these



effects occurred because parting with a resource that people earned with hard work (e.g., savings money) was more painful than money such as windfall or reward-based that was earned effortlessly (Soman, 2001). Money that people did not work hard for it would be spent more frivolously than normal income (Thaler, 1985) because individuals fail to calculate the opportunity costs of these investments (Neumann and Friedman, 1980). Hence, our participants paid relatively more attention to the total cost of debt management as opposed to the number of existing debts when they used their savings.

We also offered insight regarding the underlying mechanism for these effects. Our findings corroborated that the tendency toward irrational debt management was mediated by individuals' motivation to reduce the number of debt accounts (H5). Two plausible mechanisms may have created this mediating process. First, the overall subjective disutility from segregated losses is more than one aggregated loss (Hsee et al., 2008). Therefore, participants may have focused on closing one of the debt accounts to improve the overall utility of the remainder of the debt accounts. Second, the ultimate goal of borrowers is to be debt free, but this goal is distant. However, there are other sub-goals that are perceived to be proximal (e.g., fully paying down one of the credit card's debt). Research indicates that goal proximity enhances attention paid to the goal and the effort exerted to attain it (Kivetz et al., 2006). Therefore, our subjects committed themselves to pay off an individual loan (e.g., a proximal goal) at the expense of managing debt with respect to the total cost of debt (e.g., distant goal).

**Table 1.** The results of three regression models for testing the mediated moderation

	Regression Model:1			Regression Model:2			Regression Model:3		
	DV: The proportion of Income Allocated to the Smallest Balance with the Lowest APR			DV: Individuals' Motivation to Reduce the Number of Debt Accounts			DV: The proportion of Income Allocated to the Smallest Balance with the Lowest APR		
	Coefficient t	t-value	p-value	Coefficient t	t-value	p-value	Coefficient	t-value	p-value
Intercept	1.03	1.63	.09	4.15	33.40	.00	.60	11.05	.00
Number of Credit Cards	-.25	-7.88	.00	-.24	-1.48	.14	-.25	-7.94	.00
Type of Income	.15	5.09	.00	-.41	-2.65	.01	.15	5.04	.00
Number of Credit Cards x Type of Income	-.05	-2.64	.01	.28	2.34	.02	-.05	-1.91	.06
Individuals' Motivation to Reduce the Number of Debt Accounts							.18	2.87	.00

### **1.13 General Discussion and Conclusion**

The use of credit cards has grown dramatically and credit card payments have begun to replace cash and checks in most transactions. Despite the benefits, however, using credit cards has its own costs. The convenience of use and non-immediacy of pain of payment has caused about 46% of card holders to report self-control problems in spending with credit cards (Bertaut and Haliassos, 2009). Recent credit card statistics find that American customers have 801 billion dollars in revolving debt, resulting in an average credit card debt of \$15,956 per individual household (Federal Reserve Report, 2012). Also, industry reports indicate that American customers, on average, have five credit cards and the average balance per open credit card is \$1,157 (Wilcox, Block, and Eisenstein, 2011). This research investigated how people manage multiple credit card debt and how they prioritize their debt repayment.

In this paper, with the support of three experiments, we determined that consumers under certain circumstances may manage their debt irrationally (i.e., choosing the least optimal payment decision). Our findings in Study 1 demonstrated that when people perceived actual progress or they thought that they had sufficiently progressed toward debt account elimination, they allocated most of their income toward the debt with the smallest balance and the lowest APR (H1). Study 2 demonstrated that debt allocation decisions depend upon the nature and timing of debt benefits. More specifically, consistent with H2a (H2b), we determined that when debt benefits were realized in the past (future), people were more inclined to pay the debt with the smallest balance when it was associated with hedonic (utilitarian) consumption rather than

utilitarian (hedonic) consumption. Finally, Study 3 provides evidence that an increase in the number of credit cards increases customers' attention to the total cost of debt (H3). Also, our findings revealed that a higher proportion of subjects with two debt accounts allocated income toward the debt with the smallest balance when they used either windfall money (H4a) or reward-based money (H4b) as opposed to money from savings. These effects, however, were not observed when individuals carried five debt accounts. The individuals' motivation to reduce the total number of debt accounts was determined to be the underlying mechanism for the debt payment anomaly (H5).

**1.13.1 Theoretical implications.** Our findings add to the existing literature on financial decision making in the following ways. First, we demonstrate that individuals, regardless of their income level, make a rational financial decision in debt payment when the size of debt balances and their corresponding interest rates negatively correlate. For example, individuals first pay a \$300 debt with 20% APR and then they pay a \$500 debt with 15% APR. However, when people's income meets (or is considerably close to) the smallest balance and the size of debt balances corresponds with the size of interest rates, irrational debt payment emerges. This counterintuitive finding is explained with goal-gradient principle (Kivetz et al., 2006) that suggests that people accelerate effort toward attainment of a goal when they have an illusion of progress toward it (i.e., individuals allocate their income toward debt that can be successfully eliminated now or in the near future). However, when individuals do not perceive progress toward debt payment (i.e., their income significantly falls below the balance of the smallest debt), they shift their attention toward the goal of reducing the overall cost of debt. This notion is in line with

the research by Amar et al. (2011) that indicates that eliminating participants' ability to completely pay off the smallest debt increases rational debt payment.

Additionally, this paper suggests that irrational debt management is derived from people's inherent tendency to reduce the number of debt accounts. Debts on credit cards are perceived as losses and people are motivated to reduce the number of those losses as soon as possible (Prelec and Lowenstein, 1998). Our work indicates that people psychologically prioritize the allocation of their budget toward the debt with the smallest balance and the lowest APR over the largest balance with the highest APR to satisfy their desire to eliminate losses. Therefore, at the expense of managing debt with respect to the total cost of debt (e.g., a distant goal), debtors paid off an individual loan with respect to the desire for debt account elimination (e.g., a proximal goal).

**1.13.2 Public policy implications.** Policy makers can protect consumers' welfare by employing the findings of our research in the following ways. First, we argued that the attainment of a sub-goal (i.e., eliminating one of the debt accounts) endangered the pursuit of the superordinate goal (i.e., eliminating the total cost of debt). We think this effect occurred because the psychological gain from closing one of the debt accounts outweighed the financial loss from repayment of the less expensive debt. We attribute this finding to consumers' lack of understanding about compound APR. Research demonstrates that consumers have difficulty understanding interest compounding (Stango and Zinman, 2009) or they underestimate the exponential growth of their debt (McKenzie and Liersch, 2011), especially when the consumer is not obligated to pay off their debt within a certain period. Policy makers should shift borrowers' focus from immediate

outcomes to more distant outcomes by disclosing information that makes the future costs more salient. Particularly, existing elements of credit card statements can be revamped to assist consumers in calculating the compound interest in each billing cycle and convert it into dollar currency. This suggestion has yet to take place, but there has been some effort to increase consumers' financial literacy. For example, U.S. Credit Card Accountability, Responsibility, and Disclosure (CARD) recently required lenders to display "Minimum Payment Warning" in all monthly credit cards statements. This warning discloses the total amount of money (principal plus interest) that will ultimately be paid if consumers only make minimum monthly payments.

Additionally, this paper suggests that the deviation from rational debt payment will be attuned when debtors' budgets are significantly less than the balance on the smallest card with the lowest APR. Although neither policy makers nor lenders can directly control an individual's income level, they can promote consolidation offers to borrowers with multiple credit card debt to integrate their existing debt accounts into fewer, if not one, debt. By doing so, individuals not only can reduce the disutility of segregated debts and lower the overall interest rate, but they can also mitigate their vulnerability to pay off the most expensive debt (i.e., the debt with the smallest balance and the lowest APR).

**1.13.3 Managerial implications.** The study of credit card debt management is equally important to financial institutions as it is to consumer researchers and policy makers. Lenders risk their assets because credit cards are unsecured loans. Creditors are keen to know how much potential interest they can earn from debtors and how

individuals prioritize payments in their debt portfolio. Our findings indicate that debt repayment depends upon the nature and the timing of the debt benefits. In particular, when debt benefits were satisfied in the past, people allocated their budget toward more hedonic-based debt than toward utilitarian-based debt. However, this preference reversed when consumption benefits were expected in the future. Credit card companies should create credit cards that promote hedonic and utilitarian consumptions differently. This is because the life span of hedonic consumption is typically very short when compared to utilitarian consumption (Voss et al., 2003) and people quickly adapt to it (Kahneman and Snell, 1990). In doing so, lenders can ensure that they can expedite the repayment of the credit card balance by moving up this balance in the hierarchy of customers' debts. For example, customers are more tempted to use their Diners Club International credit card for travel and entertainment because they receive experiential rewards and unique frequent flyer miles. Since the hedonic benefits will depreciate quickly, the customers are more willing to pay the debt attributed to these type of consumption. Alternatively, Home Depot credit card rewards consumers with five points for home/garden improvements purchases and ten points for tools per every dollar spent. Since the nature of these purchases is utilitarian and the benefit of the purchase will be ongoing for many years, customers who incurred debt by using the Home Depot credit card will be more willing to pay off their debt.

**1.13.4 Directions for future research.** Our research yields several interesting areas for future research. Our findings show that people try to reduce the total number of debt accounts, even though it is financially irrational. An interesting question left for

future research is whether individuals' tendency to reduce the number of debt accounts would persist when they consider opening a new debt account. In addition, it would be insightful to find out whether the theories provided in this paper would apply similarly in the context of a decision to open a new debt account. For example, a customer visits an electronic store to buy a new digital camera to replace their old camera that no longer works. The new camera costs \$300. The salesman asks the customer if he would like to open a new credit card with an interest rate of 4% APR to buy the new camera. Will the customer accept or decline this offer knowing that he owns two other debt accounts with higher interest rates, for instance 12% and 18%? Does the customer's decision depend on the price of the item? Does the customer's response differ if he can afford to pay the cost of the camera with cash? Will the outcome of the decision change if the consumer owns four debt accounts instead of two?

Another topic for future research is the psychological differences that exist between the elimination of debt accounts and the consolidation of debt accounts. When individuals pay off one (or more) debt, the total amount of debt across all credit cards is reduced. However, when individuals consolidate many debt accounts into a fewer number of debt accounts, the total balance of the debt does not change. For example, when debt accounts were consolidated, Amar et al. (2011) found that the proportion of money suboptimally allocated toward a debt with the smallest balance and lowest APR was significantly decreased. On the contrary, we showed the reverse result, meaning that that the proportion of money allocated toward a debt with the smallest balance and lowest APR was significantly increased when the number of credit cards was reduced. As we pointed out earlier, these findings do not necessarily contradict each other. Rather, the



way debtors cognitively processed two debt scenarios was perhaps different. Further research is needed to shed light on these differences.

Future research should also investigate the role of emotions in debt repayment decision more closely. The current paper discusses the psychology of the debt payment from the cognitive perspective and shows that debtors prioritize the repayment of the debt with the smallest balance and the lowest APR over the debt with the largest balance and the highest APR. While we discussed that this decision was irrational, we did not explore whether individuals already knew that their decision was irrational. They might have demonstrated this behavior because they received emotional benefits from their actions. Research shows that people regularly monitor their affective states in order to adjust them to more comfortable states. More specifically, when people are in a negative emotional state, they generally want to feel better, and this decision becomes a proximal goal to initiate different activities to repair their mood (Tice et al., 2001). Additional research is warranted to tease out the cognitive and affective processes underlying the management of multiple debt accounts.

**1.13.5 Limitations.** The present research was not without limitations. The first limitation is the nature of our sample. We used a convenient sampling method by recruiting undergraduate student subjects, and to that extent, we cannot generalize our findings to the general population. Although our respondents reported that they had a minimum of two credit cards and almost 65% of them were revolving their credit cards debt, our sample does not mimic the profile of the overall population who have credit cards debt. The second limitation is the nature of the stimuli. We employed scenario-

based experiments and we did not measure participants' actual credit cards debt. Although we controlled for individual's overall knowledge about credit cards terms, it does not ensure that people have adequate debt management experience, especially in the exponential growth of interest compounding (McKenzie and Liersch, 2011). Third, we simplified the design of our credit card scenarios and did not communicate more detailed information such as due dates and credit limits for the credit cards. We suspect that individuals who carry debt accounts with different limits and due dates may prioritize their debt repayment differently. Finally, our findings from the second experiment regarding the nature and the timing of debt should be interpreted with caution. We manipulated the timing of the consumption benefits for a product that individuals did not possess at the time of the debt payment decision. In real life situations, however, people may incur future debt for a product that they currently own. For example, many sales promotion deals currently offer the zero cost of ownership to consumers and no debt payment is required until a certain point in future.

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## **Essay 2:**

### **Saving by Overspending**

#### **2.1 Overview**

There are various occasions where consumers prepay before a consumption decision. This paper suggests that under certain conditions, prepayment functions as a justification mechanism for temptation in the forms of overspending and indulgent consumption. Findings from two experiments indicate that monetary prepayments that are anticipated and are spent without consideration of consumption avoidance goals lead to the highest level of temptation. However, when consumption avoidance goals are accessible or a monetary prepayment incurs without anticipation, consumers are able to regulate their consumption and spending behavior. In addition, our results indicate that prepayments made with non-monetary resources, such as time and effort, substantially differ from monetary prepayments and, irrespective of their anticipation, yields to temptation. Pain of prepayment is suggested as the underlying process for these observations.

## 2.2 Introduction

*Mrs. Anderson works in an office in Manhattan, New York. Twice a week, Mrs. Anderson and her coworkers meet at a local bar for happy hour. The local bar charges a \$10 entrance fee on Fridays, but it is free to enter during the rest of the week. Although the menu does not change on Fridays, Mrs. Anderson notices that her bill is more expensive on Fridays than any other day she visits the bar.*

The above scenario is not very rare. We often encounter very similar circumstances in our daily lives in which we make a prepayment before a consumption decision. In the back of our minds, we are trying to get our investment's worth, when, in fact, we are just spending our money irrationally. This paper uses reason-based choice theory (Shafir et al., 1993) and affective restoration model (Tice et al., 2001) to indicate that prepayment toward a consumption goal may result in temptation in the forms of overspending (e.g., spending with no guilt) and indulgent consumption (e.g., choosing vice over virtue). This paper suggests that consumers are cognizant of the extra time, effort, and money they have to put forth in a monetary or non-monetary prepayment. Therefore, they will take actions to justify the cost of their investment, even if that means yielding to overspending and indulgent choice.

Thaler (1980) suggests a mental accounting framework by which people code, categorize, and evaluate economic outcomes. Once the cost of payment is experienced, consumers create a mental account that functions as self-specified allowances and serves as a guide in evaluation (Cheema and Soman, 2006). Recent findings indicate that people can regulate their food consumption by assigning calories to different food categories.

Doing so makes the mental accounting more deliberate and the amount of consumed calories more salient (Krishnamurthy and Prokopec, 2010). Similarly, Raghubir and Srivastava (2008) demonstrate that the likelihood of spending is reduced when an equivalent sum of money is coded into a single mental account (e.g., one \$20 bill) relative to many smaller mental accounts (e.g., 20 \$1 bills). Further, the saliency of the payment may also draw people's attention to the mental accounting rules, which in turn, results in spending (Soman, 2001) and consumption regulation (Thomas, Desai, and Seenivasan, 2011). For example, Soman (2001) demonstrates that people who pay with cash have better control over their expenditures compared to those who pay with a credit card. In that same vein, Thomas et al. (2011) find that the use of cash payments over credit cards strengthens impulse control and decreases unhealthy food decisions. This happens because customers' assets deplete immediately and the disutility (pain) of payment is more salient with the cash payment as compared to the credit card payment in the mental account.

Nevertheless, the exertion of self-control by the use of mental accounting is not a general rule and can be violated under certain circumstances. The violation of self-control principles are revealed with an impulsive decision about spending excessively and/or making an indulgent choice (Wilcox et al., 2009). This essay examines prepayment as one of the criterion through which the use of mental accounting, instead of regulating consumption and spending, may result in excessive spending and indulgent consumption. We offer both cognitive and affective explanations to account for this counter-intuitive effect.

First, from the cognitive standpoint, mental accounting principles are sometimes influenced by reason-based choices that seek to explain consumer preferences are based on reasoning (Kivetz, 1999; Kivetz and Simonson, 2002). Consumers often seek reasons to justify their choices (Shafir et al., 1993), especially when their decisions conflict with their personal values (e.g., spending on hedonic instead of utilitarian options). For example, Shafir and Thaler (2006) examine how wine collectors value wine that they originally purchased for \$25 that now sells for \$75. Their results indicate that most wine connoisseurs feel that consuming the wine costs them nothing. In fact, the justification of purchasing a \$25 bottle of wine that can be sold for \$75 facilitates individuals' consumption decision. Similarly, Thaler (1985) argues that the purchase of a hedonic product is guilt-free when the decision is justified as an investment rather than as consumption. Therefore, we believe that reason-based decisions will counteract the pain of payment and restrictions on consumption and spending when prepayments are justified as investments toward a consumption goal. For example, a consumer who pays a \$10 V.I.P cover charge to enter a club will be more willing to spend money at the bar to justify the cost of the initial payment than a consumer who enters the club for free. This is because people who pay \$10 will consider it as deserving that has been earned.

Second, from the affective perspective, when an initial cost is incurred without the return of an immediate benefit, people experience negative feelings (Cheema and Soman, 2008; Soman, 1998). Research indicates that people regularly monitor their affective states in order to adjust them to more comfortable states (Yi and Baumgartner, 2004). More specifically, the "affect restoration model" (Tice, Bratslavsky, and Baumeister, 2001) notes that when people are in a negative emotional state, they generally want to

feel better, and this decision becomes a proximal goal to initiate different activities to repair their mood. Freedom from self-control is one method that subconsciously helps people to improve their mood and overcome their prior negative frame of mind (Baumeister, 2002). For example, Tice et al. (2001) empirically confirm that people who are in a sad mood are more likely to eat unhealthy foods as compared to those people who are in a neutral emotional state. Hence, people who make a prepayment and want to overcome their negative mood are more likely to regulate their mood by the means of indulgent consumption and over-spending than people who do not make a prepayment.

In addition, this paper extends the concept of prepayments to currencies other than money. The total cost of consumption often entails a prepayment made with behavioral resources such as time or effort. For instance, consumers may spend some time and effort searching on the internet for the cheapest airline ticket before they book a flight. Existing literature suggests that individuals' commitment to attain a planned decision escalates if they have already devoted resources to its attainment (Soster et al., 2010; Monga and Saini, 2009). This robust phenomenon has been referred to as "sunk cost effect" and it usually results in suboptimal monetary and non-monetary decisions (Cunha and Caldieraro, 2009; Soman and Cheema, 2001).

The current research proposes that similar to the monetary prepayment, prepayments made with behavioral resources would result in excessive spending and indulgent consumption. However, the magnitude of this effect compared to that of the monetary prepayment depends on the anticipation of prepayments. More specifically, when prepayment is anticipated prior to the consumption decision, we show that the sunk cost effect for behavioral prepayments is less than that for monetary prepayment. That is,

among people who anticipate prepayment, those who prepay with money are more inclined to overspend and indulge in subsequent decisions than individuals who prepay with behavioral resources. This proposition is consistent with the findings in the existing literature regarding the sunk cost effect in the realms of money, effort, and time (Soman, 2001; Navarro and Fantino, 2009). However, when the prepayment toward a consumption decision is unanticipated, we propose the reverse pattern between the sunk cost effect of monetary and behavioral prepayments. As such, people tend to spend and indulge more in subsequent decisions when unanticipated prepayment was made with the behavioral currency than money.

When people anticipate a prepayment toward a consumption goal, they open a mental budget as a self-allowance mechanism to track their expenses. Heath and Soll (1996) suggest that individuals who devote resources to the attainment of an outcome demonstrate the escalation of commitment by seeking benefits to recover the cost of their payment. Since people easily lose track of their behavioral investments (Ariely and Loewenstein, 2000; Soman, 2001) and the opportunity cost of behavioral resources is often neglected (Frederick et al., 2009), we propose that the magnitude of the sunk cost effect (i.e., the degree of failure to achieve the optimal decision) would be greater for a monetary than a non-monetary prepayment when consumers anticipate such payment prior to consumption. However, when prepayment is unanticipated, consumers do not create a designated mental account to regulate their future decisions after their budget is depleted (Thaler, 1985). This happens because consumers do not have time or cognitive resources to spontaneously create a mental account (Stilley et al., 2010). Heath (1995) asserts that investments which are easily tracked by individuals but they do not belong to

a mental budget result in de-escalation of commitment. That is, individuals are not tempted to seek additional benefits when an investment is easily managed but it does not fit into their mental budget limit. Hence, we suggest that the de-escalation of commitment only applies to monetary prepayment because the opportunity cost of money is more readily accessible from memory (Okada and Hoch, 2004) and individuals are better able to keep track of monetary costs (Soster et al., 2010). However, non-monetary investments are not subject to de-escalation of commitment because they are usually underestimated and not easy to track (Soman, 2001; Hoskin, 1983). For instance, customers who unexpectedly wait an hour to enter a club may subsequently indulge more at the bar than those who unexpectedly pay a \$10 V.I.P cover charge, given that the average hourly wage is \$10.

### **2.3 Monetary Prepayment Violates Self-control**

Mental accounting is a method by which people regulate their consumption behavior (Soman, 2001; Heath and Soll, 1996). People open a dedicated mental account upon making a payment and close it when the consumption benefits are fully received (Prelec and Loewenstein, 1998). Consumers create arbitrary mental accounts as self-specified allowances to ensure they will abide by their consumption/spending budget (Thaler, 1985). Cheema and Soman (2008) suggest that the partitioning of an aggregate quantity of a resource (e.g., food, money) draws people's attention to the small transaction cost associated with each portion. As a result, since people open separate

mental accounts for each transaction, they are better able to control their consumption. For example, in the Weight Watchers program, each food is assigned a point value. Members are encouraged to limit their total daily consumption to a pre-specified number of points (Krishnamurthy and Prokopec, 2010). Similarly, Raghubir and Srivastava (2008) demonstrate that the likelihood of spending is reduced when an equivalent sum of money is presented with a big denomination (e.g., one \$20 bill) relative to many small denominations (e.g., 20 \$1 bills).

There are numerous occasions wherein consumers commit to a consumption goal by making a monetary prepayment. Consumers may pay a \$5 convenience fee to reserve a table at a restaurant, while others may pay a \$10 V.I.P charge to enter a club to avoid waiting in line. However, contrary to the findings regarding the restrictive role of mental accounting on consumption and spending, our paper hypothesizes that when consumers make a prepayment toward a consumption goal, they lose self-control by means of overspending and choosing an indulgent choice.

In the marketing domain, the loss of self-control is typically revealed via an impulsive decision about spending excessively and/or making an indulgent choice (Wilcox et al., 2009). While most people aim to spend their money wisely and avoid unnecessary expenses, they may indulge by overspending in an unplanned shopping situation (Hirschman, 1990). Alternatively, violation of self-control may appear in the form of choosing to consume hedonic products or “vices” (as opposed to utilitarian products or “virtues”) as the purchase or consumption of vices is harder to justify than that of virtues (Okada, 2005). Since the current literature attributes the sunk cost effect to cognitive (Arkes and Blumer, 1985; Thaler, 1985) and affective (Wong and Kwong,



2007) reasons, we delineate the role of prepayment on the loss of self-control by the use of reason-based choice theory (Shafir et al., 1993) and the affective restoration model (Tice et al., 2001).

First, from the cognitive perspective, reason-based choice theory (Shafir et al., 1993) indicates that individuals often justify their actions, especially when the decision is complex (e.g., choosing between multiple attractive options) or it interferes with normative values (e.g., choosing a hedonic product over a utilitarian one). Research shows that the mental accounting process is subjective and consumers have flexibility in coding expenses to justify their spending (Cheema and Soman, 2006). The malleability of mental accounts allows individuals to participate in “creative book keeping” to justify their expenses and consumption habits. Consumers believe that they need a good reason to indulge in order to minimize the guilt and/or regret that they experience throughout the consumption decision (Kivetz and Zheng, 2006). There are numerous incidences regarding the dominance of the justification process over the mental accounting principle. Since people enjoy rewarding themselves for their altruistic behavior, Strahilevitz and Myers (1998) observed that donations to charities are better practiced with hedonic products or “vices” than with utilitarian products or “virtues.”

Thaler (1985) argues that mental accounting rules are often abused to justify pleasurable consumption and do not actually restrain consumption. When justification rules dominate, decision makers are able to create a new mental account to justify their purchase. By doing so, consumers often create “guilt-free” zones for themselves to enjoy spending with no or little guilt (Thaler, 1985). In that same vein, Kivetz (1999) asserts that a reason-based decision may sometimes counteract the mental accounting principles

to eliminate restrictions on consumption and spending. Even consumers with hyperopia (e.g., farsightedness) often indulge when they have a compelling reason (Kivetz and Zheng, 2006). Since a decision maker has an internal need to justify prior investments to avoid considering them as wasteful (Schaubroeck and Davis, 1994), we believe this desire to compensate for the perceived loss of a prepayment guides individuals toward overspending and indulgent consumption compared to those who did not make a prepayment (e.g., “I deserve to be easy on myself tonight because I already paid to enter the club”).

Alternatively, from the affective standpoint, Brenner et al. (2007) find that people may close a mental account to negate negative emotions. By doing so, they create a psychological gain that helps them to manage potential future losses (Fishbach and Labroo, 2007). Further, the affect restoration model (Tice et al., 2001) indicates that when people are in a negative emotional state, they generally want to feel better. This desire becomes a proximal goal to initiate different activities to repair their mood (Labroo and Patrick, 2009). People regularly monitor their affective states to adjust them to more comfortable circumstances (Yi and Baumgartner, 2004). When people are upset, the goal of feeling better precipitates the goal of regulating behavior. Tice et al. (2001) demonstrate that people who are in a sad mood are more likely to eat unhealthy foods compared to those people in a neutral emotional state. Yielding to temptation may help people to improve their mood and overcome their prior negative state of mind (Yi and Baumgartner, 2004). Moreover, Schaller and Cialdini (1990) confirm that negative emotions induce a motivational drive to restore one’s mood. Therefore, this paper proposes that negative emotions evoked by prepayment can be neutralized through

overspending and indulgent consumption. For example, if a person, upon his arrival, is charged a \$10 valet parking fee to go to his favorite restaurant, he will spend more money on food to make up for the fact that he paid \$10 to get into the restaurant. Accordingly, we propose the following hypothesis:

**H1:** *People who make a prepayment toward a consumption goal are more likely to lose self-control than people who do not make a prepayment.*

Recently, Krishnamurthy and Prokopec (2010) demonstrate that mental accounts regulate impulsive consumption successfully when they are combined with consumption avoidance goals. In their study, participants imagined a shopping trip during which they were offered tempting desserts for free. The avoidance goal was activated either by asking subjects to think about reasons not to engage in the consumption or by framing the decision in terms of choosing versus rejecting. Their findings indicate that mental accounting is only effective for the exertion of self-control when avoidance goals are accessible. Given Krishnamurthy and Prokopec (2010)'s findings, one should expect the temptation justification for prepayment to disappear when the avoidance aspect of consumption behavior is made accessible. In other words, we propose that when individuals are informed about the negative consequences of impulsive consumption, they would restrain from temptation.

**H2:** *The temptation for people who prepay toward a consumption goal is attenuated when the consumption avoidance goal is present.*

## **2.4 Prepayment Currencies and Loss of Self-control**

People open a dedicated mental budget for their investment and track it against their budget (Thaler, 1985). When an investment toward a goal is anticipated, people set their mental budget such that the cost of the investment can be accommodated. For example, a consumer who decides to go to a steakhouse restaurant on a date would consider designating a mental account worth \$100 for his dining costs. Existing literature suggests that individuals' commitment to attain a planned decision escalates if they have already devoted resources to its attainment (Monga and Saini, 2009). This phenomenon is known as "sunk cost effect" and it usually results in suboptimal monetary and non-monetary decisions (Cunha and Caldieraro, 2009; Soman and Cheema, 2001). Heath and Soll (1996) suggest that when an investment falls below or meets the limit of a mental budget, it escalates the sunk cost effect. As such, individuals seek benefits to recover the cost of their payment.

A new stream of research has recently evolved that examines the effect of behavioral investments such as time (Okada and Hoch, 2004) and effort (Mogilner and Aaker, 2009) on consumers' perception and decision making. While sunk cost effect is most apparent in the context of financial decisions, Navarro and Fantino (2009) suggest that sunk cost effect also emerges with behavioral investments. That is, in the absence of

any explicit monetary payments, people seek to obtain rewards from the time they spend on a task (Rajagopal and Rha, 2009). Similarly, Soster et al. (2010) find that when people use the same mental accounting period for both money and time, sunk cost effects are observed for both. Further, Kivetz (2005) extends the mental accounting principles to effort as the currency of a transaction. He notes that there is a congruity between the rewards that individuals choose and the amount of consumption effort they devote to a task. By choosing an effort-congruent reward, consumers establish their consumption behavior to reflect their preferences in return for the amount of effort they invested prior to the consumption.

People tend to plan better and spend their money more wisely for their monetary investments than for behavioral investments (Ziberman and Lynch, 2005; Hirschman, 1990). Also, research shows that people keep track of their monetary investments and consider their opportunity costs more so than behavioral resources (Frederick et al., 2009). Overall, the consensus is that while mental accounting can be constructed for time and effort (Kivetz and Zheng, 2006; Monga and Saini, 2009), the sunk cost effect of behavioral investments are weaker than that of monetary investments (Soman, 2001; Zauberaman and Lynch, 2005). The reason is that individuals either fail to calculate the equivalent monetary costs of time and effort when unstated (Neumann and Friedman, 1980) or they underestimate them when prompted (Hoskin, 1983). In other words, when people invest behavioral resources, they notice the pain of investment, but they are less sensitive to their loss when compared to a monetary investment (Cunha and Caldieraro, 2009). Hence, we propose that the loss of self-control caused by prepayment would be

greater for an anticipated monetary prepayment than for an anticipated non-monetary prepayment.

**H3a:** *When a prepayment is anticipated, people who prepay with money are more likely to lose self-control than those who prepay with time which is comparable to that money.*

**H3b:** *When a prepayment is anticipated, people who prepay with money are more likely to lose self-control than those who prepay with effort which is comparable to that money.*

Money is a typical currency for transactions and it keeps its face value in an exchange. Therefore, it is easy to assign a monetary payment to a corresponding mental account (Soman, 2001). Conversely, people easily lose track of time (Ariely and Loewenstein, 2000) and choices are not temporally driven (Ebert and Prelec, 2007). The opportunity cost of money can be readily calculated and is approximately constant across varying situations (Hirschman, 1990). However, the opportunity cost of time and effort are often neglected (Frederick et al., 2009).

Heath (1995) argues that when an investment is easy to keep track of but it exceeds the limit of a mental budget, a reverse sunk cost effect may occur. It means that people who have devoted their resources toward the attainment of a goal, they resist the

pursuit of that goal. He refers to this behavior as de-escalation of commitment. In this case, people are not willing to justify a previous investment that appears to have been a loss. When consumers make an unexpected payment, they do not create a designated mental account so that they can regulate their future decisions when their budget is depleted (Thaler, 1985). This happens because consumers do not have time or cognitive resources to spontaneously create a mental account (Stilley et al., 2010). Therefore, when people make an unanticipated monetary prepayment that is not encoded into a mental account, we propose that they would exercise self-control as a result of a reverse sunk cost effect. For instance, a person who expects to pay a \$10 admission fee to a festival, but ends up paying \$20, may constrain his spending at the festival to make up for the unanticipated sunk cost.

Alternatively, when people experience difficulty in setting mental budgets and the investments are not easily traceable, the escalation of commitment emerges (Heath, 1995). When people make an unanticipated behavioral prepayment, we believe that the sunk cost effect still persists due to the difficulty in constructing a representative mental account, and consequently, tracking the behavioral investment (Okada and Hoch, 2004). Cheema and Soman (2006) note the malleability of mental accounting. They find that people are flexible when assigning expenses to different mental accounts when they are faced with ambiguous expenses such as time or effort. Cunha and Caldieraro (2009) believe that investing behavioral resources without an instant reward is an undesirable cognitive and emotional task. Similarly, Kivetz and Zheng (2006) note that hard work or entitlement justifies self-gratification. In this case, individuals are convinced that they have worked beyond their expectations and they deserve a reward. Therefore, they

choose to boost the enjoyment and desirability of their decision by relaxing their consumption regulation (Kivetz and Simonson, 2002). For instance, when a restaurant has an unanticipated wait, a consumer who does not pay valet and waits for 50 minutes to be seated may choose more indulgent food than a consumer who pays \$10 valet to be seated right away. Therefore, we hypothesize the followings:

**H4a:** *When a prepayment is unanticipated, people who prepay with effort are more likely to lose self-control than those who prepay with money which is comparable to that effort.*

**H4b:** *When a prepayment is unanticipated, people who prepay with time are more likely to lose self-control than those who prepay with money which is comparable to that time.*

## **2.5 Why Do These Effects Occur?**

Prospect theory (Kahneman and Tversky, 1979) suggests that people are more sensitive to losses than to corresponding gains relative to their current reference point. That is, for the equivalent gain and loss, the loss will be accentuated relative to the corresponding gain and the net utility will be negative. Payment represents a potential loss, especially when the benefits are not immediately sought (Thaler, 1980). Prelec and



Lowenstein (1998) believe that people feel pain when making a payment, especially when their payment is loosely decoupled from consumption. The pain of payment associated with depleted resources may remain in the individuals' mind until that mental account is closed (Soman, 2001). The potential pleasure of consumption and the pain of payment are even supported by neuroscientific evidence (Knutson et al. 2007). In particular, this stream of research suggests that individuals have immediate affective reactions to potential gain and loss that indicate the outcome of a purchase decision. The pain of payment represents the overall negative feelings of parting with valuable resources and is largely determined by the nature of the invested resources (Thomas et al., 2011).

Prelec and Lowenstein (1998) confirm that paying with cash elicits a greater sunk cost effect than paying with other modes of payment. Similarly, Soman (2001) indicates that the pain of payment is immediate in the case of cash payment, whereas the pain is attenuated in the case of credit card payment. In the case of a cash payment, the pain of payment is noticeable as customers' assets deplete immediately from the mental account. However, the payment disutility from a credit card payment is less salient and less traceable in the mental account. Further, Raghurir and Srivastava (2008) extend the notion of the pain of payment to spending behavior. According to their findings, people who use currencies in which the pain of payment was not salient (e.g., \$50 voucher instead of \$50 bill) spend more while shopping.

Thaler (1985) suggests that all types of investments create negative feelings, but with different intensity. Payments that are transparent in nature (e.g., cash) are more painful than payments that may not feel or appear as real (Prelec and Loewenstein, 1998).

In other words, reducing the salience of parting with resources psychologically reduces the barrier to spend. Although behavioral and monetary investments are inherently different, findings confirm that individuals experience negative affect with different intensities when these resources are depleted (Monga and Saini, 2009; Soster et al., 2010). Consistent with the current literature, this paper proposes that the pain associated with prepayment (e.g., the negative feelings of parting with valuable resources) is the mechanism causing indulgence. Therefore, it is hypothesized that *the interaction between the currencies (e.g., time, effort, or money) and the anticipation of prepayment* will ultimately lead to the loss of self-control based upon the pain experienced after making a prepayment.

**H5:** *The interaction between the currencies and the anticipation of prepayment on the propensity to lose self-control is significantly mediated by the pain of payment.*

## **2.6 Overview of Studies**

In summary, this paper proposes that making a monetary prepayment toward a consumption goal causes people to lose self-control in the forms of overspending and indulgent consumption. In addition, this research extends the currency of prepayment to other contexts such as time and effort. It hypothesizes that consumers' temptation

increases (decreases) when consumers do not anticipate (anticipate) prepaying with effort-based or temporal-based resources compared to monetary resources.

Two experiments are designed to examine these predictions. Experiment 1 uses a scenario study to test H1 and H2. Subjects read a scenario about making a monetary prepayment for a food festival. Then, they indicate their preference for various types of snacks and the amount of money they are willing to pay for their selected snacks at the event. We propose that people, who make a prepayment and are not primed with a consumption avoidance goal, demonstrate the highest level of self-indulgence and overspending.

In the second experiment, we test H3a, H3b, H4a, and H4b, as well as the underlying process, H5, in a service context. Participants are provided with a situation of attending a restaurant and making prepayment with different currencies (e.g., money, time, or effort) to enter the restaurant. Then, they are asked to list the type of appetizers that they would like to order. We propose that when the prepayment is anticipated, people who prepay with money are more willing to overspend and indulge than individuals who prepay with behavioral resources comparable to that money. Conversely, we expect to find the opposite effect when prepayments are unanticipated. Also, we show that the perceived pain of prepayment is the underlying process for the loss of self-control.

## 2.7 Experiment 1

Experiment 1 tests the prediction that making a prepayment shifts people's preference toward more vice choices and increases the amount of expenditures for a consumption goal. However, we propose that this effect only holds when consumption avoidance goals are not primed. This means that when subjects are asked to think of reasons to avoid engaging in a consumption behavior, the preference for vice over virtue and overspending tendency diminishes.

**2.7.1 Design, participants, and procedure.** This experiment is a 2 (prepayment: no vs. yes) x 2 (consumption avoidance goal: present vs. absent) between subjects factorial design. One hundred fifty-two undergraduate students were recruited from a public, southern U.S. university to participate in this experiment in exchange for partial course credit ( $M_{age}=22.37$  years,  $SD=4.58$ ; males=75 and females=77). A total of seven individuals were later excluded from the analyses as they either failed the manipulation check or they did not finish the survey completely. Subjects completed an online survey and were randomly assigned to one of four possible scenarios. The first three pages of the study were common to all conditions. They described the purpose of the study and asked for consent to participate in it. The scenario asked subjects to imagine that they would be spending a day at an event that featured international food. Then, participants were told that they decided to purchase a snack from one of the nearby food kiosks and were offered sixteen snack options. Eight snacks in the list were unhealthy (chocolate bar,

Chips Ahoy cookies, cheese curls, Doritos chips, ice cream, doughnuts, Oreos, and fruit roll-ups) and the remainder eight snacks were healthy (raisins, celery sticks, cheerios, low fat yogurt, baby carrots, granola bar, rice cake, and apple). The list of snacks was adopted from Laran (2010). Participants were asked to choose only one snack from the list. The target decisions were about whether they chose a healthy (virtue) or unhealthy (vice) option and how much they are willing to pay for their selected snack. The scenario for the no prepayment conditions without priming the consumption avoidance goal was as follows. Please note that the words in the brackets denote the conditions to which the participants were randomly assigned.

*“Imagine that you are at Disney’s Food & Wine Festival. This annual autumn event features international kiosks offering a variety of tasty appetizers and refreshing beverages. The admission to this event is free [\$10]. At the event, you decide to buy a snack from one of the nearby kiosks. Please choose the snack you would like to have from the list on the next page.”*

The key difference in the avoidance goal manipulation was that people who were primed with the consumption avoidance goal were asked to consider and document the reasons to avoid engaging in consumption behavior prior to reading the main scenario. In particular, we told subjects the following: “Often times, people feel like wanting TO AVOID EATING snacks. Can you please list below the reasons that come to your mind that make you want TO AVOID EATING snacks?” Underneath this statement, there was a box that participants were able to list their thoughts. Those for whom the consumption avoidance goal was absent only saw the main scenario.

After participants indicated their snack choice and the amount they were willing to pay, we asked them to write down their rationale for their snack choice. We specifically asked them to be as detailed as possible when reflecting their thoughts. Based on the mental accounting theory (Thaler, 1980), a mental account helps a decision maker to focus on the most salient goal. When the consumption avoidance goal is not primed, people's attention is mainly drawn to the prepayment sunk cost. As such, individuals may choose vice over virtue and spend frivolously to overcome the negative emotions elicited from prepayment. Alternatively, when the consumption avoidance goal is made salient, we expect the participant to stay focused on goals that encourage them to avoid consumption. In other words, they use the open mental budget dedicated to prepayment as the regulating mechanism to achieve their avoidance goal (Krishnamurthy and Prokopec, 2010). Thus, when the consumption avoidance goal is absent, the prepayment should lead to an increase in thoughts concerned with the sunk cost. In contrast, when the consumption avoidance goal is made salient, the prepayment should increase the incidence of health-related thoughts.

In the last page of the survey, we asked participants to answer manipulation check questions and to rate the believability of the scenario, their level of involvement, and their healthy eating habits. We also recorded participants' gender and level of hunger while taking the survey.

## **2.7.2 Independent variables**

**2.7.2.1 Prepayment.** All participants first read a short description in which they were told that they had attended an international food festival. In the prepayment

condition, participants were told that the admission fee to this event was \$10. However, in the no prepayment conditions, subjects were informed that the admission to this event was free. Thus, we initiated a mental account by telling one group of participants that the cost of admission to an event was \$10. We assume that people would choose more vice (unhealthy) snacks to justify the cost of the prepayment. Alternatively, participants in the no prepayment condition did not incur any admission cost and, consequently, their snack choices should not be driven by the negative utility of the prepayment.

**2.7.2.2 Consumption avoidance goal.** A consumption avoidance goal similar to Krishnamurthy and Prokopec (2010) was primed by asking one group of participants to consider and write down reasons to avoid eating snacks. In the case where the consumption avoidance goal was absent, subjects did not see the above statements and were immediately directed to the main prepayment scenario.

### **2.7.3 Dependent variables**

**2.7.3.1 Choice of snack.** Participants selected a snack from a list of sixteen snacks developed by Laran (2010). Half of snacks were unhealthy, whereas the other half were healthy. We pretested this list with a group of undergraduate students ( $n=17$ ). Our results indicated that the snacks, on average, were equally preferred ( $M_{\text{healthy}}=4.58$  vs.  $M_{\text{unhealthy}}=4.71$ ;  $F < 1$ ). In addition, the group of healthy and unhealthy snacks served their purpose properly, measured on a 7-point (1=very unhealthy and 7=very healthy) semantic differential scale ( $M_{\text{healthy}}=4.92$  vs.  $M_{\text{unhealthy}}=2.64$ ;  $F(1, 16) = 85.32$ ,  $p < .05$ ). Participants

were asked to only choose one snack. This choice could have one of two possible values, indicating whether the snack was healthy (coded 0) or unhealthy (coded 1).

**2.7.3.2 Willingness to pay.** After participants indicated their snack choice, they were asked how much they were willing to pay for their snack. Findings from the same pretest indicated that the cost of healthy snacks, on average, were estimated to be about the same as the unhealthy snacks ( $M_{\text{healthy}}=\$2.31$  vs.  $M_{\text{unhealthy}}=\$3.01$ ;  $F(1, 16) = 3.67, p > .05$ ).

**2.7.4 Process evidence.** To gain additional insight into the process leading to overspending and indulgence after people prepay, we analyzed the cognitive responses (i.e., the comments that respondents wrote about their thought process after they chose their snack in the survey). Each reason in the thought protocol was coded as being health-focused, pleasure-focused, or sunk cost-focused. Our prediction is that overspending and indulgent consumption (e.g., choosing vice over virtue) is based on the logic that mental accounting assists individuals in pursuing the most salient goal (Krishnamurthy and Prokopec, 2010). If this is true, when the consumption avoidance goal is absent, we predict that people who prepay would report more thoughts pertinent to the sunk cost than people who do not prepay. This is because they want to close the mental account dedicated to the prepayment by actively choosing snack options that elicit positive emotions. Conversely, when the consumption avoidance goal is activated, people who make a prepayment are more inclined to refer to health-related thoughts than people who



do not prepay. We believe this happens because the mental account assigned to the prepayment will assist individuals to focus on the pursuit of the most salient goal which is consumption avoidance.

**2.7.5 Covariates.** We measured healthy eating habits by averaging five 7-point Likert or semantic differential scales developed by Krishnamurthy and Prokopec (2010) that measured whether participants watched what they ate (disagree/agree), the importance they gave to eating healthy (not at all important/very important), whether they were on a diet (not on a diet/on a diet), their consumption of fruits/veggies (eat less of/eat more of), and the extent to which they tried to choose low-calorie foods (disagree/agree). These items were found to be highly reliable (Cronbach's  $\alpha=.91$ ). Additionally, we controlled for participants' gender, hunger during the survey, and their level of involvement with the scenario. Feeling of hunger was measured on a 7-point semantic differential scale by asking respondents to indicate to what extent they were hungry while taking the survey (not at all hungry/very hungry). The level of involvement with the task was also measured by averaging four 7-point semantic differential scales adopted from Wang and Calder (2006). These items were also found to be highly reliable (Cronbach's  $\alpha=.89$ ). However, only the healthy eating measure and gender revealed a significant influence and were controlled for in subsequent analyses.

## 2.7.6 Results

**2.7.6.1 Manipulation check.** We assessed the success of the manipulation of the prepayment and the consumption avoidance conditions with two questions at the end of the survey. First, we asked people in a multiple-choice question to select the amount that they paid to enter the festival. As was expected, people in the no prepayment condition chose the “free admission” option, whereas all subjects, except two, in the prepayment condition chose the “\$10 admission fee” option. Second, the effectiveness of the avoidance goal priming was measured by comparing the proportion of pleasure-focused thoughts generated by each group across prepayment conditions. Individuals in the salient consumption avoidance goal reported a significantly less number of pleasure-focused concerns than did subjects when consumption avoidance goal was absent ( $M=0.12$  vs.  $M=.28$ ,  $F(1, 139) = 6.31$ ,  $p < .05$ ). Therefore, we concluded that the priming of the avoidance goal was successful. Since no one correctly guessed the purpose of the study, responses from a total of 143 subjects, who met the above criteria, were used for further analyses.

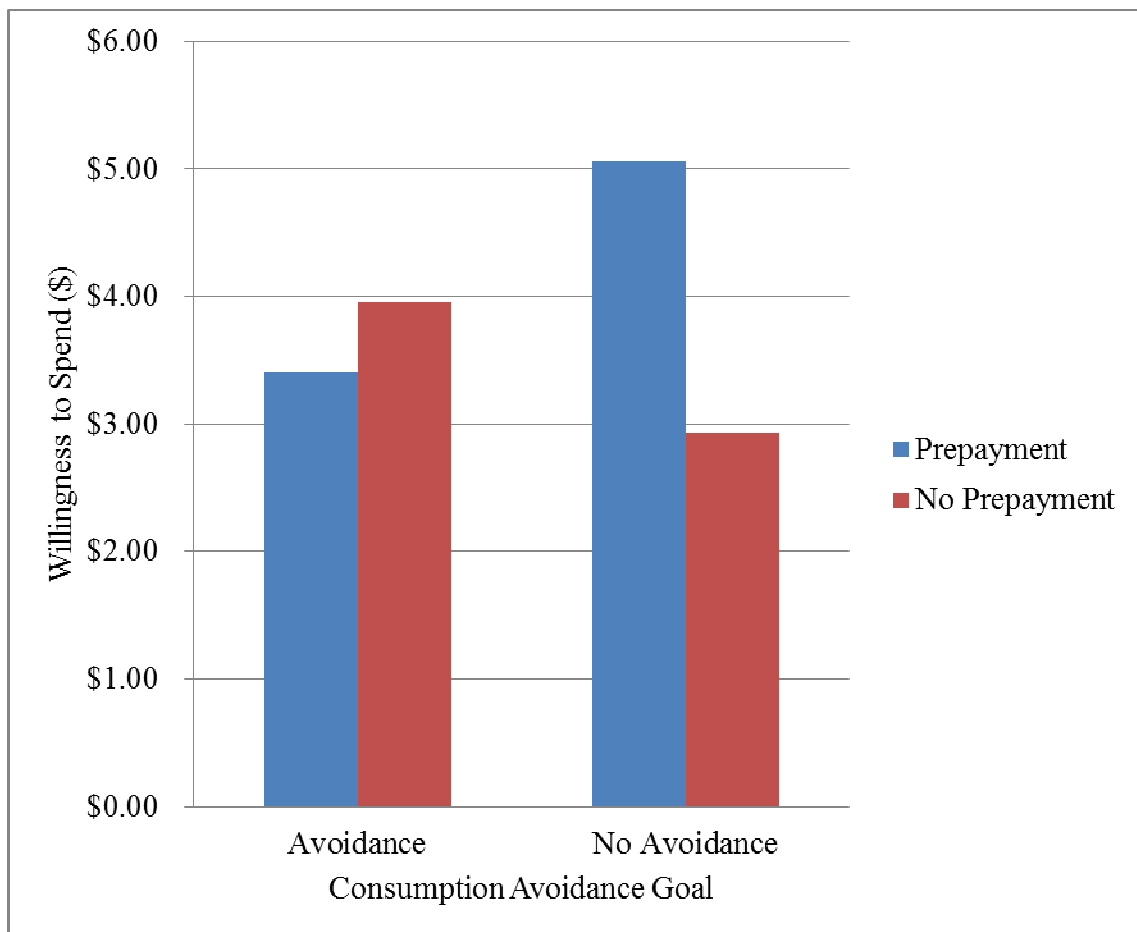
**2.7.6.2 Support for H1 and H2.** A two-way analysis of covariance (ANCOVA) was performed with two levels of monetary prepayment (present vs. absent) crossed with two levels of the consumption avoidance mechanism (present vs. absent) as between-subjects independent variables. The dependent variable was the amount that people reported they were willing to pay for their snack. Healthy eating habits and gender were also entered as covariates in the model.

Our results demonstrated a significant main effect of prepayment ( $F(1, 139) = 7.67, p < .05$ ) such that those who prepaid for the event were willing to spend more on their desired snack ( $M = \$4.03$ ) when compared to those who entered the event for free ( $M = \$3.34$ ). However, no significant main effect of the consumption avoidance goal on the willingness to pay was observed. This means that a willingness to pay for the snack did not significantly differ between people who were primed with the consumption avoidance goal ( $M = \$3.62$ ) and individuals who were not ( $M = \$3.75; F(1, 139) = 1.26, p > .05$ ). In addition, these main effects were qualified by a significant interaction. The avoidance goal and prepayment interaction ( $F(1, 139) = 22.35, p < .05$ ) confirmed that a willingness to pay difference between the prepayment conditions was significantly greater when the avoidance goal was absent ( $M = \$2.13$ ) than it was present ( $M = \$1.56$ ).

Planned contrasts revealed a significant increase in a willingness to pay for the snack when the consumption avoidance goal was absent such that willingness to pay was higher ( $F(1, 68) = 32.04, p < .05$ ) when people prepaid to enter the event ( $M = \$5.06$ ) compared to when they did not ( $M = \$2.93$ ). This finding supports H1 and H2 when overspending is considered as a proxy to temptation. As such, when the avoidance aspect of the behavior was not primed, people who prepaid toward a consumption goal were more likely to spend than people who did not prepay. However, when the avoidance aspect of behavior was activated, the difference in willingness to spend on the snack choice between two prepayment conditions disappeared ( $M_{\text{prepayment}} = \$3.40$  vs.  $M_{\text{no-prepayment}} = \$3.96; F(1, 71) = 1.73, p = .19 > .05$ ). Figure 4 depicts the above results.

To examine the loss of self-control in the context of snack choice, a logistic regression analysis was performed with the monetary prepayment (present vs. absent) and

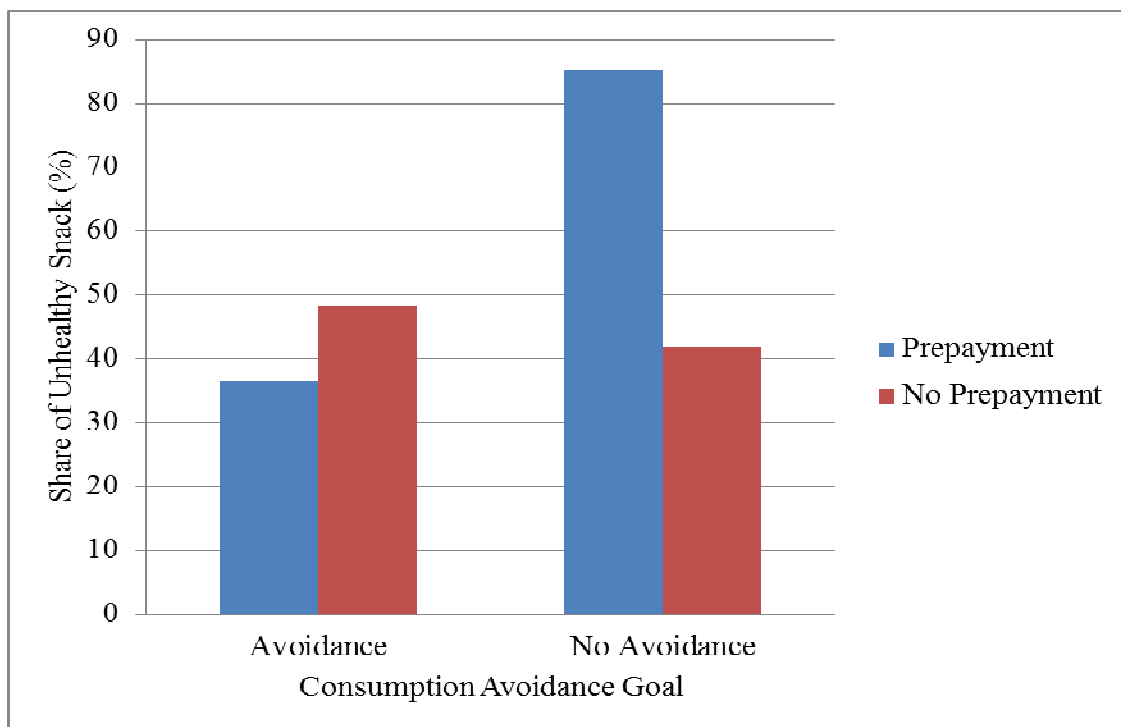
the consumption avoidance mechanism (present vs. absent) as predictors. The dependent variable was the binary choice between an unhealthy or healthy type of snack. Similar to the ANCOVA analysis, healthy eating habits, gender, task involvement, and hunger during the survey were added to the model as control variables.



**Figure 4.** The influence of prepayment and avoidance goal on willingness to spend on a snack

A logistic regression analysis indicated a significant prepayment by avoidance goal interaction (Wald=13.61,  $p < .05$ ), in addition to a significant main effect of the

consumption avoidance goal (Wald=10.55,  $p < .05$ ). In support of H1 and H2, when the consumption avoidance goal was absent, making a prepayment toward a consumption goal resulted in an increase in the choice of the unhealthy snack (85.20% when the prepayment was made compared to 41.90% when there was no prepayment;  $z=3.58$ ,  $p < .05$ ).



**Figure 5.** The influence of prepayment and avoidance goal on preference for an unhealthy snack

Moreover, when the prepayment was made, the preference for the unhealthy snack was higher when the avoidance goal was absent (85.20%) than when it was present (36.40%;  $z=4.01$ ,  $p < .05$ ). However, when no prepayment was made to enter the festival, the preference for the unhealthy snack did not significantly vary across the two avoidance

goal conditions (41.90% vs. 48.30% in the absence and presence of the avoidance goal conditions, respectively;  $z < 1$ ,  $p = .59 > .05$ ). Figure 5 illustrates these results.

**2.7.6.3 Process evidence.** Following the thought protocol procedure discussed earlier, we classified the cognitive responses of individuals regarding their snack selection into health-focused (e.g., “I am very careful about what I eat”) and pleasure-focused (e.g., “I love ice cream. This is the best option in a food festival.”), or sunk cost-focused (e.g., “I paid to get in so why not treat myself to a yummy snack?”) thoughts. Then, we carried out three separate ANOVAs to evaluate how the number of health-related, pleasure-related and sunk-cost related thoughts varied across the prepayment and avoidance goal conditions.

With respect to the incidence of health-focused thoughts, a significant main effect of the consumption avoidance goal ( $M = 0.64$  vs.  $M = .31$ ,  $F(1, 139) = 11.55$ ,  $p < .05$ ) as well as a two-way interaction between the prepayment and the consumption avoidance goal ( $F(1, 139) = 12.62$ ,  $p < .05$ ) was observed. Planned contrast showed that when the consumption avoidance goal was absent, there was no difference between the prepayment and no-prepayment condition in terms of the number of health-related thoughts ( $M_{\text{prepayment}} = .26$  vs.  $M_{\text{no-prepayment}} = .37$ ;  $F(1, 68) < 1$ ). However, when the consumption avoidance goal was present, those who prepaid for an event reported a significantly higher number of health-related thoughts than those who did not prepay ( $M_{\text{prepayment}} = .83$  vs.  $M_{\text{no-prepayment}} = .46$ ;  $F(1, 71) = 5.73$ ,  $p < .05$ ). This finding supports our assumption that a mental account will assist individuals to pursue the most salient goal.

When we analyzed the number of sunk cost thoughts, we observed a significant main effect of prepayment ( $M_{\text{prepayment}}=.61$  vs.  $M_{\text{no-prepayment}}=.25$ ;  $F(1, 139) = 5.69, p < .05$ ), as well as a two-way interaction between the prepayment and the avoidance goal ( $F(1, 139) = 12.62, p < .05$ ). Particularly, a planned contrast indicated that within the consumption avoidance salient condition, there was no difference between the prepayment and no-prepayment condition in terms of the number of sunk cost-related thoughts ( $M_{\text{prepayment}}=.32$  vs.  $M_{\text{no-prepayment}}=.26$ ;  $F(1, 71) < 1$ ). However, when the consumption avoidance goal was absent, those who prepaid for an event reported a significantly higher number of sunk cost-focused thoughts than those who did not prepay ( $M_{\text{prepayment}}=.83$  vs.  $M_{\text{no-prepayment}}=.34$ ;  $F(1, 68) = 7.41, p < .05$ ).

Our analysis for the incidence of pleasure-focused thoughts only revealed a significant main effect of avoidance goal conditions. That is, individuals in the salient consumption avoidance goal reported a significantly a fewer number of pleasure-focused concerns than did subjects when consumption avoidance goal was absent ( $M=0.12$  vs.  $M=.28, F(1, 139) = 6.31, p < .05$ ). Planned contrasts showed that no difference between the prepayment and no-prepayment condition in terms of the number of pleasure-related thoughts in the presence of avoidance goal ( $M_{\text{prepayment}}=.31$  vs.  $M_{\text{no-prepayment}}=.26$ ;  $F(1, 71) < 1$ ) and the absence of avoidance goal existed ( $M_{\text{prepayment}}=.11$  vs.  $M_{\text{no-prepayment}}=.14$ ;  $F(1, 68) < 1$ ).

In summary, we concluded that the cost of prepayment increased people's propensity to choose healthier snacks when the consumption avoidance goal was not primed. However, when the avoidance goal was activated, the tendency toward choosing an unhealthy snack disappeared.

**2.7.7 Discussion.** Results from the first study lend support to H1 and H2. More specifically, we demonstrated that when the avoidance aspect of consumption behavior was absent, individuals who prepaid had a higher tendency to indulge (e.g., choosing vice over virtue) and overspend than those who did not make a prepayment. While mental accounting generally works as a reference point to regulate consumption behavior (Soman, 2001; Thaler, 1985), our findings indicate that mental accounting, dedicated to the cost of prepayment, resulted in indulgent consumption and spending decisions. Our thought protocols revealed that the sunk costs of prepayment caused this anomaly. Participants sought immediate rewards after prepayment to feel satisfied in order to close their mental accounts. This result is consistent with the finding by Fishbach and Labroo (2007) that adding a psychological gain is one way that consumers can suppress the negative utility of an action.

Further, our results showed that priming individuals with an avoidance goal significantly enhanced their self-control in consumption. We found that when a prepayment coincided with an avoidance goal, individuals were better able to monitor their consumption and spending behavior. This finding reflects the role of mental accounting in helping decision makers to stay focused on their salient goals (Krishnamurthy and Prokopec, 2010). That is, a prepayment did not create a deviation from normal consumption behavior; rather, it facilitated individuals' pursuit of the avoidance goal. As a result, individuals reported a significantly higher number of health-focused thoughts when the consumption avoidance goal was present than did those subjects where consumption avoidance goal was absent.



In Study 1, we argued that prepayment and the saliency of the avoidance goal influenced consumption and spending behavior. In Study 2, however, we explore other factors that moderate the influence of prepayment on indulgent consumption. More specifically, we investigate whether different types of prepayment (e.g., temporal, effort-based, and monetary) and the anticipation of the prepayment would influence people's consumption decision. In addition, we reproduce the mediating role of sunk cost thoughts generated from prepayment on indulgent consumption by measuring the pain of payment.

## **2.8 Experiment 2**

Experiment 1 only focused on monetary prepayment. However, experiment 2 examines the prediction that people often prepay with other currencies and they may treat a non-monetary prepayment differently than a monetary prepayment. In particular, this study examines whether the sunk cost effect of monetary and non-monetary (e.g., in the form of time or effort) prepayments varies as a function of individuals' anticipation of the prepayment. When a prepayment is unanticipated, a behavioral prepayment shifts people's preference more toward indulgent (vice) choices than a monetary prepayment does. This prediction is based on the notion of de-escalation of commitment that only occurs to monetary prepayments. Conversely, when a prepayment is anticipated, we expect the difference between monetary and non-monetary prepayment for indulgent consumption to flip. We propose that this reversal effect occurs because when both monetary and non-monetary prepayments are anticipated, they are subject to escalation of

commitment. The pain of payment is discussed as the underlying process leading to indulgent behavior and, especially, the proposed difference among three sources of prepayment.

**2.8.1 Pretests.** The experiment involved scenarios in which people imagined prepaying with different currencies, namely money, time, and effort. We carried out several pretests to ensure equivalence of these resources. First, we told a group of undergraduate students ( $n=19$ ) to imagine they had left their IDs in a car parked four blocks from a club that they wanted to enter. Then, they decided to pay a valet staff to go and get their IDs from the car. We asked subjects to indicate how much they were willing to pay the valet staff for his effort ( $M=\$11.46$ ,  $SD=1.82$ ). This value was found to be not significantly different than \$12 used in the next pretest ( $t(1, 18) = .12$ ,  $p>.05$ ).

Another group of undergraduate students ( $n=20$ ) imagined they had gone to a club that was free for individuals who waited in line, but it charged \$12 VIP for immediate admission. Participants were asked to indicate how long they were willing to wait in line to avoid paying \$12 cover charge ( $M=47.64$  minutes,  $SD= 12.05$ ). Again, this value was shown to be not significantly different than 50 minutes ( $t(1, 19) = .84$ ,  $p>.05$ ). Finally, we confirmed the conversion rate among three prepayment currencies by asking another group of students ( $n=17$ ) to estimate how much a valet parking staff makes per hour ( $M=\$15.2$ ,  $SD=2.23$ ). This value did not significantly differ from \$12 for 50 minutes of service ( $t(1, 16) = .73$ ,  $p>.05$ ). Based on the results of these pretests, we created our experiment scenarios in the context of a service provider such that the equivalent

prepayments with money (\$12), time (50 minutes), and effort (walk eight blocks) would be applicable.

**2.8.2 Design, participants, and procedure.** This experiment is a 3 (prepayment currency: money vs. time vs. effort) x 2 (prepayment: anticipated vs. unanticipated) between subject factorial design with an additional control condition. Two hundred seven undergraduate students from the same university participated in this experiment in exchange for partial course credit ( $M_{\text{age}}=21.52$  years,  $SD=4.17$ ; males=99 and females=97). A total of eleven responses were deleted from further analyses as they either failed the manipulation checks or they were incomplete. Unlike the treatment conditions, the control group participants were exposed to neither the prepayment nor the anticipation of prepayment manipulation information. The rationale for adding this control group was to examine whether prepayment in any format would result in indulgent consumption.

An online survey with seven scenarios (one for the control group and six for the treatment conditions) was created and respondents were randomly assigned to one of the conditions. The first three pages of the study were common to all conditions. They described the purpose of the study and asked subjects for their consent to participate in it. Next, participants imagined that they were going to a popular restaurant. In a between subject design, subjects were informed that due to high demand, they had to pay an admission fee (\$12), wait in line (50 minutes), or make a certain effort (walk eight blocks) to enter the restaurant. In addition, the prepayment information was conveyed

such that it gave participants the impression that prepayment was either anticipated or unanticipated. Then, participants imagined that they entered the restaurant and decided to order. In particular, unlike Study 1 where we provided the snack choices, we asked participants to write down the appetizers they would like to order. We were interested to assess whether subjects' preference (healthy vs. unhealthy dessert) and the degree of willingness to pay varied across experiment conditions. For example, the scenario for the anticipated monetary prepayment was as follows. Please note that the underlined statements changed depending upon the conditions to which the participants were randomly assigned. More details for the wording of all treatment scenarios are available in Appendix 1.

*“Imagine that you go to your favorite restaurant on a Saturday night. The restaurant charges a \$12 admission fee as it is Oktoberfest. Oktoberfest is an international beer festival running from late September to the first weekend in October. Before selecting this place, you expected the cover charge, so you were not surprised when you were asked to pay the admission fee. After you get into the restaurant, you find out that it serves a variety of appetizers. Please list the appetizers that you would like to order on the next page.”*

Individuals in the no-treatment control condition read the following scenario:

*“Imagine that you go to your favorite restaurant on a Saturday night in Oktoberfest. Oktoberfest is an international beer festival running from late September to the first weekend in October. After you get into the restaurant, you find out that it serves a variety of appetizers. Please list the appetizers that you would like to order.”*

After participants indicated their orders and the amount they were willing to pay, we measured participants' negative feelings toward the prepayment (e.g., pain of payment) as the mediator. In particular, we were interested in investigating whether the pain of payment (Thomas et al., 2011) mediated the interaction of the type of prepayment and anticipation on indulgent choice. Finally, we collected responses pertaining to the success of the manipulation of independent variables, the level of involvement, healthy eating habits, gender, and the level of hunger in the experiment.

### **2.8.3 Independent variables.**

*2.8.3.1 Prepayment currency.* All participants first read a short description in which they were told that they went to a popular restaurant on a Saturday night. Prepayment currency was manipulated at three levels: money, time, and effort. The prepayment values were pretested to ascertain they were perceived to be equal. Under the monetary prepayment treatment, participants imagined that they paid a \$12 admission fee to enter the restaurant. When the prepayment was intended to be in time currency, subjects imagined that they had waited in line for 50 minutes before they entered the restaurant. Finally, in the prepayment condition with effort, subjects were informed that they walked eight blocks before they entered the restaurant.

**2.8.3.2 Prepayment Anticipation.** This factor was manipulated at two levels. When the prepayment anticipation was present, the scenario informed participants that the prepayment for the restaurant, regardless of the type, was something expected and it took place without any surprises. Conversely, when the prepayment was unanticipated in the scenario, participants were told that they were surprised because they were not expecting a prepayment for the restaurant.

Besides these two independent variables, a control group was also added to the experiment in that we manipulated neither the prepayment nor the anticipation of prepayment. This control condition allowed us to investigate the significant role of prepayment, irrespective of type, on indulging behavior. We did this by contrasting the effects of prepayment treatments to those of the control condition.

**2.8.4 Dependent variable.** In Study 1, the loss of self-control was measured via overspending and indulgent choices. In this study, we use an alternative method to measure loss of self-control (see Laran, 2010 for details). In particular, after participants read the prepayment scenario, they were given a minute to think about and write down the names of the appetizers they wanted to order at the restaurant. Two judges coded the responses and categorized the listed appetizer(s) by each participant into healthy/virtue (e.g., “salad,” “spinach dip”) or unhealthy/vice (e.g., “French fries,” “calamari”). The definition of vice (unhealthy) and virtue (healthy) were adopted from Khan and Dhar (2007). Vice was defined as “something tempting that may have fewer long-term benefits. It is something that you want, but at the same time feel more guilty choosing.”

Similarly, virtue was defined as “something that is not very tempting now, but may be more beneficial in the long run. It is something that you feel less guilty choosing.” Then, a value of zero (or one) was assigned when a given participant listed healthier than unhealthy appetizers. The inter-judge reliability was approximately 81% and inconsistencies were resolved through discussion.

**2.8.5 Process evidence.** We present the pain of payment as the underlying mechanism for the effect of prepayments with different currencies on indulgent consumption. This construct measured the intensity of the negative feelings that participants experienced after they made the prepayment. In particular, we used the scale developed by Thomas et al. (2011) that asked participants how they felt about paying before entering the restaurant. The pain of payment was measured via using a nonverbal faces scale. Specifically, participants responded to the following question: “Different factors may influence how consumers feel about their service experience. How did you feel about the wait time {admission fee/eight blocks walk} for this restaurant?” Words in the brackets denote the prepayment conditions. Participants indicated their responses on a 7-point nonverbal faces pain scale with a happy face (☺) at the lower end of the scale and a sad face (☹) at the higher end of the scale. For each participant, we determined the intensity of the pain of payment (i.e., negative emotion experienced after payment) by quantifying the response to the nonverbal pain scale.

**2.8.6 Covariates.** Similar to Study 1, we controlled for the effect of healthy eating habits, gender, involvement, and hunger during the survey. Of these measures,

healthy eating habit demonstrated the most influence and was retained in subsequent analyses.

## **2.8.7 Results**

**2.8.7.1 Manipulation check.** We qualified the success of the manipulation of independent variables with two questions at the end of the survey. First, we asked people in a multiple-choice question to select the amount that they paid, the time they spent, and the effort they made to enter the club. As expected, all subjects, except two, selected choices consistent with their experiment conditions. Second, we asked subjects to indicate to what extent the incurred prepayment was anticipated on a 7-point semantic differential scale (1=completely unanticipated and 7=completely anticipated). As expected, participants in the prepayment anticipation group rated the anticipation of the prepayment significantly higher than did individuals in non-anticipation condition ( $M_{\text{anticipation}}=5.88$  vs.  $M_{\text{non-anticipation}}=2.63$ ;  $F(1, 135)=28.12, p<.05$ ). Since no one correctly guessed the purpose of the study, responses from a total of 136 subjects, who met the above criteria, were used for further analyses.

**2.8.7.2 Choice of appetizers.** A logistic regression analysis is used to test the influence of prepayment method (money vs. time vs. effort) and prepayment anticipation (anticipated vs. unanticipated) on the choice of unhealthy (vice) appetizers. Since the prepayment method included three conditions, we created two dummy variables with the monetary prepayment as the base level. Therefore, the logistic regression model consisted

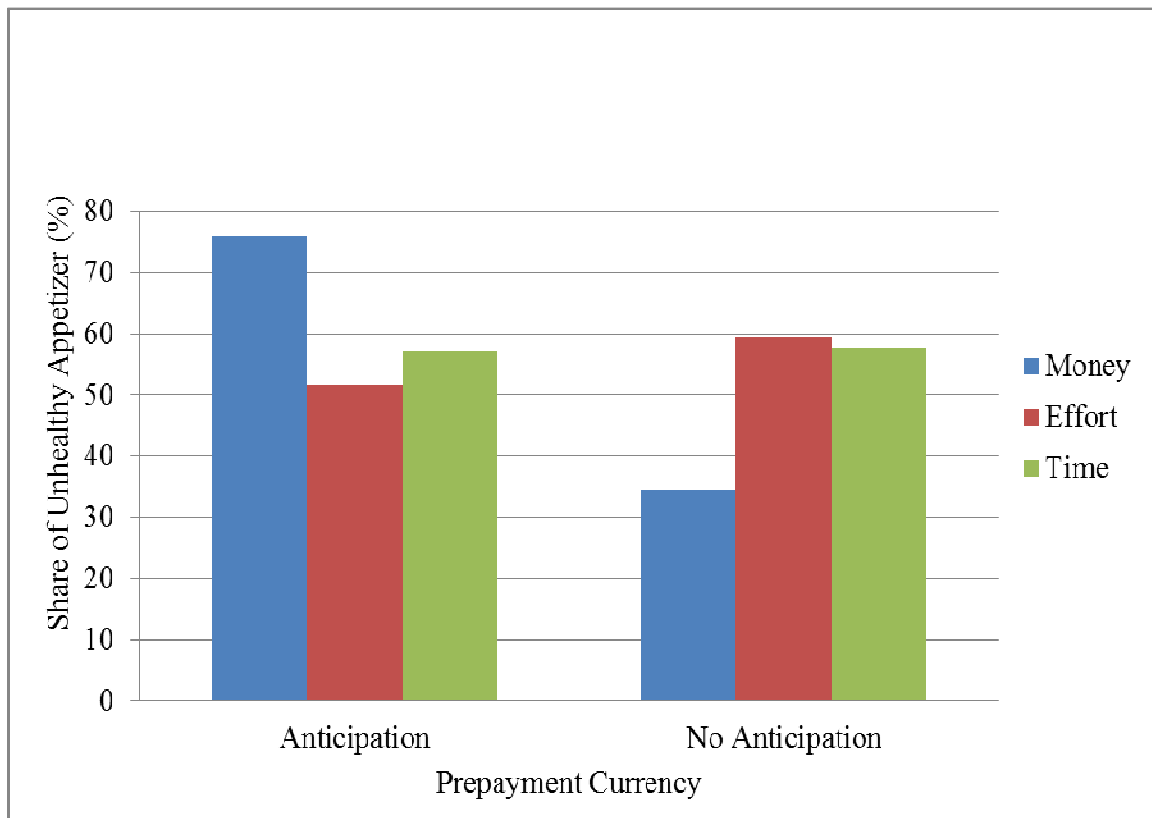


of three main effects (i.e., anticipation, time, and effort dummies) and two interaction terms between prepayment conditions and anticipation dummy correspondingly. Our results indicate that the significant main effect of anticipation (Wald=9.37,  $p<.05$ ) was qualified with two significant interactions between the effort-based prepayment and anticipation (Wald= 5.08,  $p<.05$ ) and the time-based prepayment and anticipation (Wald= 6.92,  $p<.05$ ). Planned contrasts revealed that when prepayment was anticipated, participants were more willing to choose unhealthy desserts when they made monetary prepayment compared to time-based prepayment (75.9% vs. 57.1%;  $z = 2.01, p<.05$ ) and effort-based prepayment (75.9% vs. 51.7%;  $z = 2.63, p<.05$ ). The choice of appetizer(s), however, did not significantly differ between behavioral prepayments ( $z<1, p>.05$ ). These findings support H3a and H3b as the indulgent consumption caused by prepayment is greater for anticipated monetary than anticipated non-monetary prepayment.

Conversely, when prepayment was unanticipated, the pattern of preference for unhealthy appetizers reversed among prepayment conditions. More specifically, in the unanticipated prepayment condition, participants had a higher propensity to choose unhealthy appetizer(s) when they prepaid with time (57.7%) than when they prepaid with equivalent money (34.5%;  $z = 2.55, p<.05$ ). The difference in choice shares was also significant when effort compared to effort-equivalent money was used as the prepayment method (59.3% vs. 34.5%;  $z = 2.68, p<.05$ ). However, no significant difference was found for choice shares of unhealthy appetizers between time-based and effort-based prepayments ( $z<1, p>.05$ ). Hence, H4a and H4b, which state that hedonic consumption as a result of the sunk cost effect increases when unanticipated behavioral prepayments

compared to unanticipated monetary prepayment occur. Choice shares for unhealthy appetizers are presented in Figure 6.

To further explore the overall effect of prepayment on indulgent choice, we contrasted the experimental groups with the control group using independent  $z$  tests. This test was chosen because we wanted to compare the choice shares across experiment conditions. Our results confirmed that monetary prepayment, when compared to the no prepayment scenario, enhanced temptation only when the prepayment was anticipated. In particular, the choice share of unhealthy appetizer(s) for anticipated monetary prepayment was significantly greater than that of the control group (75.9% vs. 36.1%;  $z=3.03$ ,  $p<.05$ ).



**Figure 6.** The influence of prepayment currency and anticipation on preference for an unhealthy appetizer

However, the sunk cost effect for behavioral prepayments (e.g., excessive hedonic consumption) did not vary significantly as a function of anticipation conditions. That is, the choice of unhealthy appetizer(s) for time-based (57.4%) and effort-based prepayments (55.4%) were both greater than that of the control group (36.1%;  $z=2.17$ ,  $p<.05$  and  $z=2.03$ ,  $p<.05$ , correspondingly).

**2.8.7.3 Process evidence.** We carried out a mediated moderation analysis to test to what extent the pain of prepayment predicted the preference for unhealthy appetizer(s). This analysis included a series of regression models to examine H5, stating that the effect of the interaction between prepayment methods and anticipation on unhealthy appetizer preference was mediated by the pain of payment. We followed the steps outlined by Muller, Judd, and Yzerbyt (2005) for the mediated moderation test. First, the interaction between the time prepayment dummy and prepayment anticipation predicted the pain of payment ( $F(1, 162) = 14.31$ ,  $p<.05$ ), as did the interaction between the effort prepayment dummy and prepayment anticipation ( $F(1, 162) = 10.95$ ,  $p<.05$ ). Additionally, these interactions were significant predictors of the preference for unhealthy appetizers (time:  $Wald = 5.08$ ,  $p<.05$ ; effort:  $Wald = 6.92$ ,  $p<.05$ ). Moreover, the pain of prepayment significantly influenced the preference for unhealthy appetizers ( $Wald = 9.03$ ,  $p<.05$ ). However, when the pain of prepayment and the interaction of the prepayment dummies and anticipation simultaneously predicted the preference for unhealthy appetizers, the pain of prepayment remained significant ( $Wald = 6.96$ ,  $p<.05$ ), while the interactions both turned insignificant ( $Wald < 2$ ,  $p > .05$ ). These results

collectively indicate that the effect of the interaction of prepayment currency and anticipation on the preference for unhealthy appetizers is fully mediated by the pain of prepayment. Therefore, we support H5.

**2.8.8 Discussion.** This study explored the role of prepayment anticipation and prepayment currency (e.g., money, time, or effort) on indulgent behavior. Due to difference in mental accounting and the distinct nature of time/effort and money, we demonstrated that the anticipation of prepayment was a determinant factor in establishing the sunk cost effect. In particular, our results indicated that the magnitude of the sunk cost effect for monetary prepayment depends upon the anticipation of such investment. More specifically, when a monetary prepayment was anticipated, people indicated a strong sunk cost effect as represented in the form of hedonic (unhealthy) consumption. Anticipation of prepayment assisted consumers in setting a budget for their spending and accelerated consumption toward the budgeted limit by justifying it as a license to consume (Khan and Dhar, 2006). Since mental accounts are largely formed for monetary investments (Soman, 2001) and people keep track of their money more than other behavioral resources, more indulgent (vice) choices were observed for prepayments made with money than those made with other money-equivalent behavioral resources. This finding is in line with the existing literature in that the magnitude of the sunk cost decreases from monetary to non-monetary investments (Monga and Saini, 2009; Navarro and Fantino, 2009).

However, an opposite pattern for sunk cost effects was observed when prepayments were unanticipated. As such, people who prepaid with money were less likely to yield to temptation than people who prepaid with behavioral resources that were comparable to that money. We attribute this observation to the notion of de-escalation of commitment (Heath, 1995). According to this concept, a “reverse sunk cost effect” occurs when an investment exceeds the mental budget limit and it is easy to be tracked. This finding addresses the future research inquiry set forth by Krishnamurthy and Prokopec (2010) indicating that “it would be worthwhile to examine the possible effects of exceeding the limit of a mental budget on subsequent behavior”. Although unanticipated monetary investments were susceptible to a de-escalation of commitment, behavioral investments, due to the difficulties in setting up and being traced in mental budgets, were immune from the de-escalation of commitment. We introduced the pain of prepayment as the mediator for the interactive impact of prepayment and anticipation on indulgent behavior.

## **2.9 General Discussion and Conclusion**

Consumers encounter self-control conflicts in everyday life. As such, they need to choose between immediate versus delayed gratification. One of the suggested methods that aids self-control and impedes immediate indulgence is the use of mental accounts (Thaler, 1985; Heath and Soll, 1996). Mental accounting sets self-specified allowances to curb consumption and spending habits (Soman, 2001; Krishnamurthy and Prokopec,

2010). In this research, we explore certain circumstances under which mental accounting rules can encourage, as opposed to discourage, indulgence. More specifically, we look into the role of prepayment toward a consumption goal and its influence on money spending and food choice. Prepayment before a consumption decision occurs in numerous contexts and may provide justification for consuming and spending irrationally.

Our findings in Study 1 suggested that when people were not primed with the consumption avoidance goal, those who prepaid toward the consumption goal (e.g., food consumption at a food festival) had a higher tendency to choose an unhealthy snack and overspend. Thought protocols identified the sunk cost of prepayment as the underlying justification to indulge. However, the anomaly in food preference and spending disappeared when people had access to the avoidance goals. This means that individuals who prepaid with the saliency of the avoidance goal were better in regulating their consumption and expenditures than those who prepaid without it. In addition, Study 2 extended the notion of prepayment to currencies other than money, namely time and effort. Consistent with the existing literature, our findings indicated that the magnitude of the sunk cost effect (i.e., the irrational behavior caused by the sunk cost) decreased when prepayments were made with time or effort. However, we found that when the prepayment was unanticipated, time and effort had a bigger effect on indulgent consumption than money did. We associated this interesting finding to the difference between the mental accounting of time/effort and money. Pain of prepayment served a mediating role for the interactive impact of prepayment and anticipation on indulgent behavior.

**2.9.1 Theoretical implications.** Our findings add to the existing literature on mental accounting in the following ways. First, mental accounting is known to be an effective method to regulate behavior that has been demonstrated in the context of consumption and spending behavior (Thaler, 1985; Soman, 2001). Consumers who open a mental account are able to exercise self-control effectively in their decisions. However, our research indicates that the restrictive role of mental accounting on consumption and spending will be attenuated when consumers make a prepayment toward a consumption goal (e.g., \$5 convenience fee to reserve a table at a restaurant). We support our argument for sunk cost effect with reason-based choice theory (Shafir et al., 1993) and affective restoration model (Tice et al., 2001). Akin to Kivetz's (1999) proposition, we suggest that justification may violate mental accounting rules. We believe decision makers, upon making a prepayment, experience an immediate need to justify the prior investment to avoid considering it as wasteful. To put it differently, we find prepayment to be a mechanism that makes people precommit to indulge (Kivetz and Simonson, 2002).

Additionally, while prior research suggests that sunk costs effects for time or effort investments do not exist (Soman, 2001) or are weaker than those for money investments (Navarro and Fantino, 2009), our paper confirms that these findings only hold when investments (i.e., in our case prepayments) are anticipated. That is, when an investment toward a goal is anticipated, a mental budget is adjusted such that it would accommodate the cost of investment. As a result, an anticipated prepayment would fit within the limits of the dedicated mental budget and an escalation of commitment would occur (Heath, 1995). However, we find that when an unanticipated prepayment takes

place, the direction for the magnitude of sunk cost effects for monetary and non-monetary investments reverses. This counterintuitive finding is based on the notion of de-escalation of commitment (Heath, 1995): “an investment that exceeds the mental budget limit and is easy to track produces a reverse sunk cost effect”. Since people keep track of their financial investments and consider opportunity costs of their money more readily than they do for non-monetary investments such as time and effort, we only found the reverse sunk cost effect for the monetary prepayment. Hence, an unanticipated non-monetary prepayment resulted in higher temptation than an equivalent unanticipated monetary prepayment.

**2.9.2 Managerial implications.** The results of our study may be fruitful for marketers in different ways. First, despite the fast growth and significant prominence of social coupons (e.g., coupons in the form of online daily offers), many practitioners are still doubtful about the profitability of this marketing tool for business owners (Kumar and Rajan, 2012). The reason is that coupon sites such as Groupon and LivingSocial typically take away half of the coupon value as their fees and customer retention after the coupon redemption phase is very difficult (Sherr, 2010). As a result, a lot of small/local businesses recently stopped paying premium prices to social couponing websites such as Groupon. Our findings regarding the increase in customers’ temptation after monetary prepayment have imperative applications in this context. In particular, business owners should not merely focus on the forgone profit of promoting their services and/or products on social coupon websites. Rather, they should count on the potential profit margins due to consumers’ tendency to overspend and indulge after the coupon is redeemed. Since our



results suggest the pain of prepayment is the underlying mechanism that justifies indulgent decisions, marketers are better off to advertise coupons with high face values to target hedonic (vice) services. This idea, especially, is relevant to individuals with hyperopia who need to commit themselves to indulge (Kivetz and Simonson, 2002). This suggestion seems to have started taking place in the market. For example, the average discount per social coupon was 53% and people, on average, prepaid \$38.04 per social coupon in the fourth quarter of 2010. However, in the first quarter of 2011, the average price per social coupon reached \$42.45 and most of deals were promoting luxury and other high end goods and services (Rueter, 2011).

Additionally, the notion that behavioral prepayment induces temptation can be effectively employed in practice. Behavioral resources (e.g., time and effort) are more scarce and perishable than equivalent money (Mogilner and Aaker, 2009). Therefore, when expended, they can justify and create less guilt for indulgence (Kivetz and Zheng, 2006). Marketers should promote their services/products as a reward with respect to time and/or effort consumers invested prior to the actual consumption. The immediate reward for behavioral prepayment may give an entitlement (“I deserve this product because I worked hard for it”) to select indulgent choices. For example, Burger King just recently launched "Whopper Lust," which was a commercial that was aired exclusively on Channel 111 on DirecTV. The commercial displayed a Whopper continually spinning on top of a flaming grill. The commercial randomly displayed prompts asking viewers to click a certain button on their remote control to ensure viewers were paying attention. If people could watch the commercial for five minutes, they got a free Whopper. After five minutes elapse, viewers either selected to have a free Whopper mailed to their house or

they continued to watch the spinning Whopper. For each additional five minutes people watched the commercial, they earned a free Whopper. According to Burger King's advertising agency, this campaign was designed to remind consumers about the time and mental effort they invested to earn their coupons. Therefore, the company expected consumers to rush to the closest Burger King branch to redeem their coupons and, hopefully, spend more.

**2.9.3 Directions for future research.** One of the best applications for the findings of this research is social coupons. A social coupon is a steep discount that is available in limited quantities for a limited amount of time. Consumers typically pay to buy a coupon that can be redeemed in future. However, the current research did not explore the impact of the timing of the redemption on consumers' temptation. This issue is important because some social coupons run by dates, whereas others only become available for redemption after a certain period. Future research should examine whether the framing of the time lag between the prepayment and the redemption may influence people's tendency to overspend and indulge. Although, the depreciation of the cost of prepayment over time should intuitively attenuate the sunk cost effect (Soman, 1998), research on sales promotion suggests that the presence of a restriction (i.e., purchase or time limit) draws individuals attention to the value of the deal (Inman et al., 1997). Therefore, the cost of social coupon should be perceived differently for a time limit coupon versus a coupon that is available to consumers after a certain time.

Another future research opportunity is to investigate whether consumers perceive the post-payment any differently than prepayment. While the monetary value of the payment may be the same, prepayment and post-payment are conceptually distinct and may result in different consumption and spending behavior. From the mental accounting perspective (Prelec and Lowenstein, 1998), the consumption decision of individuals who prepay will be influenced by the sunk cost effect. Conversely, in the case of post-payment, the consumption decision will be driven by the anticipation of payment in the future. Existing research shows that thoughts about a future payment decreases the consumption enjoyment and may assist individuals to regulate their consumption (Raghubir and Srivastava, 2009). For example, two consumers go to a restaurant that charges \$10 for the valet parking. Both consumers are aware of this cost but the first customer pays before entering the restaurant, whereas the second person pays after leaving the restaurant. Based on the rationale provided in this research, the first customer should yield to temptation, whereas the second one should restrain from temptation. Future research is needed to examine this proposition.

**2.9.4 Limitations.** The present research was not without limitations. The first limitation is the nature of the stimuli. This study similar to most of research in mental accounting entirely employed scenario-based experiments. It might be argued that the source of the sunk cost was artificially salient to our subjects as compared to the real world. While the purpose of our study was to show the sunk cost effect of prepayment with overspending and indulgent consumption, future research should attempt to replicate our findings with a field study to ensure their generalizability. The second limitation is

the nature of our sample. Our study employed student subjects, and to that extent, caution needs to be exercised in extrapolating our results to the general consumer. Finally, we did not consider whether time and effort were confounded in the effort manipulation for the second experiment. Effort was manipulated by asking people to imagine that they walk eight blocks to get their ID from their car. However, making this effort takes time too. We understand that this is not an easy issue to address and it applies to all types of effort manipulations in the literature (Kivetz, 2005; Monga and Saini, 2009).

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## Appendices

### Appendix A: Extra Tables

**Table A1:** Proportion of budget allocated to debt with the smaller balance under different APR levels and budget limits

Measure	Smaller balance APR: 12%			Smaller balance APR: 18%		
	\$200	\$400	\$600	\$200	\$400	\$600
Proportion of budget allocated to the smaller balance	.85 <sup>a</sup>	.85 <sup>a</sup>	.87 <sup>a</sup>	.32 <sup>b</sup>	.75 <sup>a</sup>	.78 <sup>a</sup>

Significant differences at  $p < .05$  among conditions are shown with dissimilar superscripts, a and b. Similar superscripts are insignificant at  $p > .05$ .

**Table A2:** Pretest results for vehicle package evaluation

Measures	Luxury package	Technology package
Hedonism	3.18 <sup>a</sup>	-1.52 <sup>b</sup>
Importance	5.11 <sup>a</sup>	5.46 <sup>a</sup>
Attractiveness	4.82 <sup>a</sup>	5.30 <sup>a</sup>

Significant differences at  $p < .05$  among conditions are shown with dissimilar superscripts, a and b. Similar superscripts are insignificant at  $p > .05$ .

**Table A3:** Proportion of budget allocated to the smaller balance when the nature and the timing of debt vary

Measure	Hedonic debt		Utilitarian debt	
	Past consumption	Future consumption	Past consumption	Future consumption
Proportion of budget allocated to the smaller balance	.77	.59*	.54*	.73

Values shown by an asterisk are insignificant at  $p > .05$ .

**Table A4:** Proportion of budget allocated to debt with the smaller balance under different types of income and number of credit cards

Measure	# credit cards: two			# credit cards: five		
	Type of income: savings	Type of income: windfall	Type of income: reward- based	Type of income: savings	Type of income: windfall	Type of income: reward- based
Proportion of budget allocated to the smaller balance	.60 <sup>c</sup>	.77 <sup>b</sup>	.76 <sup>b</sup>	.38 <sup>a</sup>	.43 <sup>a</sup>	.43 <sup>a</sup>

Significant differences at  $p < .05$  among conditions are shown with dissimilar superscripts, a, b, and c. Similar superscripts are insignificant at  $p > .05$ .



**Table A5:** Pretest results for snack choices

	Healthy snacks							
	raisins	celery sticks	cheerios	yogurt	baby carrots	granola bar	rice cake	apple
Preference (1=I don't like it at all and 7=I like it a lot)	5.26 <sup>a</sup>	2.11 <sup>c</sup>	4.65 <sup>b</sup>	6.20 <sup>a</sup>	4.28 <sup>b</sup>	5.14 <sup>a</sup>	3.17 <sup>c</sup>	5.83 <sup>a</sup>
Healthiness (1=very unhealthy and 7=very healthy)	4.82 <sup>b</sup>	6.03 <sup>a</sup>	3.02 <sup>c</sup>	5.35 <sup>b</sup>	6.01 <sup>a</sup>	5.04 <sup>b</sup>	2.66 <sup>c</sup>	6.44 <sup>a</sup>
Estimated price	\$2.63 <sup>a</sup>	\$2.55 <sup>a</sup>	\$2.21 <sup>a</sup>	\$2.44 <sup>a</sup>	\$2.07 <sup>a</sup>	\$2.18 <sup>a</sup>	\$2.26 <sup>a</sup>	\$2.14 <sup>a</sup>
	Unhealthy snacks							
	chocolate bar	Chips Ahoy cookies	cheese curls	Doritos chips	ice cream	doughnuts	Oreos	fruit roll-ups
Preference (1=I don't like it at all and 7=I like it a lot)	6.25 <sup>a</sup>	4.41 <sup>b</sup>	3.82 <sup>b</sup>	5.73 <sup>a</sup>	5.89 <sup>a</sup>	4.22 <sup>b</sup>	4.08 <sup>b</sup>	3.29 <sup>b</sup>
Healthiness (1=very unhealthy and 7=very healthy)	2.44 <sup>a</sup>	2.46 <sup>a</sup>	2.62 <sup>a</sup>	2.71 <sup>a</sup>	2.52 <sup>a</sup>	2.45 <sup>a</sup>	2.66 <sup>a</sup>	3.26 <sup>a</sup>
Estimated price	\$2.68 <sup>a</sup>	\$3.15 <sup>a</sup>	\$2.96 <sup>a</sup>	\$3.19 <sup>a</sup>	\$2.92 <sup>a</sup>	\$3.12 <sup>a</sup>	\$2.88 <sup>a</sup>	\$3.18 <sup>a</sup>

Significant differences at  $p < .05$  among conditions are shown with dissimilar superscripts, a, b, and c. Similar superscripts are insignificant at  $p > .05$ .

**Table A6:** Average amount of money people are willing to pay for their snack based on the existence of prepayment and consumption avoidance goal

Measure	No prepayment		Prepayment	
	Avoidance goal: absent	Avoidance goal: present	Avoidance goal: absent	Avoidance goal: present
Average amount of money people are willing to pay for their snack	\$2.93*	\$3.96*	\$5.06	\$3.40*

Values shown by an asterisk are insignificant at  $p > .05$ .

**Table A7:** Proportion of unhealthy snacks based on the existence of prepayment and consumption avoidance goal

Measure	No prepayment		Prepayment	
	Avoidance goal: absent	Avoidance goal: present	Avoidance goal: absent	Avoidance goal: present
Proportion of unhealthy snacks	41.90%*	48.30%*	85.20%	36.40%*

Values shown by an asterisk are insignificant at  $p > .05$ .

**Table A8:** Proportion of health-related, sunk cost-related and pleasure-related across the prepayment and avoidance goal conditions

		No prepayment	Prepayment
Proportion of health-related thoughts	Avoidance goal: absent	.37 <sup>a</sup> (n=13)	.26 <sup>a</sup> (n=9)
	Avoidance goal: present	.46 <sup>a</sup> (n=17)	.83 <sup>b</sup> (n=30)
Proportion of sunk cost-related thoughts	Avoidance goal: absent	.34 <sup>a</sup> (n=12)	.83 <sup>b</sup> (n=29)
	Avoidance goal: present	.26 <sup>a</sup> (n=9)	.32 <sup>a</sup> (n=11)
Proportion of pleasure-related thoughts	Avoidance goal: absent	.26 <sup>a</sup> (n=9)	.31 <sup>a</sup> (n=11)
	Avoidance goal: present	.14 <sup>a</sup> (n=5)	.11 <sup>a</sup> (n=4)

1: Significant differences at  $p < .05$  among conditions are shown with dissimilar superscripts, a, and b. Similar superscripts are insignificant at  $p > .05$ .

2: the number in parentheses represents the number of thoughts in each condition.

**Table A9:** Proportion of unhealthy appetizers under anticipation and different types of prepayment

Measure	Unanticipated prepayment			Anticipated prepayment		
	currency: Money	currency: Time	currency: Effort	currency: Money	currency: Time	currency: Effort
Proportion of unhealthy appetizers	34.50% <sup>c</sup>	57.70% <sup>a</sup>	59.30% <sup>a</sup>	75.90% <sup>b</sup>	57.10% <sup>a</sup>	51.70% <sup>a</sup>

Significant differences at  $p < .05$  among conditions are shown with dissimilar superscripts, a, b, and c. Similar superscripts are insignificant at  $p > .05$ .

## 4.2 Appendix B: Scales/Measures

**A) Overall knowledge of credit card terms:** participants rated the following attributes on a 7-point semantic scale (1=one of the least knowledgeable and 7=one of the most knowledgeable).

- Annual percentage rate (APR)
- Minimum balance
- Payment due date
- Credit card limit
- Outstanding balance

**B) Task involvement:** participants rated their level of involvement with the credit card scenario by responding to the following items:

- When I was reading the scenario: (1=I was not at all involved and 7=very involved)
- When I was reading the scenario: (1=I was not at all interested and 7=very interested)
- When I was reading the scenario: (1=I was not at all involved and 7=very involved)
- When I was reading the scenario: (1=I skimmed the information quickly and 7= I read the information carefully)
- When I was reading the scenario: (1=I paid little attention and 7= I paid a lot of attention)

**C) Hedonism:** participant considered upgrading their vehicle with two possible packages, luxury and technology, for \$1800. The luxury package included leather seats, seat warmers, and panoramic sunroof, while the technology package offered in-dash GPS, Tiptronic transmission, and an advanced suspension system. Participants rated each package separately based on the following items:

- (1=not functional and 7=functional)
- (1= unnecessary and 7= necessary)
- (1= impractical and 7= practical)
- (1= ineffective and 7= effective)
- (1= unhelpful and 7= helpful)
- (1= fun and 7= not fun)
- (1= exciting and 7= dull)
- (1= delightful and 7= not delightful)
- (1= thrilling and 7= not thrilling)
- (1= enjoyable and 7= unenjoyable)

**D) Individuals' motivation to reduce the number of debt accounts:** all items are measured on a 7-point Likert scale (1=strongly disagree and 7=very strongly agree).

- If I receive a transfer balance offer from a bank, I take advantage of it to aggregate my debts into one account.
- My total debt appears to be bigger when I own multiple credit cards than when I own only one.
- I think I make the most progress toward debt payment when I pay off my credit card debt one at a time.
- The nagging thoughts about debt payment come to my mind more frequently when I have multiple credit cards than when I have only one credit card.
- For any given debt, I'd rather to carry the balance on one credit card instead of multiple credit cards.

**E) Healthy eating habits:** participants rated their eating habits by responding to the following items:

- I watch what I eat: (1= completely disagree and 7= completely agree)
- Eating healthy for me: (1= is not at all important and 7= very important)
- I am: (1= not on a diet and 7= on a diet)
- I eat: (1= less of fruits/veggies and 7= more of fruits/veggies)
- I try to choose low-calorie foods: (1= completely disagree and 7= completely agree)

**F) Instructions for coding participants thoughts:** please read the written responses carefully and categorize each participant's response(s) to one (or more) of the following categories.

- **Health-related thoughts:** the responses mainly focus on the health benefits associated with consumption. Participants may discuss their healthy eating habits and express their desire to select healthy (e.g., low carb, low calories) snack choices.
- **Sunk cost-related thoughts:** participants account for the time, effort, or money spent in the food festival. Participants are aware of the monetary and non-monetary costs associated with their consumption decision.
- **Pleasure-related thoughts:** the responses mainly focus on the pleasure and satisfaction derived from food consumption. Participants may describe their passion for and express their feelings toward a certain kind of snack.