CREDIT CARDS AND GLOBAL COGNITIVE FOCUS: THE ROLE OF TEMPORAL

DISTANCE

by

LAURA E. BUFFARDI

(Under the Direction of W. Keith Campbell)

ABSTRACT

Credit cards are increasingly pervasive in the lives of consumers. Recent research has established that interacting with credit cards produces a different cognitive mindset in comparison to interacting with cash. Buffardi & Campbell (2009) have shown that credit cards lead to a big picture, inclusive, or *global cognitive focus*; whereas, comparatively cash leads to a detail-oriented, exclusive, or *local cognitive focus*. The present research tests a potential mechanism underlying this cognitive shift – temporal distance. In two studies, it was determined whether a cognitive association exists between credit cards and distant time and whether this association is responsible for credit cards inciting global cognitive focus. First, implicit and explicit reports of the ease of association between credit cards and distant future time (and cash with near time) were examined. Second, global focus was assessed when the time until a credit card payment was manipulated to be in the near future rather than the distant future. Results showed that individuals have an implicit and explicit bias for pairing credit cards with distant future time. It was also found that reducing this pairing by assigning a near future payment to a credit card purchase eliminated the credit card – global focus effect. Implications of these

findings for consumer psychology and consumer educational and debt prevention programs are discussed.

INDEX WORDS: Credit Cards, Global Cognitive Focus, Temporal Distance, Consumer Psychology

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CHAPTER 1

INTRODUCTION

Over the past fifty years, the U.S. has increasingly become home to a culture of credit. Credit cards are relatively easy to obtain – to the point that consumers occasionally receive unsolicited cards in the mail that are ready to be activated and charged to. Credit cards are also ubiquitous – it is common to purchase items at all price points (from a pack of gum to a 52" LCD TV) with a credit card. Credit cards are not only accepted by the vast majority of retailers, but many stores, in fact, profit from offering their own card. In some respects, credit cards have become necessary for participation in consumer activity. For example, without a credit (or debit) card, Internet purchasing is difficult, if not, impossible. Moreover, the culture of credit grows with each generation. The next generation of core consumers, twenty-somethings, rarely carry cash in favor of plastic forms of payment (Olson, 2007). Even classic children's toys, like Monopoly, are now available in electronic banking versions. With the increase in the availability and utility of credit cards in American culture, consumer debt has become commonplace and it is on the rise. The result has effects at many levels of society – credit card debt (and consumer debt in general) can adversely affect individuals (Brown, Taylor, & Price, 2005), families (Dew, 2008), communities, and, as we have seen recently, even national economies. This makes credit cards an important and interesting tool for psychologists to examine.

How could being part of a culture of credit affect individuals psychologically? Research shows that cultural environment influences individuals' cognition. For example, East Asians view objects more in context with their surroundings; whereas, Westerners are more likely to

extract objects from their settings (Masuda, & Nisbett, 2001; Nisbett, Peng, Choi, & Norenzayan, 2001). Given such findings, it is possible that other changes in culture, for instance, the shift to a culture of credit as discussed above, might also affect psychological processes. Some evidence suggests this is the case. A recent set of studies demonstrated that interacting with credit cards leads to global cognitive focus; whereas, interacting with cash leads to a local cognitive focus (Buffardi & Campbell, 2009).

The purpose of the present research is to examine what factors might cause the link between credit cards and global cognitive focus. The specific factor that will be tested is temporal distance. A main difference between credit cards and cash is that credit cards allow for purchase and payment to be temporally separate or distant. This is important because a pervasive, and highly supported, social psychological framework – Construal Level Theory – generally predicts that increased distance evokes global cognitive focus (see Trope & Liberman, 2003 for a review). Taken together, this suggests that temporal distance plays a key role in the association between credit cards and global cognitive focus. A number of lines of previous research have established that credit/cash, global/local cognitive focus, and temporal distance are all, by and large, related to each other. Before proposing specific hypotheses, this literature will be reviewed.

Increased Spending with Credit Cards

To present, the majority of psychological research dealing with credit cards has examined monetary outcomes. A great deal of support has been found for a fundamental difference between spending behavior with credit cards and with cash. Purchasing with a credit card leads to greater spending in comparison to purchasing with cash (e.g., Hirschman, 1979). Prelec and Simester (2001) refer to increased willingness-to-pay with a credit card as the credit card

premium. They demonstrated the credit card premium in a silent auction paradigm. Participants were willing to spend, on average, 95% more for a sporting event tickets when they believed they would pay for the tickets with a credit card (if they won the silent auction) than if they believed they would pay with cash (Prelec & Simester, 2001, Study 1). Other studies have shown similar effects. For example, participants have estimated they would spend more on common consumer products and charitable contributions when primed with credit cards that were ostensibly left nearby (Feinberg, 1986). This has also been found outside of the lab in real-world consumer settings. For instance, restaurant customers leave greater tips when they pay with credit cards (Garrity & Degelman, 1990; Lynn & Mynier, 1993) and when credit card insignia are present at the time of tipping (McCall & Belmont, 1996). Furthermore, one study has shown that children's purchase decisions also exhibit the credit card premium. When given an allowance to spend in a laboratory store either in the form of credit or cash, children who were not given an allowance at home spent more with the credit allowance than the cash one (Abramovitch, Freedman, & Pliner, 1991).

Three separate, but related, lines of research have been cited as reasons why individuals spend more with credit cards than with cash. First, economic discounting theories generally predict that future outcomes are "discounted" in comparison to immediate ones (Ainslie & Haslam, 1992; Soman, et al., 2005). In order words, these theories suggest that individuals undervalue future outcomes in relation to immediate outcomes. Take, for example, purchasing a week-long cruise vacation. According to discounting theories, consumers value purchasing (and going on) a cruise immediately more than having the money to spend on a cruise vacation (or another desirable consumer item) later in the future. Again, a desirable outcome in the future

(having funds to purchase a desirable product) is perceived as less valuable than one in the present (taking the cruise immediately).

Empirical studies have demonstrated time discounting in the laboratory. For example, in one study, individuals were instructed to imagine that they won a monetary prize that was held in a bank. They were told that they could either take the prize money immediately or wait for it. Participants were asked to report how much prize money they would have to receive at a future time in order for the prize to be equally as desirable as if they received it in the present. For a $15 prize received immediately, participants reported on average that a $30 prize would be equally attractive if they had to wait 3 months to obtain it, a $60 prize if they had to wait 1 year, and a $100 prize if they had to wait 3 years (Thaler, 1991). It is clear in these results that participants exhibited "impatience" (Prelec & Loewenstein, 1991) with regard to obtaining the prize. They required a bigger prize for it to seem equally as desirable in a delay. Researchers have also found that time discounting applies to purchasing consumer goods – consumers prefer to pay less up-front costs for a less energy-efficient air conditioner that will lead to increased electricity costs in the long-term than paying more up-front for an energy-efficient appliance that will later lead to saving on energy costs (Hausman, 1979). Temporal discounting theories may shed light on why consumers spend more with a credit card than with cash. Credit cards might make the natural inclination to discount future payoffs in comparison to immediate one even stronger. In comparison to cash, credit cards delay actual payment, perhaps making the immediate outcome seem even more rewarding.

A second line of reasoning adds to the discounting theories. Credit cards might lead to increased spending in comparison to cash because consumers endure differing levels of pain of paying when they make purchases with different forms of payment (Prelec & Loewenstein,

1998). Pain of payment refers to the displeasure consumers experience when they "fork over" an amount of money to make a purchase. There is some evidence that suggests that pain of paying is actually associated with physical pain. A recent neuroimagining study showed that exposure to pictures of overpriced products caused activation of the insula, a section of the brain associated with the anticipation of physical pain processing, and this activation predicted purchase decisions (Knuston, Rick, Wimmer, Prelec, & Loewenstein, 2007). According to marketing researchers, different modes of payment (e.g., credit cards, debit cards, checks, gift cards, cash, etc.) affect the salience of the outward flow of money when consumers make purchases. It has been predicted that cash payments are more salient than credit card payments because cash payments are recalled with more accuracy than credit card payments (Raghubir & Srivastava, 2002).

Decreased salience or transparency of payment, in turn, decreases pain of paying, which leads to more spending. This has been supported in a variety of clever studies conducted in both laboratories and real-world consumer settings. Soman (2003) examined grocery store receipts. This investigation showed that individuals spent more on "flexible" purchases (i.e., treats and luxuries, such as gum, candy, drinks) when paying with a credit card than when paying with a check or with cash. Mode of payment did not affect the amount spent on "inflexible" purchases (e.g., staple products, such as cooking oil, toilet tissue, and bread). Importantly, similar effects have also been found in studies that isolate differences in transparencies among modes of payment. For example, student participants reported that they would spend more per item on a typical grocery list when paying with a $50 store credit than with a $50 dollar bill (Raghubir & Srivastava, 2008). Additionally, Soman (2003) found that individuals did more loads of laundry when using a prepaid card in the washing machine than when placing cash in the machine. With both cash and a store credit (or a prepaid laundry card), the payment is made up front. There is

no possibility of going into debt (as with credit card purchases), but the salience of dispensing money differs between these two modes and produces spending differences.

A third factor that might contribute to increases in spending with credit cards in comparison to cash is coupling (Prelec & Loewenstein, 1998). Coupling refers to how closely associated making a purchase and the actual payment for the purchase are in a consumer's mind. Though it has not been tested empirically, theoretically cash purchases and payments are thought to be tightly coupled because they occur at the same time. Credit card purchases and payments, however, are considered less tightly coupled because the payment occurs sometime in the future. How might this be involved with increased spending with credit cards in comparison to cash? Consumers may have more incentive to make purchases with credit cards because, according to Prelec and Loewenstein's (1998) theorizing, goods purchased with decoupled (or loosely coupled) forms of payment can be freely enjoyed without the thought of payment. In comparison to other payment modes that are less salient than cash (e.g., gift cards), credit card purchases and payments are particularly de-coupled. Purchases made with credit cards are not only paid off as nebulous total expenditures, but it is also uncertain which item(s) is exactly being paid for each time a less-than full payment is made. In practice, a purchase made today might not be paid off for years to come.

Thus far, it has been established that credit cards lead to greater spending than cash. This increase in spending is due to one of, or all three, of the following behavioral economic findings: 1) individuals prefer immediate over delayed rewards; 2) credit card purchasing is less tangible than cash purchasing; and 3) there is less association between purchase and payment with credit cards than with cash. Taken together, these reasons that have been cited to explain increased

spending with credit cards may actually all be symptoms or signals of one more basic underlying psychological effect.

<div align="center">Increased Global Focus with Credit Cards</div>

Recent research proposes that a general cognitive shift occurs when consumers purchase or even interact with credit cards versus cash. It has supported the notion that credit cards lead to a global cognitive focus; whereas, cash leads to local cognitive focus (Buffardi & Campbell, 2009). A global cognitive focus (which has also been referred to as "high-level" construals by Trope and Liberman, 2003, "wholes" by Melchers, Shanks, and Lachnit, 2008, and "holistic" by Kimchi, 1992) is one that is typically broad, inclusive, and big-picture. A local cognitive focus (which has also been referred to as "low-level" construals by Trope and Liberman, 2003, "parts" by Melchers, Shanks, and Lachnit, 2008, and "piecemeal" by Kimchi, 1992) is one that is typically narrow, exclusive, and detail-oriented.

Parallels can be drawn between the causes of increased spending with credit cards and globally focused cognitions. When individuals are globally focused, they rely more on "cool," reason-based thoughts (as opposed to "hot," emotion-based thoughts; Metcalfe & Mischel, 1999). Likewise, credit cards "cool" the emotions associated with pain of paying, which leads to increased spending. Furthermore, when individuals are globally focused, they tend to focus on goals rather than means-to-ends (Liberman & Trope, 1998). As a de-coupled form of payment, credit cards allow for increased focus on the purchase (i.e., the goal) and less consideration of payment (i.e., means-to-ends). Thus, there are theoretical reasons to predict that individuals are more globally focused when they think about credit cards than cash.

There is also empirical support of this prediction. Individuals have been found to be globally focused when making decisions in a credit card purchasing context. Previous research

establishes that individuals use broader category definitions when they are globally focused (Liberman, Sagristano, & Trope, 2002). In the laboratory, consumers used broader, more inclusive category definitions when they thought about purchasing items with a credit card as opposed to cash (Buffardi & Campbell, 2009). For example, when participants rated the extent to which non-exemplar consumer items (e.g., earmuffs) belong to categories of products (e.g., clothing), they rated them as more belonging when they were thinking of purchasing the items with a credit card than with cash. Similarly, when presented with a shopping list and asked to organize the items on the list into groups, participants created fewer, broader item groupings when they anticipated purchasing the items with a credit card than with cash (Buffardi & Campbell, 2009). Furthermore, there is some evidence to suggest that focusing globally or locally on credit card and cash purchases affects spending. Manipulating the salience of a credit card purchase by asking participants to decompose a multi-item purchase by estimating each item's cost (in comparison to estimating the only total cost) has been found to attenuate increased spending with a credit card (Raghubir & Srivastava, 2008).

Importantly, credit cards might also cause global cognitive focus outside of purchasing contexts. In one study, participants completed a visual comparison task. They compared target arrangements of credit cards or U. S. dollar bills with two comparison arrangements. One of the comparison shape arrangements had the same overall configuration as the target, but was comprised of different credit cards or dollar bills (the global option). The other comparison shape arrangement had a difference overall configuration, but was composed of the same credit cards or dollar bills as the target (the local option; based on a measure created by Kimchi and Palmer, 1982 and used by Gerald and Clore, 2002). Results showed that global arrangements of credit cards were perceived as more similar to the target, but local arrangements of dollar bills were

perceived as more similar to target. This result is notable because it suggests that the sight of a credit card focused individuals more globally than the sight of cash, regardless of whether a purchase is being made or not.

<div align="center">Present Research</div>

In the present research, the question is what is the feature of credit cards that leads to an increase in global cognitive focus inside and outside of purchase contexts? Theoretically, the best prediction is that the temporal distance that is set up by credit cards is the feature that explains the cognitive focus finding. As described in the payment coupling research, credit cards separate purchases and payments. Purchase made with credit card transactions in the present are paid for in the distant future. Temporal distance is important because extensive research on Construal Level Theory converges on the prediction that increased temporal distance leads to increased global focus (Trope & Liberman, 2003). This has been found in a wide range of psychological domains. Increased temporal distance predicts, to name a few examples, abstract cognitions (Liberman & Trope, 1998; Trope & Liberman, 2000), use of broader category definitions (Liberman, Sagristano, & Trope, 2002), and preference for bigger rewards as opposed to better chances at winning (Sagristano, Liberman, & Trope, 2002).

It is expected that credit cards are inherently connected to temporally distance psychologically and, therefore, individuals will display an implicit cognitive link between credit cards and distant time. It is also expected that an explicit link exists between credit cards and distant time. It is possible the strengths of the implicit and explicit links are correlated, thus this is a research question that will be tested. It is also expected, based on Construal Level Theory, that temporal distance is responsible for the increase in global cognitive focus that has been found in conjunction with credit cards. This hypothesis will be tested in two ways. First, if the

hypothesis is supported, the strength of the implicit and/or explicit link should predict global cognitive focus. Second, if temporal distance between purchase and payment is the feature of credit cards that drives the credit card-global focus effect, then a cash payment due at a distant time should also create this effect. A credit card payment due at a near time should attenuate this effect and cause decreased global focus.

The hypotheses were tested in two studies. In Study 1, evidence of an implicit cognitive link between credit cards and temporal distance was examined using an Implicit Associations Test (Greenwald, McGhee, & Schwartz, 1998). Evidence of an explicit connection between credit cards and temporal distance was assessed via self-report items. Finally, global cognitive focus was assessed by a categorization task. In Study 2, participants were prompted to think about purchasing consumer items with either a credit card or cash. Importantly, temporal distance was manipulated by randomly assigning a near or distant time to payment. Then, global cognitive focus was measured on a subsequent categorization task.

CHAPTER 2

STUDY 1

In Study 1, the proposed cognitive link between credit and temporal distance was examined (both implicitly and explicitly) and it was determined if the strength of the proposed link predicts global cognitive focus. Using an Implicit Associations Test (Greenwald, McGhee, & Schwartz, 1998), this study tested whether individuals exhibit a natural cognitive inclination to pair credit with distance time and cash with near time. Self-report items assessed whether individuals consciously consider credit cards to be more associated with distant time than cash. A categorization task used in previous research involving rating the extent to which weak, moderate, and strong exemplars belong to categories was used to measure global cognitive focus. According to previous research, when individuals are globally focused, they use broader, more inclusive category definitions (Liberman, Sagristano, & Trope, 2002). Therefore, increased ratings of category belongingness of weak exemplar items indicated increased global cognitive focus.

Method

Participants. Participants were 58 (48 females) undergraduate students participating for partial course credit.

Materials and Measures.

IAT. An Implicit Associations Test (IAT; Greenwald, McGhee, & Schwartz, 1998) was created for this study using DirectRT software. It measured cognitive associations between credit cards and cash and the concepts of distant and near time via response latencies. In the IAT task,

two concepts were presented in each of the two top corners of the computer screen. For example, the left-hand corner could contain the concepts, "credit" and "near" while the right-hand corner contains the concepts, "cash" and "distant." Words that pertain to each of those four concepts appeared one at a time in the center of the computer screen. The participant's task was to categorize each word as quickly as possible by pressing a key on the keyboard that corresponds to the corner of the screen containing the concept which the word is associated with. Therefore, the words, "VISA," "plastic," "AMEX," "balance," "charge," and "loan," as well as the words, "recent," "minute," "now," "immediately," and "soon," were categorized by pressing the key for the left-hand concepts, credit and near. The words, "dollar," "coin," "money," "bills," "currency," and "change" as well as the words, "year," "decade," "later," "in the future," and "next year," were categorized by pressing the key for the right-hand concepts, cash and distant. The near and distant time words were based on those used in an IAT in Bar-Anan, Liberman, & Trope (2006, Study 1B). Response latencies were recorded for each word categorization trial. After a number of trials, the concept combinations in the corners of the screen switched so that the left-hand corner contained "credit" and "distant" and the right hand corner contained "cash" and "near." Participants then repeated the word categorization, one word at a time, and response latencies were recorded.

The IAT data were handled using the method described by Greenwald, Nosek, and Banaji (2003). This resulted in a single IAT score for each participant ($M = .41$, $SD = .39$). The score represents a ratio of the average number of milliseconds it took participants to pair incongruent concepts (credit cards with near time and cash with distant time) to the average number of milliseconds it took participants to pair congruent concepts (credit cards with distant time and cash with near time). Therefore, individuals who take longer to pair credit cards with near time

(and cash with distant time) in comparison to credit cards with distant time (and cash with near time) have positive scores; whereas, individuals who take longer to pair credit cards with distant time (and cash with near time) in comparison to credit cards with near time (and cash with distant time) have negative scores.

Explicit Measures. Two items assessed the extent to which participants explicitly relate credit cards and cash with the distant past, near past, near future, or distant future. These measures will be referred to as the *Explicit Relation to Time – Credit* ($M = 1.31$, $SD = 2.14$) and the *Explicit Relation to Time – Cash* ($M = .14$, $SD = 1.21$) items. The items asked, "When you think about a credit card (cash), what time do you think of in relation to you?" Participants responded on an 11-point Likert scale with the following anchors: -5 (Distant past), 0 (Your position now), 5 (Distant future).

Two additional items measured the extent to which participants explicitly associate credit cards with the distant future and cash with the present. These will be referred to as the *Explicit Association – Credit* ($M = 3.91$, $SD = 1.56$) and *Explicit Association – Cash* ($M = 5.62$, $SD = 1.49$) items. The items asked, "To what extent do you associate credit cards (cash) with the distant future (present)?" Participants responded on a 7-point Likert scale ranging from 1 (Not at all) to 7 (Very much).

Difference in Explicit Relation to Time scores were created by subtracting the *Explicit Relation to Time – Cash* item response from the *Explicit Relation to Time - Credit* item response ($M = 1.17$, $SD = 2.28$).

An *Explicit Association* index was created by taking the mean of the *Explicit Association – Credit* and *Explicit Association – Cash* item responses ($M = 4.77$, $SD = 1.04$).

Global cognitive focus. To assess global cognitive focus, a categorization task based on previous research was employed (Smith & Trope, Study 1). Participants rated 9 *clothing category items* (3 strong category members including, pants, shirt and dress, 3 moderate category members including, shoes, stockings, and vest, and 3 weak category members including earmuffs, watch, and necklace [Rosch, 1975]) and 9 *furniture category items* (3 strong category members including, chair, sofa, and table, 3 moderate category members including, cabinet, bench, and lamp, and 3 weak category members including vase, fan, and telephone [Rosch, 1975]) on a 10-point scale with the following anchors: 1 = *Definitely does <u>not</u> belong to the category*, 5 = *Does <u>not</u> belong to the category, but is very similar to members of that category*, 6 = *<u>Does</u> belong to the category, but is not a very good example of it*, and 10 = *Definitely <u>does</u> belong to the category*. The clothing and furniture items were presented in random order.

The following measures were created from the category member ratings questionnaire (based on Smith & Trope, 2006, Study 1): 1. *Weak item category membership*. The number of weak clothing and furniture category members that participants rated as belonging to their respective category (i.e. rated as a 6 or greater) were summed ($M = 2.24$, $SD = 1.65$, $\alpha = .67$). 2. *Weak item ratings*. The mean rating of the 3 weak clothing category members and 3 weak furniture category members was calculated ($M = 4.80$, $SD = 1.50$, $\alpha = .75$). 3. *Moderate item category membership*. The number of moderate clothing and furniture category members that participants rated as belonging to their respective category (i.e. rated as a 6 or greater) were summed ($M = 4.91$, $SD = 1.16$, $\alpha = .50$). 4. *Moderate item ratings*. The mean rating of the 3 moderate clothing category members and 3 moderate furniture category members was taken ($M = 7.88$, $SD = 1.22$, $\alpha = .49$). 5. *Strong item category membership*. The number of strong clothing and furniture category members that participants rated as belonging to their respective category

(i.e. rated as a 6 or greater) were summed (M = 5.71, SD = .73, α = .58). 6. *Strong item ratings*. The mean rating of the 3 strong clothing category members and 3 strong furniture category members was taken (M = 9.44, SD = 1.13, α = .63).

Positive and Negative Affect Scale (PANAS). Ten items measured participants' positive mood (including the following adjectives: *active, alert, attentive, determined, enthusiastic, excited, inspired, interested, proud, and strong*) on a 5-point Likert scale ranging from 1 (Not at all) to 5 (Very much) and 10 items measured participant's negative mood (including the following adjectives: *afraid, ashamed, distressed, guilty, hostile, irritable, jittery, nervous, scared*, and *upset*) on the same scale (Watson, Clark, & Tellegen, 1988). The ten positive adjective ratings were summed to create a positive affect index (M = 29.66, SD = 6.44, α = .85). The ten negative adjective ratings were summed to create a negative affect index (M = 17.86, SD = 4.79, α = .83).

Pain. Three items measured the extent to which participants were experiencing pain, including *hurt*, *in pain*, and *comfortable* (reversed) on a 5-point Likert scale ranging from 1 (Not at all) to 5 (Very much). The mean of the three items was calculated to create the pain index (M = 1.83, SD = .50, α = .19).

Credit and debit card use. Two items assessed the extent to which participants use credit and debit cards in their everyday lives on a 6-point Likert scale with the following anchors: 1 (Never), 2 (Once per month), 3 (Once a week), 4 (A few times per week), 5 (Once a day) to 6 (A few times per day).

Number of credit and debit cards owned. Two open-ended items assessed how many credit cards and how many debit cards participants own.

Average credit and debit charge per month. Two additional open-ended items assessed the average dollar amount participants charge on their credit card(s) and debit cards(s) per month.

Credit card debt. For those who report owning at least one credit card, one open-ended item assessed how much credit card debt participants currently have.

Who pays credit card bill. Finally, also only for those who report owning at least one credit card, one multiple choice item assessed who pays the credit card bill: 1 (the participant), 2 (the participants' parents), 3 (both the participant and his/her parents), 4 (other).

Procedure. Upon consenting to participate, participants were seated at a computer on which they completed all of the measures included in the study. Approximately half of the participants ($n = 28$) completed the measures in the following order: (1) PANAS, (2) Pain, (3) IAT, (4) Explicit measures, (5) Global cognitive focus, (6) Demographic information, and (7) all credit and debit card questions. The IAT and Explicit measures were counterbalanced so the remaining half of the participants ($n = 30$) completed the measures in the same order except the Explicit measures were completed 3rd and the IAT was completed 4th. Finally, all participants were fully debriefed.

<center>Results</center>

Description of sample's credit and debit card use. Overall, descriptive statistics showed that participants were more likely to own and use a debit card than a credit card. Twenty-six percent reported owning 1 credit card and 16% reported owning 2 or 3 credit cards while 59% reported not owning any credit cards. About half (55%) reported never using a credit card and the remaining half (42%) reported using a credit card between once per month and several times per week. Just 3% reported using a credit card daily. In contrast, all but 1 participant reported

owning at least 1 debit cards (between 1 and 3). Just 3% reported never using a debit card. The majority of the sample (73%) use a debit card between once per month to several times per week and 24% use a debit card daily.

Descriptive statistics also showed that the sample, on average, reported charging modest amounts to the credit and debits cards each month. Those who reported using a credit card(s) charge an average of $236.54 per month (median = $90.00). Those who reported using a debit card(s) reported charging an average of $271.32 per month (median = $200.00). The sample also reported low credit card debt. Only 3 participants (5%) reported carrying any credit card debt, with an average amount among those people equal to $800.00 (median =$300.00). There was an approximately even split between those who paid their credit card bill themselves (42%) and those whose parents paid their credit card bill (46%). The remaining 13% reported another arrangement for paying credit card bills, such as both themselves and their parents contributing.

Main analyses.

IAT. The IAT scores were compared to zero using a single-sample t-test (as in Dasgupta & Rivera, 2006, Study 1). As predicted, results showed that the IAT effect ($M = .41$) was significantly greater than zero, $t(57) = 7.58$, $p < .001$, indicating that participants were quicker to pair credit with distant future and cash with near future than the opposite pairings, see Figure 1. The magnitude of the IAT effect did not differ in the two counterbalance conditions (Ms = .37 and .45; SDs = .39 and .40, respectively), $t < 1$.

Correlations between IAT and other measures. Correlation analyses were conducted between IAT scores and all of the credit and debit use items, the pain measure, and the positive and negative affect indices. The IAT effect was greater for those who charged more to their debit

FIGURE 1. *IAT Effect by Counterbalance and Combined*
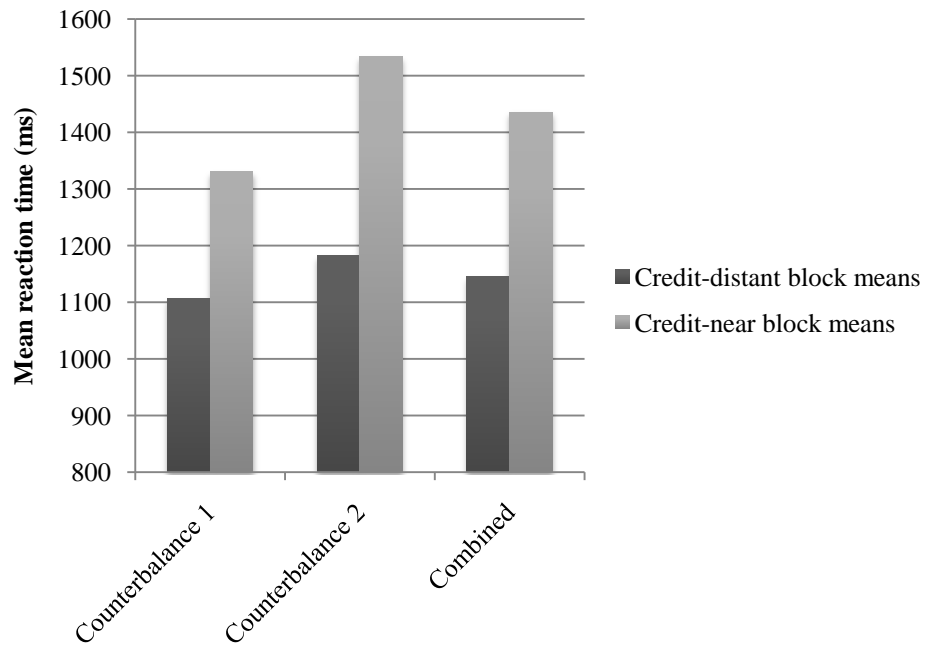
card(s), $r(57) = .35$, $p < .01$, and for those who reported greater levels of pain at the beginning of the study, $r(57) = .29$, $p = .05$. No other significant correlations emerged, all rs $< .21$.

Explicit measures. Repeated measures ANOVAs were conducted to examine differences within participants on the explicit measures. First, the two *Explicit Relation to Time* ratings were entered as a within-subjects factor and counterbalance condition was entered as a between-subjects factor. As predicted, results showed a significant within-subject contrast of *Explicit Relation to Time*, $F(1, 56) = 15.01$, $p < .001$, indicating that participants reported thinking about a more distant future when they thought about a credit card ($M = 1.31$) than when they thought about cash ($M = .14$). There was no main effect of or interaction with counterbalance condition, Fs $< .20$. Second, the two *Explicit Association* ratings were entered as a within-subjects factor and counterbalance condition was entered as a between-subjects factor. As predicted, results showed a significant within-subject contrast of *Explicit Association*, $F(1, 56) = 36.73$, $p < .001$, indicating that participants associated cash with the present ($M = 5.62$) to a greater extent than they associated credit cards with distant future ($M = 3.91$). There was no main of effect of counterbalance condition, $F < 1.05$, but there was an interaction, $F(1, 56) = 4.34$, $p = .04$, such that responses were more discrepant between the two items when the IAT was completed before the explicit ratings ($M_{diff} = -2.32$) than when the explicit ratings were completed before the IAT ($M_{diff} = -1.13$).

Correlations between explicit measures and other measures. Correlation analyses were conducted between each of the explicit measures and all of the credit and debit use items, the pain measure, and the positive and negative affect indices. Some significant relationships emerged. First, when participants who owned fewer credit cards thought about credit cards, they thought of a significantly more distant future time in relation to themselves, $r(57) = -.33$, p $= .01$.

Those who charge less to their debit cards on average monthly thought about a marginally more distant future time in relation to credit cards, $r(57) = -.23$, p = .08. Second, owning fewer credit cards and reporting greater levels of negative affect was related to greater levels of association between credit cards and the distant future, $r(57) = -.26$, $p = .05$ and $r(57) = .28$, $p = .04$, respectively. Less credit card debt and greater reports of pain were marginally linked to greater levels of association between credit cards and the distant future, $r(57) = -.25$, $p = .06$ and $r(57) = .22$, $p = .09$, respectively.

Correlation analyses were also conducted between the *Difference in Explicit Relation to Time* and all of the credit and debit use items, the pain measure, and the positive and negative affect indices. Results indicated that owning fewer credit cards and charging less on average to debit cards each month were related to greater differences in between the *Explicit Relation to Time – Credit* measure and the *Explicit Relation to Time – Cash* measure, $r(57) = -.27$, $p = .04$ and $r(57) = .30$, $p = .02$, respectively. A marginal negative relationship was also found between frequency of credit card use and the *Difference in Explicit Relation to Time, $r(57) = -.23$, $p = .09$.

Finally, correlation analyses were conducted between the *Explicit Association* index and all of the credit and debit use items, the pain measure, and positive and negative affect. One significant negative relationship emerged between number of credit cards owned and mean rating of explicit association between credit cards and the distant future and cash and the present time $r(57) = -.27$, $p = .04$. No other correlations were found between explicit items and any of the credit and debit use measure, pain, or positive and negative affect.

Correlations between explicit and implicit measures. To test the research question concerning relationships between the implicit measure of the strength of association between credit and distant time and explicit measures of the strength of the same association, correlations

were run between the IAT and all explicit measures. No support was found. One marginal

correlation emerged in the opposite direction to what was predicted. Greater IAT effect scores

(i.e., greater ease of pairing credit with distant future and cash with near future than the opposite)

were marginally related to lower ratings of the *Explicit Relation to Time – Credit* item (i.e, time

in relation to one's self was rated as less in the distant future when thinking about a credit card),

$r(57) = -.24$, $p = .07$. Otherwise correlations were non-significant, rs $< .20$, see Table 1.

 Correlations between distance and global focus. To test the hypothesis that implicit and

explicit measures of the strength of association between the concepts of credit cards and distant

time will predict global cognitive focus, correlation analyses were conducted between the IAT,

explicit measures, and measures category inclusiveness measures. First, correlations were

conducted with the weak exemplar outcomes because they are the most important in terms of the

hypotheses. Perceiving weak exemplar items as more included in a category suggests increased

global cognitive focus. One marginal correlation emerged between *Explicit Association – Credit*

and *weak item category membership,* $r(57)= -.24$, $p = .07$, see Table 1. This correlation is in the

opposite direction than the relationship that was predicted. Higher ratings of the association

between credit cards and the distant future predicted including fewer weak exemplar items in the

clothing and furniture categories. No other significant correlations resulted with *weak item*

category membership or the *weak item ratings,* all rs $< .20$, see Table 1. Second, correlations

with moderate and strong exemplar items were conducted. No significant relationships resulted

with the implicit or explicit measures of the strength of association between the concepts of

credit cards and distant time, all rs $<.13$.

 Finally, a series of regressions were conducted to attempt to control for some extraneous

variance that might be preventing the predicted relationships between the strength of association

TABLE 1. *Correlations Between Implicit and Explicit Measures of Credit Card – Distant Time Association and Global Cognitive Focus*

Measure	1.	2.	3.	4.	5.	6.	7.	8.
1. IAT Effect								
2. Explicit Relation to Time – Credit	-.24†							
3. Explicit Relation to Time – Cash	-.06	.16						
4. Explicit Relation to Time Difference	-.19	.85**	-.38**					
5. Explicit Association – Credit	-.07	.21	-.06	.23†				
6. Explicit Association – Cash	-.02	-.05	-.15	.04	-.08			
7. Explicit Association Index	-.07	.13	-.15	.20	.70**	.66**		
8. Weak Item Category Membership	-.13	-.02	-.11	.04	-.24†	-.02	-.19	
9. Weak Item Rating	-.05	-.05	-.10	.01	-.15	-.07	-.17	.84**

Note: † < .10, ** < .0 1

between credit cards and distant time and global cognitive focus from emerging. In hierarchical linear regression models, the weak exemplar item outcomes were entered as the dependent variable (one at a time), one of the implicit or explicit association measures was entered as the independent variable in Step 1 and gender, the credit and debit card use measures, positive and negative affect, and pain were entered as covariates (both simultaneously and in separate models) in Step 2. The relationship that was previously reported above (in the unpredicted direction) between *Explicit Association – Credit* and *weak item category membership* emerged significantly in the regression analyses when credit use is controlled for [βs =.26, $t(55)$ = -1.99, p = .05] and marginally when gender, debit card use, number of credit cards owned, number of debit cards owned, average credit charge per month, average debit charge per month, and negative affect were included as covariates (βs ranging from -.23 to -.25, ts ranging from -1.69 to -1.83). Otherwise none of the measures of the strength of association between credit and distant time were significant predictors in any of the models, all βs < .21, all ts < 1.63, *ns*.

Discussion

The results of Study 1 show support for both an implicit and explicit cognitive link between credit cards and distant time. In the IAT, evidenced by response times, participants paired words related to credit cards and words related to distant time with relative ease compared to pairing credit cards and words related to near time. When thinking about a credit card, participants reported thinking about a more distant future time in relation to themselves than when thinking about cash. These measures, however, were unrelated to each other and unrelated to a global cognitive focus categorization outcome. Controlling for extraneous variance attributable to other measures recorded in this study did not aid in uncovering a link to global cognitive focus. Furthermore, by and large, the implicit and explicit measures were also

unrelated to various aspects of credit and debit card use and affect in a theoretically relevant way. In Study 2, this association between credit cards, temporal distance, and global cognitive focus will again be tested for. An experimental manipulation will be employed, instead of correlational techniques such as those used in Study 1.

CHAPTER 3

STUDY 2

Study 2 examined the effects of the cognitive link between credit cards and temporal

distance on the association between credit cards and global cognitive focus that has been

established in previous research using different methods than those in Study 1. In this study, an

experimental manipulation of time was used to gain a new perspective on the hypothesized

effects of credit cards on global cognitive focus by way of distant time. More specifically, this

study determined whether altering the time until payment is due in purchasing situations with

both credit cards and cash affects the link between credit cards and global cognitive focus.

To do this, participants were prompted to think of purchasing consumer items with one of

two modes of payment, either a credit card or cash. Then, the time until the payment is due with

either mode of payment was also manipulated. Participants were either prompted with a

congruent or incongruent time until payment. When purchasing with credit cards, the true

payment for a purchase is usually made in the distant future – when the billing statement is paid

off in about a month's time. When purchasing with cash, however, the true payment occurs right

at the time of the transaction. Therefore, the congruent time until payment for those in the credit

card condition was "in a month" and the incongruent time until payment was "today."

Conversely, the congruent time until payment in the cash condition was "today" and the

incongruent time until payment was "in a month." There was also a control time until payment

condition in which no specific time until payment was specified.

The same categorization task used in Study 1 measured global and local cognitive focus. It is expected that the cognitive association between credit and distant time is critical to the link between credit cards and global focus found in previous research. Therefore, the hypothesis of Study 2 is that a cross-over interaction will result between the mode of payment and time until payment congruency. The congruent time until payment condition is expected to reproduce previous global focus findings with credit card paid in a month showing significantly more global focus than cash paid today. Incongruent time until payment will produce the opposite results, with cash paid in a month producing significantly greater levels of global focus than credit card paid today. Put differently, time until payment should trump mode of payment in predicting global cognitive focus. Participants prompted with cash purchasing in the incongruent condition (i.e., in a month) should be equally as globally focused as those in the credit card and congruent time (i.e., in a month) conditions and the credit card condition with no time until payment specified. Likewise, participants prompted with credit card purchasing in the incongruent time condition (i.e., today) should be equal as locally focused as those in the cash congruent time condition (i.e., today) and cash no time until payment specified.

Method

Participants and Design. Participants were 172 (120 females) undergraduates participating for partial course credit. They were randomly assigned to one of the two the modes of payment conditions (credit card or cash) and one of the three time until payment conditions (today, in a month, or none given). Therefore, the design was a 2 x 3 with both factors between subjects.

Procedure and Measures. Upon consent, each participant received a questionnaire titled, "Categorization for shopping trips." The instructions read, "Imagine that you are going shopping

to purchase some clothing and furniture items. Imagine that you will pay for the listed items with a credit card (cash) with payment due in a month (today, or neither specified). The measure beneath these instructions was the same global focus measure used in Study 1. The identical dependent measures were calculated as in Study 1: *Weak item category membership* ($M = 1.49$, $SD = 1.58$, $\alpha = .70$), *Weak item ratings* ($M = 4.07$, $SD = 1.63$, $\alpha = .81$), *Moderate item category membership* ($M = 4.58$, $SD = 1.25$, $\alpha = .46$), *Moderate item ratings* ($M = 7.30$, $SD = 1.41$, $\alpha = .64$), *Strong item category membership* ($M = 5.82$, $SD = .80$, $\alpha = .87$), and *Strong item ratings* ($M = 9.57$, $SD = 1.12$, $\alpha = .89$).

Next, participants completed an open-ended manipulation check question, "When would the payment be due to pay for the clothing and furniture items?" This was followed by demographic questions and the same items regarding credit and debit card use from Study 1. Finally, participants were fully debriefed.

Results

Description of sample's credit and debit card use. Overall, descriptive statistics showed that this sample was very similar to the sample in Study 1 in terms of characteristics related to credit and debit card use. Forty-eight percent of the present sample reported owning 1 or 2 credit cards while 51% owned no credit cards. One participant reported owning 8 credit cards. About half (54%) reported never using a credit card and the remaining half (42%) reported using a credit card between once per month and several times per week. Just 4% reported using a credit card daily. In contrast, 95% of participants reported owning at least 1 debit card (between 1 and 3). The majority of the sample (71%) use a debit card between once per month to several times per week and 22% use a debit card daily. Only 7% reported never using a debit card.

Descriptive statistics also showed that this sample, on average, reported charging modest amounts to the credit and debits cards each month. Those who reported using a credit card(s) charge an average of $190.00 per month (median = $80.00). Those who reported using a debit card(s) reported charge an average of $228.90 per month (median = $150.00). They also reported low credit card debt. Just 11 participants (6%) reported carrying any credit card debt at all, with an average amount equal to $840.91 (median =$350.00). The majority of participants with a credit card reported that their parents paid credit card bills (59%). Twenty-six percent reported that both they and their parents contributed to paying credit card bills. Fifteen percent paid credit card bills themselves.

Manipulation check. Two independent coders blind to condition assigned one of three codes to each manipulation check response: *distant future*, *near future*, or *not code-able*. Responses were marked not code-able if they were not legible, irrelevant, or referenced both a distant and near future time. Six responses were coded as not-codable (3%). The coders agreed on 95% of the responses which lead to sufficiently high interrater reliability ($\kappa = .92$, $p < .001$). Discrepancies were resolved through discussion.

To check the manipulation, first, the responses given only those participants in the *today* and *in a month* time to payment conditions were examined (i.e., control time to payment participants' responses were excluded). Out of 115 participants assigned to those conditions, 105 (91%) correctly answered the manipulation check question, X^2 (1, $N = 115$) = 87.52, $p < .001$. Second, the responses of only those participants in the control time to payment condition were examined (i.e., those in the *today* and *in a month* conditions were excluded). To check the manipulation for control participants, a chi-square test was conducted with mode of payment (credit card versus cash) condition as one factor and coded manipulation check response as a

second factor. Results showed that out of 57 participants assigned to the control time to payment condition, 45 (79%) answered the manipulation check question in a congruent way to the mode of payment condition to which they were assigned, $X^2 (1, N = 57) = 24.62$, $p < .001$. That is to say, of those in the control time to payment condition, 88% of participants in the *credit card* mode of payment condition indicated that the payment would be due at a distant future point in time and 80% of those participants in the *cash* mode of payment condition indicated that the payment would be due at a near future point in time.

    Main analyses.

    Weak Exemplars. Before main analyses were conducted, the time to payment manipulation was recoded into congruent time to payment condition. Time to payment condition was transformed to either congruent (i.e., distant future in the credit card condition and near future in the cash condition), incongruent (i.e., near future in the credit card condition and distant future in the cash condition), or control (i.e., no time to payment given).

    First, the weak item category membership and weak item ratings measures were analyzed. A two-way analysis of variance (ANOVA) was conducted with mode of payment (2 levels: credit card or cash) entered as the first between-subjects factors and time to payment (3 levels: congruent time with mode of payment, incongruent time with mode of payment, or control – none given) was entered as the second between-subjects factor. Results for the analyses with *weak item category membership* entered as the dependent variable showed a replication of previous studies. Those in the credit condition ($M = 1.80$) included more weak exemplar items in categories than those in the cash condition ($M = 1.21$), $F(1, 166) = 5.63$, $p = .02$. The main effect of time to payment and the interaction were not significant, Fs $< .30$. Results for the analyses

with *weak item ratings* entered as the dependent variable showed no significant effects, Fs <

1.78.

An examination of patterns in plots of the results of the analyses for both *weak item*

category membership and *weak item ratings* appeared to be aligned with hypotheses, though

effects were not significant. To re-examine the dependent variables at another level, separate

ANOVAs were conducted for the clothing and furniture categories. Two-way ANOVAs with

mode of payment entered as the first between-subjects factors and time until payment was

entered as the second between-subjects factor were conducted for the following dependent

variables: *weak furniture item category membership, weak clothing item category membership,*

weak furniture item ratings, and *weak clothing item ratings.*

The analyses for *weak furniture item category membership* yielded, first, a significant

main effect of mode of payment [$F(1,166) = 6.36$, $p = .01$], indicating that those in the credit

card condition ($M = .86$) included more weak furniture items in the furniture category than those

in the cash condition ($M = .51$). It also yielded a significant mode of payment x time to payment

interaction, $F(2, 166) = 4.54$, $p = .01$, see Figure 2. Planned contrasts revealed that, as predicted,

of participants who received the congruent time manipulation, those in the credit card condition

included significantly more furniture items in the furniture category than those in the cash

condition [$M_{diff} = .57$; $F(1, 166) = 5.67$, $p = .02$]. In accord with previous research, of

participants who received the control time manipulation, those in the credit card condition also

included significantly more furniture items in the furniture category than those in the cash

condition [$M_{diff} = .71$; $F(1, 166) = 8.86$, $p < .01$]. Of participants who received the incongruent

time manipulation, the number of items they included in the furniture condition did not differ

FIGURE 2. *Mode of Payment x Time to Payment Interaction for Weak Furniture Item Category Membership*
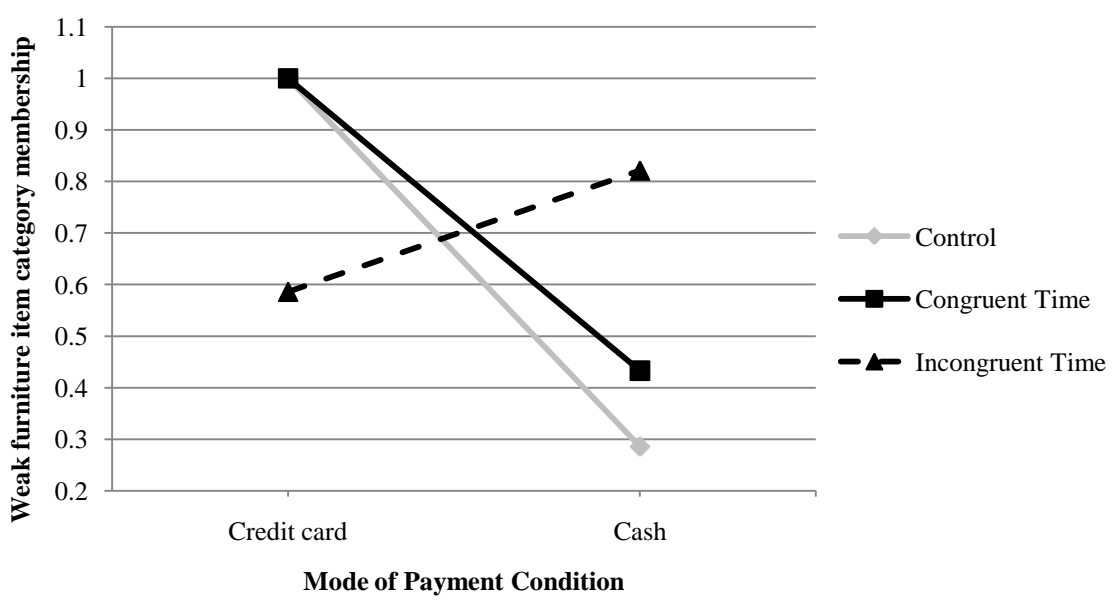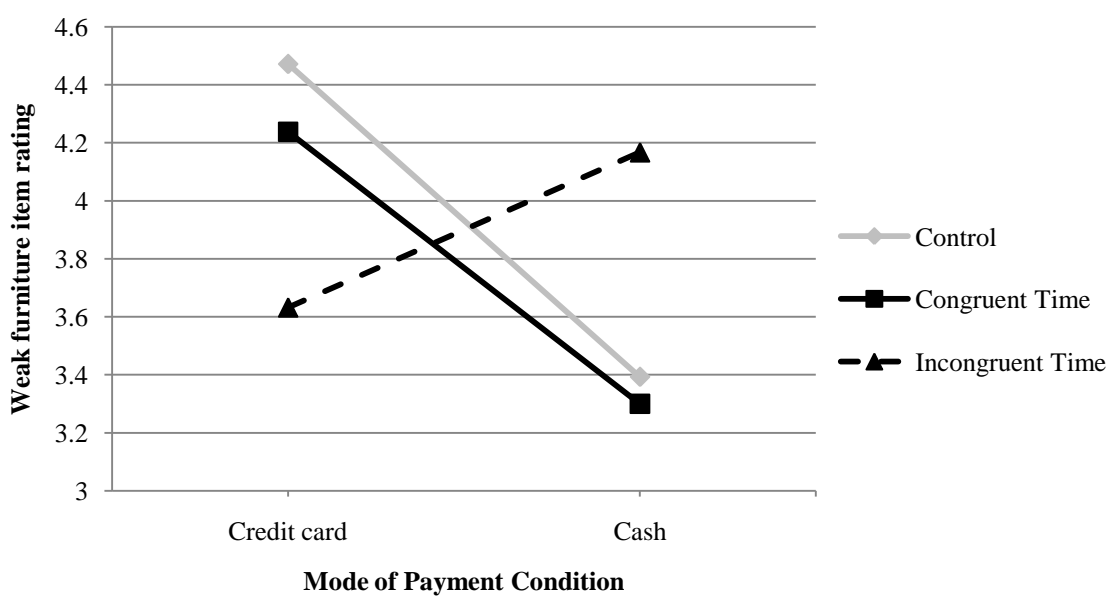

Note: There was a significant planned contrast between credit card and cash conditions for those who received the congruent time manipulation [$M_{diff} = .57$; $F(1, 166) = 5.67$, $p = .02$] and the control time manipulation [$M_{diff} = .71$; $F(1, 166) = 8.86$, $p < .01$]. This contrast was not significant for those who received the incongruent time manipulation, $M_{diff} = -.24$; $F < 1$.

between the credit card and cash conditions, [M_{diff} = -.24; $F < 1$], but the means were in the opposite direction of the other contrasts, as predicted.

The *weak furniture item rating* analyses produced similar results. There was a marginal main effect of mode of payment condition, such that overall participants in the credit card (M = 4.11) condition rating the items as more belonging to the furniture category than those in the cash condition [M = 3.61; $F(1, 166) = 2.30, p = .09$]. There was also a significant mode of payment x time to payment interaction, $F(2, 166) = 3.15, p = .05$, see Figure 3. Planned contrasts revealed that, as predicted, of participants who received the congruent time manipulation, those in the credit card condition rated furniture items as marginally more belonging to the furniture category than those in the cash condition [M_{diff} = .94; $F(1, 166) = 3.53, p = .06$]. In accord with previous research, of participants who received the control time manipulation, those in the credit card condition also rated furniture items as significantly more belonging to the category than those in the cash condition [M_{diff} = 1.08; $F(1, 166) = 4.59, p = .03$]. Of participants who received the incongruent time manipulation, the inclusiveness of their item ratings did not differ between the credit card and cash conditions, [M_{diff} = -.53; $F < 1.20$] but the means were in the opposite direction of the other contrasts, as predicted. No significant results emerged for the *weak clothing item category membership* and *weak clothing item ratings*, Fs < 2.25.

Moderate and Strong Exemplars. Two-way ANOVAS with the same between-subjects factors as the previous analyses were conducted on the moderate and strong exemplar item measures: *moderate item category membership, moderate item ratings, strong item category membership,* and *strong item ratings*. These analyses were not expected to yield significant results because the belongingness of moderate and strong items to the categories is less ambiguous and, thus, less susceptible to manipulation. No significant effects emerged (all Fs $<$

FIGURE 3. *Mode of Payment x Time to Payment Interaction for Weak Furniture Item Rating*

Note: There was a marginally significant planned contrast between the credit card and cash conditions for participants who received the congruent time manipulation [$M_{diff} = .94$; $F(1, 166) = 3.53$, $p = .06$] and a significant planned contrast for those who received the control time manipulation [$M_{diff} = 1.08$; $F(1, 166) = 4.59$, $p = .03$]. This contrast was not significant contrast for those who received the incongruent time manipulation, $M_{diff} = -.53$; $F < 1.20$.

2.00), with the exception of a main effect of time to payment condition for moderate item ratings, $F(2, 166) = 2.96$, $p = .05$, such that those in the control condition ($M = 7.65$) rated items as more belonging to their respective categories than those in the congruent ($M = 7.23$) and incongruent time ($M = 7.03$) conditions.

 Analyses using coded manipulation check. Coded manipulation check responses were recoded to mirror the analyses conducted above. That is to say, participants' responses to the manipulation check question were transformed to either a congruent (i.e., distant future in the credit card condition and near future in the cash condition) or incongruent (i.e., near future in the credit card condition and distant future in the cash condition) response. Then, a 2x2 ANOVA with mode of payment (credit or cash) as the first factor and manipulation check responses recorded (congruent or incongruent) as the second factor was conducted on *weak item category membership,* and *weak item ratings*. Weak item category membership results showed a main effect of mode of payment condition, $F(1, 162) = 4.98$, $p = .03$, indicating that overall participants in the credit card condition ($M = 1.78$) included more weak exemplars than those in the cash condition ($M = 1.21$). No other effects were significant in the analyses of *weak item category membership* or *weak item rating*, Fs < 1.35.

 Next, the weak item dependent measures were again separated into clothing and furniture categories and 2x2 ANOVAs with mode of payment as the first factor and manipulation check responses recorded (congruent or incongruent) as the second factor were conducted. The analyses with *weak item furniture category membership* entered as the dependent variable resulted in a marginal main effect of mode of payment [$F(1,162) = 3.18$, $p = .08$], indicating that those in the credit card condition ($M = .86$) included more weak furniture items in the furniture category than those in the cash condition ($M = .51$). It also yielded a significant mode of payment

x manipulation check interaction, $F(1, 162) = 5.77, p = .02$. Planned contrasts revealed that, as predicted, of participants who responded with a congruent time to the manipulation check question, those in the credit card condition included significantly more furniture items in the furniture category than those in the cash condition [$M_{diff} = .62; F(1, 162) = 12.11, p = .001$]. Of participants who responded with an incongruent time to the manipulation check question, however, the number of items they included in the furniture condition did not differ between the credit card and cash conditions, [$M_{diff} = -.09; F < 1$].

There were no main effects in the analysis of *weak furniture item rating*, but a marginal mode of payment x manipulation check interaction resulted, $F(1, 162) = 3.52, p = .06$. Planned contrasts revealed that, as predicted, of participants who responded with a congruent time to the manipulation check question, those in the credit card condition rated the furniture items as more belonging to the furniture category than those in the cash condition [$M_{diff} = .95; F(1, 162) = 6.54, p = .01$]. Participants who responded with an incongruent time to the manipulation check question, however, rated items as equally belonging to the furniture category in both mode of payment conditions, [$M_{diff} = -.21; F < 1$].

The analyses with *weak clothing item category membership* entered as the dependent variable resulted in a main effect of mode of payment [$F(1,162) = 3.60, p = .05$], indicating that those in the credit card condition ($M = .92$) included more weak clothing items in the clothing category than those in the cash condition ($M = .70$). It also yielded a significant mode of payment x manipulation check interaction, $F(1, 162) = 5.88, p = .02$. Planned contrasts revealed a pattern contrary to predictions. The number of items included in the clothing category did not differ between those in the credit card and cash conditions for participants who responded with a congruent time to the manipulation check question, [$M_{diff} = -.07; F < 1$]. Of participants who

responded with an incongruent time to the manipulation check question, however, those in the credit card condition included significantly more weak exemplar clothing items in the clothing category than those in the cash condition [$M_{diff} = .68$; $F(1, 162) = 7.56$, $p = .01$]. In the *weak clothing item rating* analyses, no effects were significant, all Fs < 1.20.

ANOVA analyses were also conducted for the moderate and strong exemplar item indices: *moderate item category membership, moderate item ratings, strong item category membership,* and *strong item ratings*. No main effects results in any of the models, all Fs < 1. Results, however, for all four dependent variables revealed either marginal or significant mode of payment x manipulation check interactions, Fs (1, 62) ranging from 2.91 to 9.52, ps ranging from .09 to < .01. In each of the 4 interactions, however, a pattern of results opposite to predictions emerged – those who responded to the manipulation check question with a congruent time response, were more globally focused in the cash than in the credit card condition (M_{diff} ranging from -.32 to -.64).

Covariates. Finally, to examine whether the results of the main analyses are affected by variables related to participants credit and/or debit card use, analyses of covariance (ANCOVAs) were conducted on the following dependent variables: *weak item category membership*, *weak item rating*, *weak furniture item category membership*, *weak furniture item rating*, *weak clothing item category membership*, *weak clothing item rating*. Mode of payment (credit or cash) was entered as the first between-subjects factor, time to payment (congruent time with mode of payment, incongruent time with mode of payment, or none given) was entered as the second between subjects factor, and *credit card use, debit card use*, *number of credit cards owned, number of debit cards owned*, *average credit charge per month,* and *average debit charge per month*, and *credit card debt* were each entered as a covariate in separate analyses. For the sake of

brevity, the results of all analyses including covariates will be summarized. Inclusion of the covariates did not affect the results in noteworthy ways. The main effect of mode of payment remained significant for *weak item category membership* when all covariates were included. Mode of payment x time to payment interactions remained significant or marginally significant for *weak furniture item category membership* and *weak furniture rating* when all covariates were included, except in the case of *credit card debt*. When *credit card debt* was included as a covariate, these interactions did not emerge.

Discussion

This study presents some evidence showing that temporal distance is responsible for the relationship between credit cards and global cognitive focus. When categorizing weak furniture exemplars (vase, telephone, and fan), participants included more items (and rated them as more belonging) if they considered purchasing the items with a credit card with payment due in a month in comparison to cash with payment due today. Participants who thought about purchasing the items when the time to payment was switched (credit card with payment due today and cash with payment due in a month), however, did not exhibit this effect. The same pattern of responses was found with manipulation check coded responses. Those in the credit card condition, who reported that payment would occur at a distant future time, perceived weak furniture exemplars as more belonging than those in the cash condition who reported that payment would occur at a near future time. However, there was no difference, in perceived belongingness between those in the credit card condition who reported that payment would occur at a near future time and those in the cash condition who reported that payment would occur at a distant future time. These results support one hypothesis set forth in the present research – that credit cards lead to global focus because they are associated with distant time. The results of this

study, however, also conflict with this hypothesis because no significant results emerged from ratings of weak clothing exemplar items (watch, necklace, earmuffs). Possible explanation for this discrepancy will be discussed in the following section. It is also worth nothing that the effects associated with weak furniture exemplars remained when a variety of measures related to credit card and debit card use were controlled for suggesting that, to the extent that the hypothesis is supported, it may be robust and relatively unaffected by idiosyncratic familiarity with and use of plastic forms of payment.

CHAPTER 4

GENERAL DISCUSSION

The questions addressed in the present studies were: 1) Do individuals exhibit a natural association between credit cards and distant future times, both on an implicit and explicit level? 2) Is this association responsible for inciting global focus in individuals who are interacting with credit cards? First, evidence of a cognitive link was found in Study 1. Using an IAT, it was found that participants exhibited a bias for pairing credit card concept words with distant future time words in comparison to near time words. They also explicitly reported (on a self-report rating scale) thinking about a more distant future time when thinking about credit cards than cash. With respect to the second question examined in this research, support was not found in Study 1, but partial support was established in Study 2. In Study 1, there were no relationships (in the predicted direction) between either the implicit or explicit measures of association between credit cards and distant time and global cognitive focus. In Study 2, however, assigning participants to a condition in which they were asked to imagine purchasing consumer items with a credit card with payment due at a near future time (or with cash at a distant future time) mitigated the relationship previously found between credit cards and global cognitive focus. More specifically, those who thought about purchasing furniture items with a credit card with payment due today exhibited equal levels of global focus to those who thought about purchasing furniture items with cash with payment due in a month; whereas, participants who were prompted to thinking about purchasing the same items with a credit card with payment due in a month were significantly more globally focused than those who were prompted to thing about purchasing with cash due

today. Results also showed that these effects remained consistent when a number of different variables measuring frequency of credit card use, debit card use, the number of cards owned, the amount charged to them on average per month, and levels of debt were controlled for. It is important though to consider these findings to be preliminary due to limitations that will be discussed.

At this point, the model set forth earlier in this paper will be revisited and stock will be taken of the components there is evidence of and those that there is not yet evidence to support. The model, in full, predicted that 1) credit cards would predict activation of the concept of distant future time; 2) distant time activation would predict global (in comparison to local) cognitive focus; 3) credit cards would also predict global cognitive; and 4) distant time activation would be a factor responsible for the credit card – global focus effect. Support was found for the component 1 of this model – both implicitly and explicitly – in Study 1. Component 2 has been consistently supported by the Construal Level Theory body of research (Trope & Liberman, 2003), but evidence of component 2 was lacking in the present studies. In Study 1, neither the implicit or explicit measurement of distant time activation correlated with global cognitive focus. Component 3 has also been supported in previous studies (Buffardi & Campbell, 2009) and in Study 2. Main effects of mode of payment revealed increased cognitive focus in the credit card compared to cash condition overall. Finally, in Study 2, we also glean some support of component 4 of the model. By manipulating the time until payment was due to be incongruent with the time frame one usually thinks of with regards to credit cards (i.e., in the near future) and cash (i.e., in the distant future), the credit card – global focus effect was eliminated. In this finding, there lies some support for component 4.

Implications. Although the full model presented in the present research was only partially supported, there are a number of important and thought-provoking implications of the findings that were supported by the data. First, Study 1 showed that credit cards predicted automatic activation of distant future time. Due to spread of activation, this might mean that a number of other concepts related to the distant future are also activated when interacting with a credit card. For example, if distant future times are easily accessed so might be one's dreams and aspirations. Distant future activation may also lead to a general sense of optimism due to the lifting of the constraints associated with the here and now. Perhaps a distant future mindset leads to greater procrastination because the vastness of the distant future is highlighted. Or, conversely, activating the concept of the distant future may aid in self-control (see Fujita, Trope, Liberman, Levin-Sagi, 2006). If support was found for any of these possibilities, it is likely that they will also moderated by individual differences. Importantly, if credit cards do begin a chain reaction such as those suggested here, then interacting with credit cards might influence behavior and decision-making in domains that are unrelated to purchasing.

Second, research in this area represents initial steps towards understanding psychological processes underlying the accumulation of consumer debt. Due to recent downward trends in the economic climate, consumer debt (e.g. foreclosures, credit card debt, bankruptcy) has garnered attention at a national level as a major political, financial and humanitarian issue. Now, and in coming years, it will be important for psychologists and behavioral economists to provide theoretical frameworks for more applied work to inform policy makers. Determining what the cognitive effects are of the omnipresence of credit cards in our society is one important component in this growing body of literature.

Third, this research might contribute to informing the creation of credit card debt interventions and prevention programs in the future. Credit card debt does not signal financial problems alone, but is correlated with psychological and health ones as well (see Jessop, Herberts, & Solomon, 2005). Clinicians and consumer educators may find the results of the present research to be instructive when interacting with those who are burdened with debt. Findings indicate that consumers are focused on a distinctive feature of credit cards – the ability to pay them off at a future time – to the extent that distant time is automatically activated when credit cards are. Taken together with previous research that shows evidence of the credit card premium, it is reasonable to assume that distant future activation plays a role in increased spending with a credit card. Furthermore, the present research indicates that when distant time is removed from credit cards (by manipulating the time until payment is due to be in the near future), consumers do not exhibit cognitive responses that they do exhibit when credit cards are link to a distant future time until payment. When credit cards and distant time are active, consumers rely on broader category definitions in comparison to cash. When credit cards and near time are active, however, consumers do not exhibit this effect. Inclusive categorization might lead to increased detrimental consumer outcomes for those with debt such as more inclusive purchasing patterns (e.g., purchasing more products to fulfill one goal). Therefore, effective remedies that guard against credit card debt might strive to accustom consumers to associating credit cards with the present time.

Caveats and Future Directions. Although some findings supported hypotheses in the present studies, other aspects did not turn out as expected. First, in Study 1, the implicit and explicit measures of the strength of association between credit cards and distant future time did not correlate. On average, the sample exhibits both an implicit and explicit bias for pairing credit

cards with distant future times, but these measures were uncorrelated. Research grounded in dual

processing models suggests a number of different reasons why implicit and explicit attitudes are

often unrelated (e.g., Karpinski & Hilton, 2001). For instance, self-presentation has been found

to moderate the relationship between implicit and explicit self-esteem (Olson, Fazio, &

Hermann, 2007). Priming has also been found to successfully switch either implicit or explicit

attitudes, but does not lead to correlations between them (e.g., Rydell & McConnell, 2006;

Rydell, McConnell, Mackie, & Strain, 2006). These explanations, however, do not seem to be

responsible for the lack of correlation between the implicit and explicit measures in Study 1. One

would not expect a connection between credit cards and the distant future to be susceptible to

social desirability. There was no priming involved in Study 1. Another line of research suggests

that relevant memories that are unrelated to the self (sometimes referred to as "extra-personal

associations") can also effect correspondence between implicit and explicit attitudes (Han, Olson

& Fazio, 2006). Information about this type of cognitive representation of credit cards was not

collected in the present research. Thus, it remains unknown why Study 1's implicit and explicit

measures were not correlated and this is a potential area to examine in the future.

　　　　Second, it is unclear why the implicit and explicit measures of association between credit

cards and distant time were uncorrelated with global focus with chronic global focus. There is a

good deal of evidence from the Construal Level Theory literature to support the expectation that

this relationship would exist. Why, then, was it not found? One possibility involves the way

temporal distance is measured in Study 1. In both the implicit and explicit measurements, it was

always tied to credit cards and not measured (or manipulated) independently, as it often is in

Construal Level Theory studies. The IAT is a concept pairing task – it measured the strength of

association between credit cards and the concept of distant time, not the extent to which a distant

time was active alone. The explicit measures also asked about what time participants thought of when they thought about credit cards. To separate the variables of credit cards and time, in future studies, might lead to uncovering a relationship between temporal distance and global focus (component 2 of the full model). For example, first priming credit cards, then asking participants to write down the first time of day, date, month, year that comes to mind to would be one method for obtaining an independent measurement of time.

Third, in Study 2, expected interactions were obtained for the weak furniture exemplars, but not the weak clothing exemplars. This is difficult to explain because in two previous studies, credit cards (in comparison to cash) predicted more inclusive categorizations of both types of items (Buffardi & Campbell, 2009). One clue might be the gender make-up of the sample. Study 2's sample was 70% female. It is possible that females generally have more exclusive category definitions for clothing items than males do because, on average, they are usually more interested in clothing, fashion, shopping, and appearance. Alternatively, the weak exemplars were taken from research conducted in the 1970s. Culturally, clothing category definitions may have changed in the last 35 years more so than furniture categories. In the future, it would be useful to include items from other categories when using category inclusiveness as a measurement of cognitive focus.

The present research makes progress in examining the cognitive processes associated with credit cards, but it remains unknown how these affects purchasing and debt outcomes. Therefore, another route for extending this line of research includes determining how the present findings relate to monetary outcomes. In the future, it would be worthwhile to determine, for instance, if manipulating time to payment influences lab purchasing tasks or debt related

outcomes. And, to test whether training one to cognitively pair credit cards with near time mitigates spending.

Finally, the samples' characteristics may have affected some results. In the present studies, owning and using credit and debit cards did not contribute to the findings in important ways. Neither did credit card debt. This may be, in part, due to the fact that the samples used in the present research were comprised of only college students at a university where the student body has, on average, relatively high socioeconomic status. Furthermore, participants reported charging low amounts per month to their credit and debit cards. Very few reported carrying any credit card debt and those who did reported modest amounts, well below the national average of $16,000 per household (Woolsey & Schulz, 2010). In the future, it would be important to examine the same cognitive processes in an adult population from a variety of socioeconomic backgrounds. Adults would ostensibly have more variety in the extent to which they use credit cards and in the debt which they have incurred. This variance might prove to be predictive of the cognitive relationships found in this research.

CHAPTER 5

REFERENCES

Abramovitch, R., Freedman, J., & Pliner, P. (1991). Children and money: Getting an allowance, credit versus cash, and handling of money. *Journal of Economic Psychology, 12,* 27-42.

Ainslie, G., & Haslam, N. (1992). Hyperbolic discounting. In G. Loewenstein and J. Elster (Eds.) *Choice over time* (pp. 57-92). New York: Russell Sage Foundation.

Bar-Anan, Y., Liberman, N., & Trope, Y. (2006). The association between psychological distance and construal level: An implicit association test. *Journal of Experimental Psychology: General, 135*, 609–622.

Brown, S., Taylor, K. & Price, S. W. (2005). Debt and distress: Evaluating the psychological cost of credit. *Journal of Economic Psychology, 26*, 642–663.

Buffardi, L. E., & Campbell, W. K. (2009). "Credit or cash?" The effect of credit cards versus cash on global cognitive focus. Unpublished manuscript, University of Georgia.

Dasgupta, N., & Rivera, L. M. (2006). From automatic antigay prejudice to behavior: The moderating role of conscious beliefs about gender and behavioral control. *Journal of Personality and Social Psychology, 91*, 268-280.

Dew, J. (2008). Debt change and marital satisfaction change in recently married couples. *Family Relations, 57*, 60 – 71.

Feinberg, R. A. (1986). Credit cards as spending facilitating stimuli: A conditioning interpretation. *Journal of Consumer Research, 12*, 384-356.

Fujita, K., Trope, Y., Liberman, N., & Levin-Sagi, M. (2006). Construal levels and self-control. *Journal of Personality and Social Psychology*, *90*, 351-367.

Garrity, K., & Degelman, D. (1990). Effect of server introduction on restaurant tipping. *Journal of Applied Social Psychology, 20*, 168-172.

Gasper, K. & Clore, G. L. (2002). Attending to the big picture: Mood and global vs. local processing of visual information. *Psychological Science, 13*, 34-40.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology, 74*, 1464–1480.

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the Implicit Association Test: An improved scoring algorithm. *Journal of Personality and Social Psychology, 85*, 197-216.

Hausman, J. (1979). Individual discount rates and the purchase and utilization of energy-using durables. *Bell Journal of Economics, 10,* 33–54.

Hirschman, E. C. (1979). Differences in consumer purchase behavior by credit card payment system. *Journal of Consumer Research, 6*, 58-66.

Jessop, D.C., Herberts, C., & Solomon, L. (2005). The impact of financial circumstances on student health. *British Journal of Health Psychology, 10*, 421-439.

Karpinski, A., & Hilton, J. L. (2001). Attitudes and the Implicit Association Test. *Journal of Personality and Social Psychology, 81*, 774–788.

Kimchi, R. (1992). Primacy of wholistic processing and global/local paradigm: A critical review. *Psychological Bulletin, 112*, 24-38.

Kimchi, R., & Palmer, S. E. (1982). Form and texture in hierarchically constructed patterns. *Journal of Experimental Psychology: Human Perception and Performance, 8,* 521-535.

Knutson, B., Rick, S., Wimmer, E., Prelec, D., & Loewenstein, G. (2007). Neural predictors of purchases. *Neuron, 53*, 147-156.

Liberman, N., Sagristano, M. D., & Trope, Y. (2002). The effect of temporal distance on level of mental construal. *Journal of Experimental Social Psychology*, *38*, 523-534.

Liberman, N., & Trope, Y. (1998). The role of feasibility and desirability considerations in near and distant future decisions: A test of temporal construal theory. *Journal of Personality and Social Psychology, 75*, 5-18.

Lynn, M., & Mynier, K. (1993). Effect of server position on restaurant tipping. *Journal of Applied Psychology*, *23*, 678–685.

Masuda, T., & Nisbett, R. E. (2001). Attending holistically versus analytically: Comparing the context sensitivity of Japanese and Americans. *Journal of Personality and Social Psychology, 81*, 992-934.

McCall, M., & Belmont, H. J. (1996). Credit card insignia and restaurant tipping: Evidence for an associative link. *Journal of Applied Psychology, 81*, 609-613.

Melchers, K. G., Shanks, D. R., & Lachnit, H. (2008). Stimulus coding in human associative learning: Flexible representations of parts and wholes. *Behavioural Processes*, *77*, 413-427.

Metcalfe, J., & Mischel, W. (1999). A hot/cool system analysis of delay of gratification: Dynamics of willpower. *Psychological Review, 106,* 3-19.

Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: Holistic vs. analytic cognition. *Psychological Review, 108*, 291–310.

Olson, E. (2007, June 17). Who needs pocket change when you've got plastic? The New York

    Times. Retrieved on May 10, 2008 from the World Wide Web:

    http://www.nytimes.com/2007/06/17/business/yourmoney/17plastic.html?_r=1&sq=who

    %20needs%20pocket%20change&st=cse&oref=slogin&scp=1&pagewanted=print.

Prelec, D., & Loewenstein, G. (1991). Decision making over time and under uncertainty: A

    common approach. *Management Science*, *37*, 770–786

Prelec, D., & Loewenstein, G. F. (1998). The red and the black: Mental accounting of savings

    and debt. *Marketing Science, 17*, 4–28.

Prelec, D., & Simester, D. (2001). Always leave home without it: A further investigation of

    the credit card effect on willingness-to-pay. *Marketing Letters, 12*, 5-12.

Raghubir, P., & Srivastava, J. (2008) Monopoly money: The effect of payment coupling and

    form on spending behavior. *Journal of Experimental Psychology: Applied, 14*, 213-225.

Rosch, R. H. (1975). Cognitive reference points. *Cognitive Psychology, 7*, 532-47.

Sagristano, M. D., Trope, Y., & Liberman, N. (2002). Time-dependent gambling: Odds now,

    money later. *Journal of Experimental Psychology: General*, *131*, 364-376.

Smith, P. K., & Trope, Y. (2006). You focus on the forest when you're in charge of the trees:

    Power priming and abstract information processing. *Journal of Personality and Social

    Psychology, 90*, 578-596.

Soman, D. (2003). The effect of payment transparency on consumption: Quasi experiments from

    the field. *Marketing Letters, 14*, 173-183.

Soman, D., Ainslie, G., Frederick, S., Li, X., Lynch, J., Moreau, P., Mitchell, A., Read, D.,

    Sawyer, A., Trope, Y., Wertenbroch, K., & Zauberman, G. (2005). The psychology of

    intertemporal choice. *Marketing Letters, 16*, 347-360.

Thaler,R. (1991). *Quasi-Rational Economics*. New York: Russell Sage Foundation.

Trope, Y., & Liberman, N. (2000). Temporal construal and time-dependent changes in preference. *Journal of Personality and Social Psychology, 79*, 876-889.

Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review, 110*, 403-421.

Watson D., Clark, L.A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063-70.

Woolsey, B., & Schulz, M. (2010, April 6). Credit card statistics, industry facts, debt statistics. Retrieved April 6, 2010, from CreditCards.com website: http://www.creditcards.com/credit-card-news/credit-card-industry-facts-personal-debt-statistics-1276.php