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This research examines how credit card debt affects consumer spending. In five experimental and field studies, the authors demonstrate that outstanding credit card debt increases spending for consumers with high self-control. They also show that this effect can be eliminated by increasing the available credit on the credit card. Thus, when the available credit is low, consumers with greater self-control increase spending, but when the available credit is high, they reduce spending. The results extend the literature on goal violation and self-control and offer insights into consumer decision making and consumption patterns under conditions of debt.

*Keywords:* credit cards, debt, self-control, spending, goals

## Leave Home Without It? The Effects of Credit Card Debt and Available Credit on Spending

Credit card transactions in the United States have been steadily rising over the past few years, and with increased transactions comes increased debt. Recent industry statistics report that 26.5 billion credit card transactions took place in 2008 (Nilson Report 2009a), with a corresponding \$973 billion in credit card debt (Nilson Report 2009b). The individual-level household numbers are sobering. The average outstanding credit card debt for households that have a credit card was \$10,679 (Nilson Report 2009b), and the average balance per open credit card was \$1,157 in 2008 (Experian 2009). Perhaps more dire, in the fourth quarter of 2008, approximately 13.9% of consumers' disposable income went to service credit card debt (U.S. Congress Joint Economic Committee 2009).

Despite these staggering numbers, there is virtually no consumer research on how credit card debt affects spending. Previous studies have primarily focused on how spending differs across different forms of payment (i.e., credit cards versus cash) or, more recently, how minimum payment information influences the likelihood of paying off the debt (Navarro-Martinez et al. 2011). In this research, we explore how the presence of an outstanding credit card balance influences spending, most specifically for people

with high self-control. During periods of economic downturn, rising job losses and other unexpected events can lead even those who are generally effective at controlling their spending to incur unbearable amounts of debt (Andrews 2009). For example, a significant portion of the defaults that occurred during the recent credit crisis was attributed to those with relatively solid credit histories (Goodman and Healy 2009). Thus, it is important for research to explore the potential biases credit card balances have on consumers' spending decisions, including those who are usually successful at exercising restraint.

This research consists of a series of five experimental and field studies that together demonstrate the counterintuitive effect that carrying a credit card balance tends to increase spending for people with relatively high self-control. Specifically, we find that incurring an outstanding balance leads consumers with high self-control to submit higher bids in actual auctions (Study 1a), to be more likely to purchase higher-priced products (Studies 1b, 2, and 4), and to spend more per month on their actual credit cards (Study 3) than those with low self-control. In addition, we demonstrate that the perceived impact of the balance moderates this effect, but in a surprising manner. Specifically, the increased spending of people with high self-control occurs when there is low available credit on the credit card, and increasing the available credit restores spending control (Studies 2, 3, and 4). Finally, we provide evidence that a decrease in negative emotions drives this effect (Study 4).

In addition to the timely contribution to the understanding of debt and consumer credit card behavior, this research makes several theoretical contributions. First, although studies have demonstrated that consumers often abandon restraint after an initial failure (Cochran and Tesser 1996;

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Polivy and Herman 1985; Raghurir and Srivastava 2009; Soman and Cheema 2004), to the best of our knowledge, this research is the first to show that this effect can emerge for people who are most effective at self-control. Second, although previous research has focused mainly on improving self-control by reducing the instances of failure (Cochran and Tesser 1996; Soman and Cheema 2004), we demonstrate that after a failure has occurred (i.e., a balance is incurred), spending control can be restored by reducing the psychological impact of the failure. Finally, it is generally assumed that increasing consumers' consumption resources often leads to greater consumption (Morewedge, Holtzman, and Epley 2007; Soman and Cheema 2002; Spiller 2011). We show, however, that when the resources (e.g., available credit) are linked to failure, such as credit card debt, increasing consumption resources can actually lower spending.

#### *THE EFFECT OF CREDIT CARD BALANCES ON SPENDING*

Much of the previous research on the use of credit cards has focused on the difference between credit cards and other forms of payments on consumer spending. A common finding from this research is that when the decision to purchase has been made, the use of a credit card leads to more spending than cash or checks (Feinberg 1986; Hirschman 1979; Inman, Winer, and Ferraro 2009; Prelec and Loewenstein 1998; Prelec and Simester 2001; Rick, Cryder, and Loewenstein 2008). Thus, the decision to use a credit card over other forms of payment to make a purchase often results in lower spending control. However, consumers also have a strong aversion to debt, especially credit card debt (Prelec and Loewenstein 1998). Therefore, while credit cards may stimulate spending, their overuse is something that consumers want to avoid.

#### *Credit Card Balances and Failure*

The income effect from microeconomic theory predicts that as consumers' income and total wealth decrease, so should their discretionary spending (Ferber 1962). Because credit card balance payments reduce future income, this should reduce consumers' discretionary spending when they carry a credit card balance, holding everything else constant. This reasoning is also consistent with the literature on mental budgeting (Heath and Soll 1996), which suggests that consumers allocate expenses to specific categories and resist spending when the category budget is reached. Credit card balances comprise past purchases, and thus these expenses should constrain future spending within the categories in which an expense has been recorded.

Although income or budgeting constraints are likely to play some role in consumers' spending decisions, an alternative perspective suggests that credit card balances have the opposite effect on spending. Several studies have documented the tendency of people to abandon a behavioral goal after an initial failure (Cochran and Tesser 1996; Polivy and Herman 1985; Soman and Cheema 2004), particularly when the goal represents a behavior that they are trying to decrease or eliminate, such as drinking, smoking, and overeating (Cochran and Tesser 1996). Failing to inhibit an unwanted behavior has a psychological cost that often leads to goal abandonment in an effort to overcome the

pain of failure (Soman and Cheema 2004). For example, people trying to stop smoking are likely to try to maintain an active focus on not smoking. After they smoke just one cigarette, however, the goal is lost, which often leads them to start smoking again. Often, such failures lead not just to a reduction in effort but also to a complete loss of restraint and overindulgence in the opposite direction—a pattern of behavior often referred to as the “what-the-hell” effect (Cochran and Tesser 1996).

Although the what-the-hell effect has been primarily shown in the eating domain (see Herman and Polivy 2010), recent research has provided evidence of the effect in consumer financial decisions. Soman and Cheema (2004) find that when consumers exceed a monthly budget, they are more likely to make an unnecessary purchase than when they are within their spending budget. Dhar, Huber, and Khan (2007) demonstrate that an initial purchase can increase the likelihood of making an immediate unrelated purchase. Raghurir and Srivastava (2009) show that consumers are less likely to make a purchase when given money in a large denomination than when given the same amount in small denominations, but after the decision to purchase is made, the amount they spend is higher for the large denomination.

Thus, previous research has demonstrated that an initial financial decision can momentarily increase spending (Dhar, Huber, and Khan 2007; Raghurir and Srivastava 2009; Soman and Cheema 2004). However, outstanding credit card balances represent spending decisions that have occurred in the distant past (at least a month before), so it is unclear whether incurring a balance will affect immediate spending decisions. In addition, although previous research has shown that self-control helps consumers avoid unwanted behaviors, the effect of self-control in the spending domain is uncertain. Raghurir and Srivastava (2009) explore the moderating role of self-control in a study of the denomination effect. When manipulating self-control (Study 2), they find that those high in need for self-control preferred to be paid in a large denomination, which effectively acted as a precommitment strategy because large bills are more difficult to spend. However, they also find that this holds true only for tightwads (Study 3) and not for spendthrifts, who show no preference for any particular denomination over another. Raghurir and Srivastava conclude (p. 712) that “this pattern suggests that it is not the need to exert self-control in spending (which is greater for spendthrifts vs. tightwads) but the need to avoid the pain of paying (which is greater for tightwads) that drives the choice of denomination as a strategic precommitment device.” Importantly, the effect of self-control on spending decisions after the person has already faced goal failure (i.e., an outstanding balance) has not been tested. Previous research on self-control and avoidance helps inform our theorizing.

#### *Self-Control and Avoidance*

The ability of the self to control behavior, in other words to resist temptation, break habits, and maintain discipline, enable people to live healthy, happy, and productive lives. People's capacity to exert self-control is perhaps the most powerful adaptive mechanism in maintaining social order (Tangney, Baumeister, and Boone 2004). Research studies

have identified trait differences in self-control, such that some people are better able to maintain control than others, and this generalized trait level of control crosses domains. For example, some people are better than others at saving money, concentrating at work, and maintaining a regular exercise routine (Baumeister and Heatherton 1996; Rick, Cryder, and Loewenstein 2008; Tangney, Baumeister, and Boone 2004). Several studies confirm the robustness of trait self-control, such that people with high self-control demonstrate a greater focus on achieving important long-term objectives than those with low self-control (Giner-Sorolla 2001).

Effective self-control requires more than focusing on personal goals; it also involves inhibiting unwanted behaviors that conflict with such objectives. Consistently, studies have shown that people with generally high self-control are more effective at avoiding unhealthful foods, are less prone to alcohol or substance abuse, and have lower incidents of crime (Baumeister and Vohs 2004). Moreover, people with high self-control perform these behaviors so often that simply exposing them to temptation automatically activates cognitions designed to inhibit the unwanted behavior (Wilcox et al. 2009). In other words, people with high self-control focus more on avoiding unwanted behaviors that conflict with their goals.

However, research suggests that efforts at avoidance can have the opposite effect on behavior after failure occurs (e.g., cheating on a diet). Several studies have documented the tendencies of people who are cognitively preoccupied with avoiding unwanted behaviors to completely abandon restraint after failure. For example, several studies in the eating domain have demonstrated that restrained eaters consume more calories following a high-calorie preload than those who did not consume a preload (Herman and Polivy 1996). In contrast, unrestrained eaters often compensate for the calories and consume less after a preload (Herman and Mack 1975). This is also consistent with the abstinence violation effect observed in restrained drinkers and drug addicts in which even a small slip after a period of abstinence can have a demoralizing effect and lead to a much larger relapse (Curry, Marlatt, and Gordon 1987).

Although much of the previous research on the what-the-hell effect examines overindulgence arising from chronic dieters and addicts who are often ineffective at controlling their behavior, these groups share one thing in common with those with high self-control: a greater focus on avoidance. It is this greater focus on avoidance that leads to the what-the-hell effect because the more focused people are on avoiding unwanted behavior, the greater is the sense of loss from engaging in the behavior and the more susceptible they are to abandoning restraint after failure (Cochran and Tesser 1996). Thus, although people with high self-control may be more effective at regulating their behavior across domains, their greater focus on avoidance should make them more susceptible to abandoning restraint after failure.

Our theorizing is applicable across domains, but we test our theory in the credit card domain because those with high self-control may be less able to avoid credit card debt than unwanted behaviors in other domains (e.g., unhealthful foods) because budgeting decisions are often affected by unexpected expenses beyond one's control (e.g., expensive car repairs). Specifically, we argue that consumers with

high self-control should focus more on avoiding credit card debt before incurring a balance than those with relatively low self-control. However, after incurring a credit card balance, those with high self-control should abandon this focus, resulting in greater spending. Because consumers with low self-control focus less on avoiding credit card debt to begin with, incurring a balance should not increase their spending; in many cases, those less focused on avoidance (e.g., nonrestrained eaters) compensate and show greater restraint after an initial failure (Herman and Polivy 2010). Thus, we predict that after a balance has been incurred, spending will be greater for those with high self-control than those with low self-control. Thus:

H<sub>1</sub>: Consumers with relatively high self-control will spend more when they have already incurred a credit card balance than when there is no outstanding balance.

H<sub>2</sub>: After an outstanding balance has been incurred, greater self-control will result in greater spending.

### *REDUCING THE PSYCHOLOGICAL IMPACT*

If carrying a credit card balance can increase spending, it is important from a consumer welfare perspective to find ways to mitigate the effect. However, much of the previous research has reduced goal abandonment by focusing on the goal-setting process. For example, Cochran and Tesser (1996) find that changing the framing of a goal from inhibiting an unwanted behavior (e.g., controlling spending) to acquiring a positive outcome (e.g., saving money) can eliminate the what-the-hell effect. Soman and Cheema (2004) demonstrate that setting longer versus shorter deadlines can have a positive effect on goal pursuit. However, for many unwanted behaviors, such as drugs or even credit card debt, there is less opportunity to alter the framing of behavior or the temporal proximity to the goal; complete abstinence may be the best solution, but an impractical one in the current economic climate.

However, a closer examination of the goal violation literature suggests that the failure may matter less than people's cognitive representation of the failure. For example, recent research suggests that varying the required minimum payment on outstanding debt, which changes the psychological representation of current versus future utility, influences debt repayment behavior (Navarro-Martinez et al. 2011). Cognitive representation of goal failure has also been shown to influence behavior in the eating domain. For example, Polivy (1976) finds that restrained eaters were more likely to become disinhibited in their eating behavior when they were led to believe they were consuming a high-calorie preload than those who believed they were consuming a low-calorie preload, even though the actual calories remained the same in both conditions. Other studies (Ruderman, Belzer, and Halperin 1985) find that simply anticipating a preload later in the day produces disinhibition in restrained eaters. If goal abandonment is produced by people's cognitive representation of the failure, rather than the amount of failure, the what-the-hell effect may be attenuated by reducing the subjective evaluation of the failure. That is, the effect of an outstanding balance on spending should be mitigated by reducing the psychological impact of the balance.

Research on resource consumption suggests that people perceive the cost of the same amount of consumption differently depending on their available resources. According to this literature, the more (fewer) resources people have available for consumption, the weaker (greater) is the psychological impact of any one unit of consumption on their overall resources (Ando and Modigliani 1963). For example, Spiller (2011) finds that resource constraints lead people to consider the opportunity cost of consumption, which can lower spending. Morewedge, Holtzman, and Epley (2007) find that people judged the same candy as more fattening when their daily, rather than weekly, caloric intake was made accessible. Importantly, they find that the size of accessible resources affected only the psychological cost of consumption (e.g., how fattening it is), not the objective cost of consumption (e.g., calorie estimates).

In the context of credit card balances, these findings suggest that the psychological cost of incurring a credit card balance depends less on the actual amount of the balance than on the proportional impact of the balance relative to the available consumption resources (i.e., the available credit). Therefore, we propose that the psychological pain associated with incurring a balance for consumers with high self-control can be reduced by decreasing the ratio of the outstanding balance to the available credit on the credit card. That is, when a balance has been incurred, increasing the available credit should attenuate the effect on spending. Thus, available credit will moderate the effect of incurring a balance, as we previously specified in  $H_1$  and  $H_2$ , such that

$H_{3a}$ : The increased spending of people with high self-control after incurring a balance (vs. no balance,  $H_1$ ) will be observed only when available credit is low (i.e., psychological impact is high).

$H_{3b}$ : The positive relationship between greater self-control and spending conditional on an incurred balance ( $H_2$ ) will be observed only when available credit is low.

### PILOT STUDY

Our theory rests on the assumption that consumers with high self-control focus more on avoiding credit card debt before a balance is incurred and less after a balance is incurred; however, this assumption has never been empirically validated. Therefore, we first conducted a pilot study to confirm this assumption. Seventy undergraduates from a large public university participated in the pilot study for course credit. Approximately half were told that they had a credit card with \$1,000 credit limit and no outstanding balance. The remaining participants were instructed that they had a credit card with a \$1,500 credit limit and a \$500 outstanding balance. They were then asked to indicate on two scales how focused they would be on avoiding credit card debt and how conscious they would be of accumulating credit card debt. We averaged responses to these measures together to form a debt avoidance index ( $r = .74$ ). We measured self-control using the 13-item Brief Self-Control scale (Tangney, Baumeister, and Boone 2004;  $\alpha = .86$ ), which is a reliable predictor of people's general tendency to exercise restraint in different domains. Balance was dummy coded (0 = No; 1 = \$500) so that we could examine the simple effect of Self-Control on Debt Avoidance when

no balance was incurred. A regression analysis of Debt Avoidance on Balance, mean-centered Self-Control, and their interaction revealed that Self-Control had a significant, positive effect on Debt Avoidance ( $\beta = .88$ ;  $t(66) = 3.50$ ;  $p = .001$ ). Thus, higher levels of self-control corresponded to a greater focus on avoiding credit card debt when there was no balance. Moreover, the Balance  $\times$  Self-Control interaction was significant ( $\beta = -.86$ ;  $t(66) = -2.52$ ;  $p < .05$ ). A spotlight analysis (Aiken and West 1991) revealed that carrying a balance made consumers with high self-control (self-control centered at 1 standard deviation above the mean) less focused on avoiding credit card debt ( $\beta = -1.09$ ;  $t(66) = -2.18$ ;  $p < .05$ ). Carrying a balance made consumers with low self-control (self-control centered at 1 standard deviation below the mean) more focused on avoiding credit card debt, but the difference was not significant.

The results of the pilot study are consistent with the avoidance process that initiates the what-the-hell effect. Participants with high self-control focused more on avoiding credit card debt before incurring a balance. However, after they incurred a balance, they abandoned the goal and focused less on avoiding credit card debt. Study 1a demonstrates the effect of carrying an outstanding balance on actual spending behavior.

### STUDY 1A: CREDIT CARD BALANCES AND AUCTION BIDS

The purpose of Study 1a is to test  $H_1$  and  $H_2$  using actual consumption. Specifically, participants took part in an auction for a new Apple iPad. We expected those with higher self-control who carried a balance to submit higher bids when they had an outstanding balance on their credit card than those who did not carry a balance.

#### Method

One hundred fifteen students and staff at a small private college were recruited to participate in a study to understand how consumers value the Apple iPad. The study announcement informed participants that the study would be an auction for a 16 GB version of the iPad (\$499 retail value) involving actual money and included a link to the study website. On the website, participants were instructed that the auction was a single-bid silent auction in which the highest bidder would then purchase the iPad at the value of his or her winning bid. Participants were further instructed that the winning bidder would be notified by e-mail to complete the purchase online using a credit card. Only credit cards were accepted as a form of payment, which ensured that the results would be driven primarily by participants' credit card spending behavior.

Before the auction, approximately half the participants were asked a series of questions about their credit card behavior that included whether they currently had an outstanding balance on one of their credit cards. The remaining participants were asked the same set of questions after submitting their bids to ensure that the results were not confounded by making the balance salient. During the auction, participants saw a picture and read a brief description of the iPad. After reviewing the information, they were reminded that they could submit only one bid and that the highest bidder would purchase the iPad at the amount of his or her bid using a credit card. They were then prompted

to enter a bid. All participants then received the 13-item Brief Self-Control scale (Tangney, Baumeister, and Boone 2004;  $\alpha = .78$ ), which served as a measure of general self-control in this study. After one week, the winner was notified by e-mail and given instructions on how to complete the purchase.

### Results

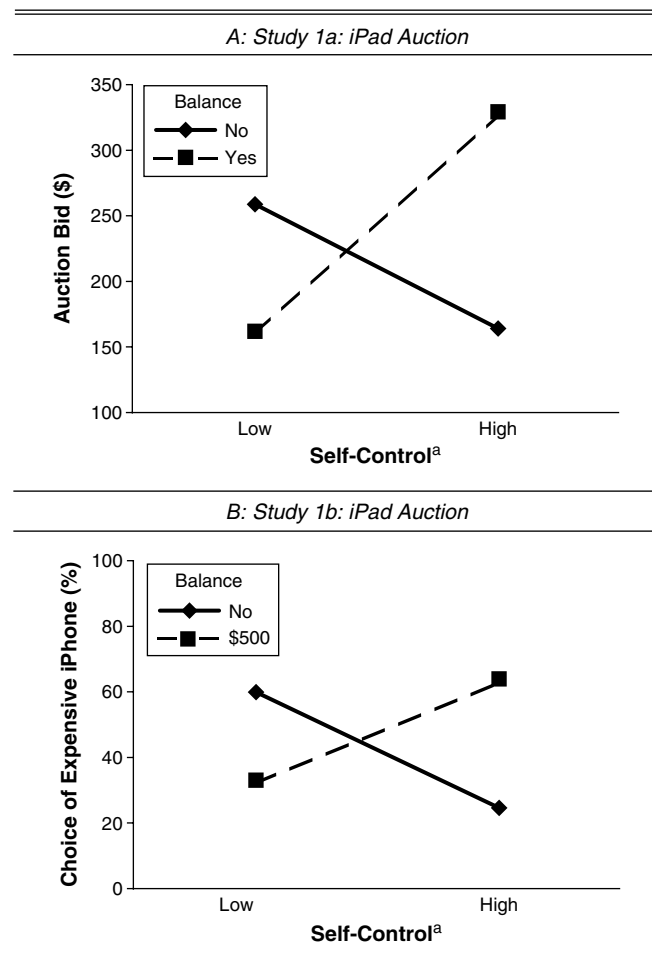
We excluded 11 participants who indicated that they did not own a credit card from the analysis; it is likely that these respondents submitted bids because we did not instruct participants that credit cards were required before they began the study to keep the study as naturalistic as possible. There was no correlation between self-control and the likelihood of having an outstanding balance ( $r = -.03$ ). We tested hypotheses by estimating a regression of Spending, measured using participants' auction bids, on Balance, mean-centered Self-Control, and their interaction. We dummy-coded Balance (0 = Yes; 1 = No) so that we could examine the relationship between self-control and spending for those who carried a balance. A separate regression that added the order of information collection to the current analysis revealed no interactions with any other factor in our model and produced equivalent results.

As Figure 1 depicts, spending increased with greater self-control for those who carried a balance ( $\beta = 102.32$ ;  $t(100) = 3.31$ ;  $p = .001$ ). In addition, there was a significant interaction between Balance and Self-Control ( $\beta = -161.70$ ;  $t(100) = -3.86$ ;  $p < .001$ ), which we explored using spotlight analysis. Specifically, we recoded Balance (0 = No; 1 = Yes) so that a positive slope would correspond to greater spending. In addition, we centered self-control at 1 standard deviation above the mean to examine the effect of incurring a balance for those with high self-control. We then regressed Spending on Balance, Self-Control, and their interaction. As we expected, consumers with greater self-control who incurred a balance on their credit card spent more than those without a balance ( $\beta = 161.82$ ;  $t(100) = 3.34$ ;  $p = .001$ ). To examine the effect for those with low self-control, we ran an equivalent model with self-control centered at 1 standard deviation below the mean. Those who incurred a balance spent less than those who did not carry a balance at low self-control ( $\beta = -93.67$ ;  $t(100) = -1.91$ ;  $p < .10$ ), but the difference was marginally significant. Thus, incurring a balance corresponded to greater spending for those with high self-control ( $H_1$ ), and greater self-control corresponded to greater spending for those who incurred a balance ( $H_2$ ).

### Discussion

The results are consistent with our hypotheses. First, incurring an outstanding balance can increase spending for consumers with high self-control ( $H_1$ ). Second, after a balance was incurred, spending increased with higher levels of self-control ( $H_2$ ). Thus, Study 1a supports our theorizing and confirms  $H_1$  and  $H_2$  using actual expenditures. Because this was an actual auction for both students and staff, we find that our results hold across people with differences in income and total available credit. The purpose of Study 1b is to provide additional support for  $H_1$  and  $H_2$ , while controlling for differences in income and total available credit.

Figure 1  
THE EFFECT OF CREDIT CARD BALANCE AND  
SELF-CONTROL ON SPENDING



<sup>a</sup>Low is 1 standard deviation below and high is 1 standard deviation above the mean.

### STUDY 1B: CREDIT CARD BALANCES AND iPhone CHOICE

#### Method

**Design.** Sixty-nine undergraduates at a large public university participated in the study. The study was a single-factor (balance: no balance vs. \$500 balance) between-subjects design, with self-control as a measured variable.

**Procedure.** We conducted the study during two separate sessions. In the first session, participants completed the 13-item Brief Self-Control scale (Tangney, Baumeister, and Boone 2004), which served as a measure of Self-Control ( $\alpha = .86$ ) for this study. The second session took place approximately three weeks later. We randomly assigned participants to one of two credit card conditions. To control for potential income effects, all students were told that they had \$1,000 in their bank account. We selected this amount because a pretest indicated that the median checking account balance for this student population was approximately \$1,000. In one condition, participants were instructed that they had a credit card with a \$1,000 credit

limit and no outstanding balance (no balance condition). In the other condition, they were instructed that they had a credit card with \$1,500 credit limit and a \$500 outstanding balance (\$500 balance condition). Thus, across both conditions, the amount of money in the bank and the available credit were the same (\$1,000), but in one condition, participants had an outstanding balance. Participants were then instructed that they had decided to buy a new iPhone and to choose between a 32GB version for \$499 and a 16 GB version for \$399 (prices from Apple's website).

### Results

**Spending.** We tested our predictions using logistic regression with Spending, coded as 1 if participants selected the more expensive 32 GB iPhone and 0 if participants selected the less expensive 16 GB version. Independent variables included Balance (0 = \$500; 1 = No), mean-centered Self-Control, and their interaction. The simple effect of Self-Control on Spending when consumers incurred a balance was marginally significant ( $\beta = .73$ ;  $\chi^2(1) = 3.10$ ;  $p < .10$ ). In addition, as Figure 1, Panel B, shows, there was a significant Balance  $\times$  Self-Control interaction ( $\beta = -1.42$ ;  $\chi^2(1) = 5.77$ ;  $p < .05$ ). To explore the interaction, we recoded Balance (0 = No; 1 = \$500) so that a positive slope would correspond to greater spending. A regression model with Self-Control (+1 standard deviation), Balance, and their interactions revealed that Balance increased Spending at high self-control ( $\beta = 1.70$ ;  $\chi^2(1) = 4.56$ ;  $p < .05$ ). Balance had no significant effect on Spending at low self-control (−1 standard deviation;  $\beta = -1.11$ ;  $\chi^2(1) = 2.13$ ; n.s.). Thus, the results are consistent with Study 1a and provide additional support for  $H_1$  and  $H_2$ .

### Discussion

The results of Studies 1a and 1b are consistent with our theory. For people with high self-control, carrying a credit card balance leads to greater spending than no balance, in both hypothetical questions and in actual observational data. In Study 2, we attempt to extend the current theory by demonstrating that the increased spending is produced by the psychological impact of the balance, as opposed to its mere presence or absence. If this is the case, the psychological impact associated with the balance should moderate the effects found in Study 1. Specifically, reducing the psychological impact of the balance by increasing the available credit on the credit card should attenuate Study 1's results ( $H_3$ ).

## STUDY 2: THE EFFECT OF INCREASED AVAILABLE CREDIT

### Method

**Design.** One hundred thirty-four students at a large public university participated for course credit. The study was a 2 (balance: no balance vs. \$500 balance)  $\times$  2 (available credit: \$1,000 vs. \$10,000) between-subjects design, with self-control measured continuously.

**Procedure.** Participants were randomly assigned to one of four credit card conditions. In one condition, participants were told that they had a credit card with \$1,000 credit limit and zero balance (\$1,000 available credit, no balance condition). In a second condition, participants were told that they

had a credit card with \$10,000 credit limit and zero balance (\$10,000 available credit, no balance condition). In a third condition, participants were told that they had a credit card with \$1,500 credit limit and a \$500 balance (\$1,000 available credit, \$500 balance condition). The remaining participants were instructed that they had a credit card with \$10,500 credit limit and a \$500 balance (\$10,000 available credit, \$500 balance condition). All participants were instructed that they had \$1,000 in the bank account. Participants were then instructed that they had decided to buy a new pair of sunglasses, and they were asked to choose between two pairs of gender-neutral sunglasses: one by Louis Vuitton (\$399) and one by Ray-Ban (\$199). They then completed the same self-control scale as in previous studies ( $\alpha = .81$ ).

### Results

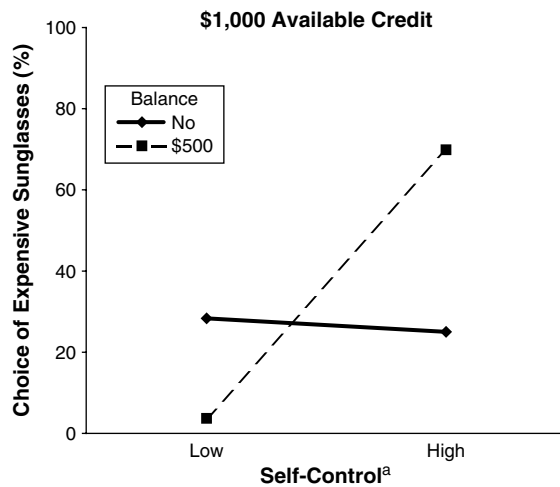
We estimated a logistic regression of Spending, coded as 1 if participants selected the more expensive Louis Vuitton sunglasses, on Balance, Available Credit, mean-centered Self-Control, and their interactions. As Figure 2 depicts, there was a significant Balance  $\times$  Available Credit  $\times$  Self-Control interaction ( $\chi^2(1) = 7.07$ ;  $p < .01$ ). To test our hypotheses, we explored the interaction using spotlight analysis.

**The effect of a balance on spending.** Previously, we showed that people with high self-control spend more when carrying a balance.  $H_{3a}$  predicts that this relationship should be moderated by the available credit. To test this effect, we examined the effect of Balance (0 = No; 1 = \$500) on the likelihood of choosing the expensive sunglasses for those with high self-control (+1 standard deviation), at different levels of available credit. Balance increased Spending at \$1,000 available credit (coded 0 = \$1,000;  $\beta = 1.50$ ;  $\chi^2(1) = 3.78$ ;  $p = .052$ ). However, Balance had no significant effect on Spending at \$10,000 available credit (coded 0 = \$10,000;  $\beta = -1.18$ ;  $\chi^2(1) = 1.07$ ; n.s.). These results support  $H_{3a}$  that available credit moderates the influence of the balance on spending for those with high self-control. We also examined the effect of incurring a balance at different levels of available credit for those with low self-control (−1 standard deviation). None of these parallel analyses reached significance.

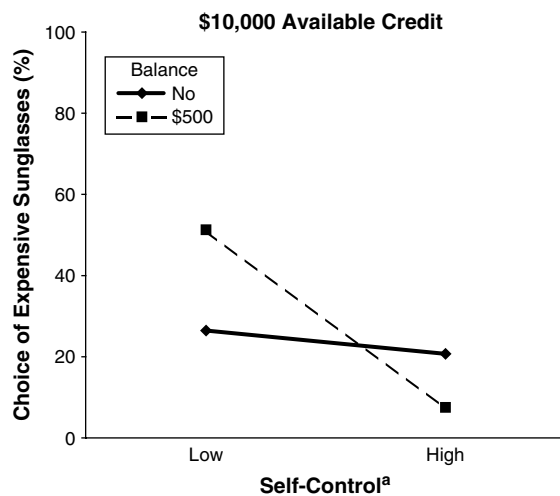
**The effect of self-control on spending.** Previously, we showed that spending increases as self-control increases for people who carry a balance.  $H_{3b}$  predicts that this effect should be attenuated by increasing available credit. Thus, we recoded Balance (0 = \$500; 1 = No) to examine the effect of self-control on spending after a balance has been incurred. When available credit was \$1,000, self-control increased spending ( $\beta = 1.45$ ;  $\chi^2(1) = 6.27$ ;  $p < .05$ ). In contrast, when available credit was \$10,000, self-control decreased spending ( $\beta = -1.36$ ;  $\chi^2(1) = 3.30$ ;  $p < .10$ ). These results support  $H_{3b}$  by demonstrating that after a balance is incurred, self-control increases spending when the available credit is relatively low. However, when available credit is increased, self-control no longer increases spending.

Figure 2  
AVAILABLE CREDIT MODERATES THE EFFECT OF CREDIT CARD BALANCES ON SPENDING

A: Effect of a Balance and Self-Control on Spending for People with Low Available Credit



B: Effect of a Balance and Self-Control on Spending for People with High Available Credit



<sup>a</sup>Low is 1 standard deviation below and high is 1 standard deviation above the mean.

### Discussion

The results of Study 2 are consistent with those in previous studies but also demonstrate that increasing available credit restores spending control for those with high self-control. Thus, we provide initial evidence that the psychological impact of the failure, rather than the absolute failure itself, drives subsequent behavior. One limitation of our studies is that with the exception of Study 1a, our findings are based on hypothetical scenarios, so it might be that participants are responding as they would expect to behave instead of how they would actually behave. Thus, Study 3 provides additional support for our theory by collecting actual credit card data to compare spending patterns

between consumers who carry an outstanding balance and those who do not carry a balance. We also enhance the managerial implications of our research by relating self-control to important consumer characteristics.

### STUDY 3: ACTUAL CREDIT CARD BEHAVIOR

#### Method

**Procedure.** One hundred twenty-eight consumers from a national U.S. panel were recruited to participate in an online survey. Participants were told that the purpose of the study was to understand how people use their credit cards and that they would be asked several questions about their credit card spending behavior. They were then instructed to obtain (or access online) the last statement from the credit card (MasterCard, Visa, or Discover) they use most often. We obtained information about the credit card used most often because the average number of credit cards consumers hold is 3.5 (Foster et al. 2010) and we wanted to avoid receiving information about a card they rarely used. In addition, we specified MasterCard, Visa, or Discover to avoid confusion because some credit card companies, such as American Express, offer both charge cards and credit cards. After participants confirmed that they had access to their statement, they completed a measure of self-control (compulsiveness, shame proneness, and conscientiousness; Tangney, Baumeister, and Boone 2004), to rule out the possibility that our results were due to one of these related constructs. Participants then entered personal information, including age, gender, annual household income (in seven categories), credit rating (1 = "poor," and 5 = "excellent"), employment status, and home ownership (do not own; own). After completing the personal information, participants accessed their credit card statement and entered in the following information: balance previous period, last period payment, dollar amount of the purchases made during the statement period, and available credit. These items pertain to our hypotheses and are easily accessible on most credit card statements, eliminating the need for participants to make any mathematical computations.

**Measures.** We measured Self-Control using the same scale as in previous studies ( $\alpha = .84$ ). We measured Compulsiveness using the Compulsive Spending scale (Faber and O'Guinn 1992;  $\alpha = .85$ ), Shame Proneness using the shame component of the Personal Feelings Questionnaire (Harder and Zalma 1990;  $\alpha = .80$ ), and Conscientiousness using the conscientiousness component of the Big Five Inventory (John and Srivastava 1999;  $\alpha = .85$ ). We measured Balance by subtracting the last period payment from the previous period balance and assigned positive values as having a balance and the remaining as having no balance.

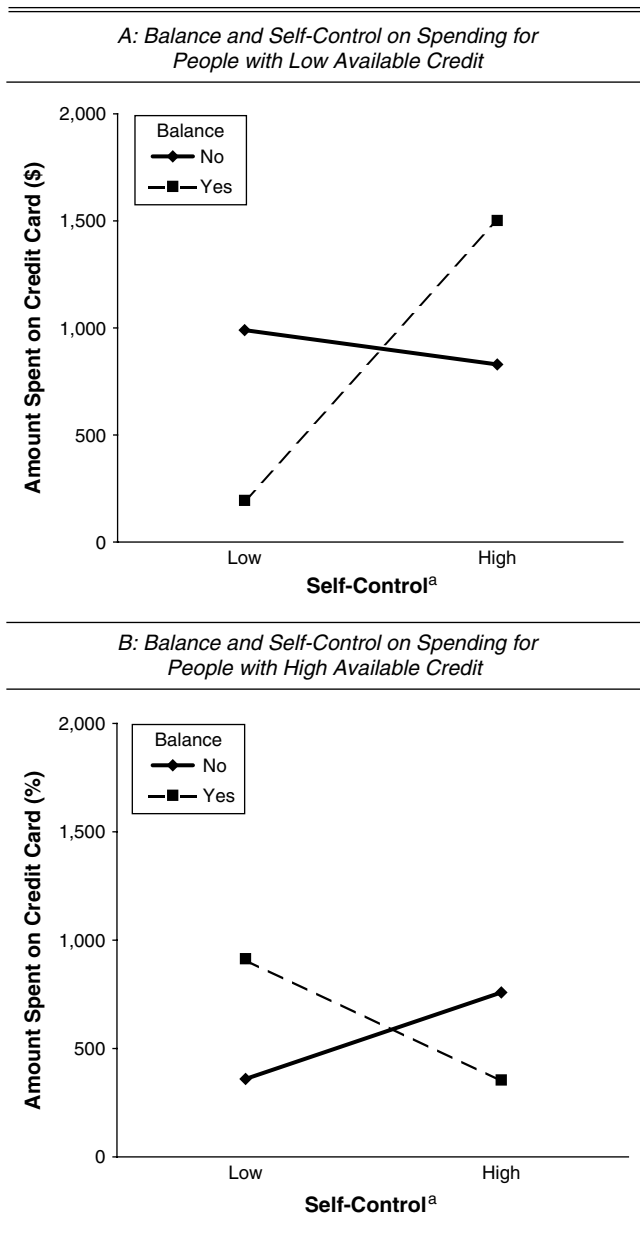
**Consumer characteristics and self-control.** Self-Control significantly correlated with age ( $r = .21$ ), credit score ( $r = .31$ ), and the likelihood of owning a home ( $r = .18$ ). It did not significantly correlate with income ( $r = .08$ ), employment ( $r = .04$ ), or gender ( $r = -.07$ ). In addition, Self-Control significantly correlated with the trait measures of Compulsiveness ( $r = -.41$ ), Shame Proneness ( $r = -.34$ ), and Conscientiousness ( $r = .72$ ). Self-Control also significantly correlated with the likelihood of incurring an outstanding balance ( $r = -.29$ ).

## Results

We estimated a regression of Spending on mean-centered Self-Control, Balance, mean-centered Available Credit, and their interactions. In addition, we included Compulsiveness, Shame Proneness, Conscientiousness, Employment, and Income as covariates. We included employment and income as demographic covariates because we believed that they would be the most likely to affect the relationship between incurring a balance and spending. However, including all the demographic variables as covariates in the model does not change the reported results. As Figure 3 shows,

Figure 3

STUDY 3: SELF-CONTROL, BALANCE, AND AVAILABLE CREDIT ON ACTUAL CREDIT CARD SPENDING BEHAVIOR



<sup>a</sup>Low is 1 standard deviation below and high is 1 standard deviation above the mean.

there was a significant Self-Control  $\times$  Balance  $\times$  Available Credit interaction ( $\beta = .008$ ;  $t(115) = 2.63$ ;  $p = .01$ ). Income ( $\beta = 143.68$ ;  $t(115) = 2.62$ ;  $p = .01$ ) was the only covariate that was a significant predictor of spending. To test our hypotheses, we explored the interaction using spotlight analysis.

*The effect of a balance on spending.* We estimated the effect of Balance (0 = No; 1 = Yes) on Spending for those with high self-control (+1 standard deviation) at different levels of available credit (i.e., centered at 1 standard deviation above and below the mean). As we predicted, for those with high self-control, a balance led to greater spending at low available credit (−1 standard deviation;  $\beta = 915.21$ ;  $t(115) = 2.02$ ;  $p < .05$ ), and Balance had no significant effect on Spending when available credit was high (+1 standard deviation;  $\beta = -879.54$ ;  $t(115) = -1.51$ ; n.s.). These results support  $H_{3a}$  and replicate the laboratory results obtained in Study 2. Specifically, for people with high self-control, when the available credit was low, incurring a balance corresponded to greater spending. However, when the available credit was high, the effect of incurring a balance was mitigated. These effects did not occur for people with low self-control. For these participants, a balance corresponded to less spending at low available credit (−1 standard deviation;  $\beta = -796.45$ ;  $t(115) = -3.39$ ;  $p < .05$ ), and there was no significant effect of incurring a balance at high available credit (+1 standard deviation;  $\beta = 749.11$ ;  $t(115) = 1.31$ ; n.s.).

*The effect of self-control on spending.* We recoded Balance (0 = Yes; 1 = No) to examine the effect of self-control on spending after a balance has been incurred at different levels of available credit. As  $H_{3b}$  predicted, when the available credit was low (−1 standard deviation), the effect of Self-Control on Spending was positive and significant ( $\beta = 39.41$ ;  $t(115) = 1.98$ ;  $p = .05$ ), and this relationship was attenuated ( $\beta = -55.60$ ;  $t(115) = -1.67$ ;  $p < .10$ ) when the available credit was high (+1 standard deviation). Thus, consistent with our theory ( $H_{3b}$ ), when the available credit was increased, self-control no longer corresponded to greater spending.

*Self-control and the likelihood of a balance.* Our previous analysis found that the covariates did not account for the relationship between self-control and spending. However, we examined whether the covariates accounted for the relationship between self-control and the likelihood of incurring an outstanding balance. We estimated a logistic regression, in which we regressed Balance (1 = Yes; 0 = No) on Self-Control, Compulsiveness, Shame Proneness, Conscientiousness, Employment, and Income. After we controlled for the other variables, Self-Control was not a significant predictor of the likelihood of incurring an outstanding balance ( $\beta = -.01$ ;  $\chi^2(1) = .13$ ; n.s.). Compulsiveness was the only variable that was a significant predictor of the likelihood of incurring a balance ( $\beta = -.22$ ;  $\chi^2(1) = 12.11$ ;  $p < .001$ ).

*Analyses of related trait measures.* To ensure that self-control was driving our results, we added each of the related personality trait measures and their interactions to our main regression model to determine their effect on the focal Self-Control  $\times$  Balance  $\times$  Available Credit interaction. Adding the full set of interactions of Shame Proneness to the model did not reduce the Self-Control  $\times$  Balance  $\times$



Available Credit interaction below significance ( $t(108) = 2.12$ ;  $p < .05$ ). Similarly, adding the full set of interactions of Compulsiveness to the model did not reduce the interaction below significance ( $t(108) = 2.15$ ;  $p < .05$ ). Together, these results provide additional assurance that self-control underlies the observed effects, while shame proneness and compulsiveness are more ancillary. Adding the full set of interactions of Conscientiousness did reduce our focal interaction below significance ( $t(108) = 1.13$ ; n.s.). However, this reduction was likely due to collinearity issues rather than a substantive difference in interpretation because conscientiousness correlates highly with self-control.

In addition, we examined whether each of the trait measures by themselves moderated the Balance  $\times$  Available Credit interaction effect on spending. We did this by replacing self-control in the main model with each of the variables and their interactions (Self-Control was included in the model as a covariate). The Shame Proneness  $\times$  Balance  $\times$  Available Credit interaction effect on spending was not significant ( $t(115) = -1.20$ ; n.s.). The Compulsiveness  $\times$  Balance  $\times$  Available Credit interaction effect on spending was significant, but in the opposite direction as the three-way interaction with self-control ( $t(115) = -2.03$ ;  $p < .05$ ). The Conscientiousness  $\times$  Balance  $\times$  Available Credit interaction effect on spending was significant ( $t(115) = 2.48$ ;  $p < .05$ ). These findings reveal that people high in conscientiousness and low in compulsivity may also maintain a greater focus on inhibiting or avoiding unwanted behaviors similar to those with high self-control. Thus, effects involving interactions with compulsivity and conscientiousness, particularly those involving inhibiting behavior, may be alternatively interpreted in terms of self-control.

### Discussion

The results of Study 3 provide particularly strong support for our theory. Using actual credit card spending data from nonstudents, we replicate the effects from our prior studies. Moreover, our results are consistent with the predictions of  $H_{3a}$  and  $H_{3b}$ , demonstrating the moderating effect of available credit on the relationship between self-control and spending. The purpose of Study 4 is to provide direct evidence that increasing the available credit reduces the psychological impact of incurring the balance.

According to the goal violation literature, when people fail to inhibit an unwanted behavior, the experience of strong negative emotions (i.e., the psychological pain) often results in a loss of control (Muraven et al. 2005; Raghurir and Srivastava 2009; Soman and Cheema 2004). For example, restrained drinkers often experience guilt from violating a self-imposed limit, which leads them to drink more as a means of coping with their negative affective state (Muraven et al. 2005). Similarly, excessive spending may lead to feelings of regret (O'Guinn and Faber 1989) and result in the what-the-hell effect (Raghurir and Srivastava 2009). Thus, if the what-the-hell effect underlies our findings when the available credit is low, we would expect those with high self-control to experience stronger negative emotions after incurring an outstanding balance than those with low self-control. If increasing the available credit reduces the psychological pain of incurring an outstanding balance, however, we would expect increasing the

available credit to reduce the negative emotions associated with incurring the balance and to restore spending control for consumers with high self-control. Thus:

- $H_4$ : The relationship between self-control and experienced negative emotions will be moderated by available credit. Greater self-control will result in more negative emotions when available credit is relatively low, and this relationship will not occur when available credit is relatively high.

### STUDY 4: REDUCING THE PAIN OF FAILURE

#### Method

*Design.* Ninety-four undergraduates at a small private college participated for course credit. The study used a single-factor between-subjects design (available credit: \$1,000 vs. \$10,000), with self-control measured continuously.

*Procedure.* Participants were randomly assigned to one of two available credit conditions. They received the same financial information as those in the Study 2 balance conditions. Participants were then presented with a choice task and the measures of negative emotions; the order of these tasks was counterbalanced. For the choice task, participants were instructed that they had decided to buy a new iPod touch, and they were asked to choose between a 64 GB version for \$399 and a 32 GB version for \$299. For the emotions measures, participants indicated the extent to which incurring the outstanding balance would make them feel the following negative emotions: guilt, shame, and regret (1 = "not at all," and 7 = "very much"), which we compiled to form a negative emotions index ( $\alpha = .86$ ). Finally, they completed the same self-control scale as in previous studies ( $\alpha = .82$ ).

#### Results

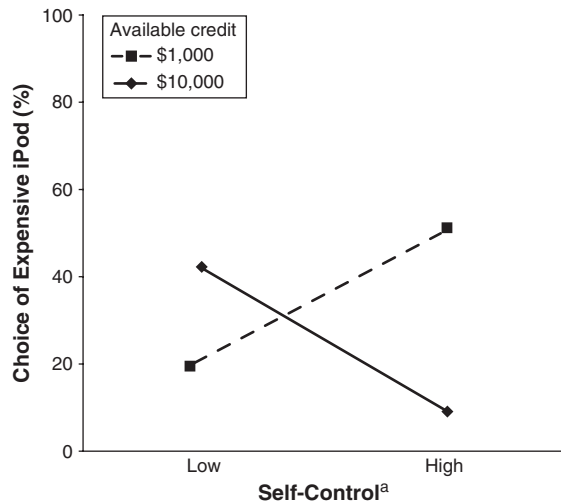
*Spending.* The key dependent variable was Spending, coded as 1 if participants selected the more expensive iPod and 0 if participants selected the less expensive iPod. We estimated a logistic regression of Spending on Available Credit (0 = \$1,000; 1 = \$10,000), mean-centered Self-Control, and their interaction. Replicating the results of previous studies, analysis revealed a significant Available Credit  $\times$  Self-Control interaction ( $\beta = -1.89$ ;  $\chi^2(1) = 8.41$ ;  $p < .01$ ), which Figure 4, Panel A, depicts. Consistent with prior results, higher levels of self-control corresponded to greater spending when available credit was relatively low ( $\beta = .80$ ;  $\chi^2(1) = 4.87$ ;  $p < .05$ ), and this relationship was not present when available credit (coded 0 = \$10,000) was relatively high ( $\beta = -1.09$ ;  $\chi^2(1) = 4.05$ ;  $p < .05$ ). These results provide additional support for  $H_{3b}$ .

*Negative emotions.* We also estimated a regression of negative emotions on Available Credit, mean-centered Self-Control, and their interaction. This analysis revealed a significant Available Credit  $\times$  Self-Control interaction ( $\beta = -1.74$ ;  $t(90) = -4.74$ ;  $p < .001$ ); Figure 4, Panel B, graphically displays the results. As  $H_4$  predicts, when available credit was low, people with high self-control experienced greater negative emotions from the incurred balance ( $\beta = .78$ ;  $t(90) = 3.58$ ;  $p = .001$ ). Furthermore, as we expected, when available credit was high, this effect was not present ( $\beta = -1.09$ ;  $t(90) = 4.05$ ;  $p < .05$ ).

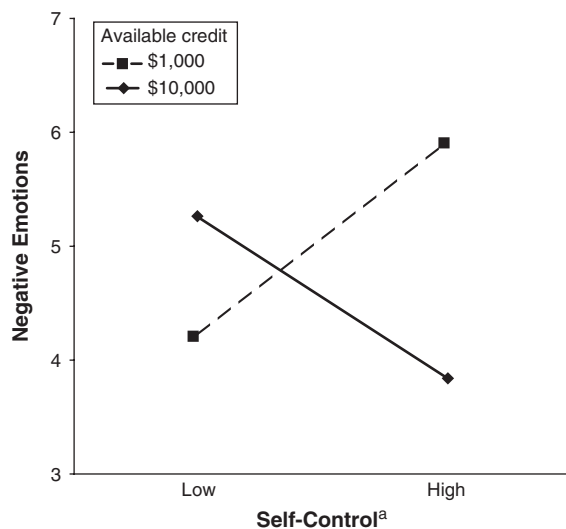
Figure 4

STUDY 4: THE EFFECT OF SELF-CONTROL AND AVAILABLE CREDIT ON SPENDING AND NEGATIVE EMOTIONS AFTER A BALANCE IS INCURRED

A: Effect of Available Credit and Self-Control on Spending for People with a Balance



B: Effect of Available Credit and Self-Control on Negative Emotions Associated with Incurring a Balance



<sup>a</sup>Low is 1 standard deviation below and high is 1 standard deviation above the mean.

**Mediation.** To examine whether Negative Emotions mediate the effect of Self-Control on Spending, we conducted a bootstrap test for mediation at different levels of available credit (Preacher and Hayes 2008; Zhao, Lynch, and Chen 2010). At \$1,000 available credit, the total effect of Self-Control on Spending was marginally significant ( $\beta = .64$ ;  $\chi^2(1) = 3.61$ ;  $p < .10$ ). The indirect effect of Self-Control on Spending was positive and significant, with a 95% confidence interval that excluded zero (indirect effect = .51; 95% CI: .22 to .92). The effect of Self-Control

on Negative Emotions was significant ( $\beta = .78$ ;  $t(47) = 3.30$ ;  $p < .01$ ). In addition, Negative Emotions predicted Spending ( $\beta = .65$ ;  $\chi^2(1) = 8.23$ ;  $p < .01$ ). Finally, the direct effect of Self-Control on Spending was not significant ( $\beta = .13$ ;  $\chi^2(1) = .13$ ; n.s.). This pattern of results indicates indirect-only mediation by negative emotions (Zhao, Lynch, and Chen 2010). At \$10,000 available credit, the indirect effect of Self-Control on Spending was negative and insignificant, with a 95% confidence interval that included zero (indirect effect =  $-.20$ ; 95% CI:  $-.74$  to  $.19$ ), which does not support mediation at \$10,000 available credit.

### GENERAL DISCUSSION

Across five studies, we find that credit card balances influence consumer spending in systematic ways. In Study 1a, we demonstrate that consumers with high self-control and who carry a balance (vs. no balance) on their credit card are willing to spend more for an iPad in an actual auction. We replicate these results in Study 1b with a different product (iPhone). We further explore this finding in Study 2, in which we show that the available credit moderates the effects of an incurred balance on spending, so that increases in the available credit reduce the psychological impact of the balance and eliminate greater spending for people with high self-control. Using actual credit card spending data, Study 3 supports our contention that available credit moderates spending. Study 4 demonstrates that increasing available credit reduces the psychological pain associated with incurring the balance for those with high self-control, providing evidence that the what-the-hell effect underlies our results. Importantly, the results also show that the relationship between self-control and the likelihood of incurring a balance is relatively small ( $r = -.03$  in Study 1a;  $r = -.29$  in Study 3), implying that people with high self-control may not be effective at avoiding unwanted behaviors in the financial budgeting domain.

Our findings offer several theoretical contributions. Many studies have documented the effectiveness of self-control mechanisms in the pursuit of long-term goals. People with high self-control have more accessible cognitions associated with the achievement of long-term goals (Giner-Sorolla 2001), which often makes them more successful at reaching their long-term objectives than those with low self-control. Moreover, those with high self-control tend to be more effective at avoiding indulgences that would undermine their long-term objectives (Baumeister and Vohs 2004). This is consistent with Tangney, Baumeister, and Boone (2004), who view self-control as the ability to effectively regulate behavior when it is required. Importantly, however, they also note that people with high self-control are more prone to suspend self-control when it is not required or contextual factors warrant its release. For example, people with high self-control are better able to suspend studying during spring break and dieting on their birthday (Tangney, Baumeister, and Boone 2004, p. 314.) However, even people with high self-control transgress in daily life, and few studies have explored how they respond to contextual factors related to failure, such as when they incur a credit card balance. In this case, we demonstrate that the same mechanism that leads those with high self-control to be more effective at controlling their spending before incurring a balance (i.e., debt avoidance) also makes them prone to suspend control after incurring a balance.

This research also makes an important contribution to the goal violation literature. Several studies have found ways to mitigate the what-the-hell effect by focusing on the goal-setting process. Cochran and Tesser (1996) suggest that changing the framing of a goal from inhibiting a behavior (e.g., controlling spending) to acquiring a positive outcome (e.g., saving money) can eliminate the what-the-hell effect. Moreover, they demonstrate that even for inhibition goals, people are less likely to disengage when they set distant goals than more proximal goals because they are less likely to fail if the goal is in the future. Similarly, Soman and Cheema (2004) demonstrate that setting longer versus shorter deadlines can have a positive effect on goal pursuit. Our findings suggest that reducing the perception of failure, rather than eliminating its existence, can also be an effective way to counteract the what-the-hell effect.

Though not the primary focus of this research, the results of Studies 2 and 3 are consistent with previous research that examines the effect of credit limits on spending (Soman and Cheema 2002). Soman and Cheema (2002) find that increasing credit limits increases spending when consumers do not carry an outstanding balance, but only when participants believed the credit limit represents a true reflection of future income potential ("credibility of the limit"). When the credit limit does not signal future earnings potential, the effect of the credit limit is weaker (Soman and Cheema 2002). In our lab study, giving students a hypothetical \$10,000 credit limit may not be a true reflection of their future earnings, and therefore increasing the credit limit should not lead to the inferences of greater future earnings that increase spending in Soman and Cheema (2002). A supplementary analysis of the results of Study 2 shows that there was no difference in preference for the sunglasses between the \$1,000 and the \$10,000 credit limit conditions ( $\chi^2(1) = .68$ , n.s.). In contrast, Study 3 used actual credit limit information, and thus the credit limit is a meaningful and credible heuristic of earnings potential. A supplementary analysis of these results reveals that higher credit limits are associated with greater spending for those who do not carry an outstanding balance ( $t(126) = 3.92$ ;  $p < .001$ ). In summary, the results in Studies 2 and 3 are consistent with Soman and Cheema (2002) in that they show that the effect of a credit limit on spending depends on its credibility.

Finally, this research makes an important contribution to the burgeoning literature on resource consumption. Much of the previous work in this area has found that increasing consumers' available resources for consumption leads to more indulgent behavior. For example, Morewedge, Holtzman, and Epley (2007) find that making people's investment account accessible can lead them to spend more than when a much smaller spending account (e.g., money in their wallet) is made accessible. Similarly, they find that making people's caloric intake for the week (vs. day) more accessible leads them to consume more of an indulgent food item. Our findings demonstrate that when the consumption resources are linked to a failed goal, increasing the resources can mitigate the sense of failure and actually lead to less indulgent behavior. Future studies should examine whether expanding consumption resources can have positive effects on goal engagement in other domains, such as drinking, smoking, and eating.

Consumers in the United States hold nearly 610 million credit cards, and the average age at which U.S. consumers first adopt a credit card is 20.8 years (Foster et al. 2010). A recent poll indicates that 60% of young adults (aged 18–29) actively focus on controlling their financial welfare, including their savings and investments (Dolliver 2010). The snapshot of college students mirrors that of the larger population. Eighty-four percent of undergraduate students have credit cards, and half of those have four or more credit cards (Woolsey and Schulz 2010). The average undergraduate carries \$2,200 in credit card debt, and 21% have balances between \$3,000 and \$7,000 (Sallie Mae 2009). The regulation change of February 2010 included several measures to aid college students and young adults, such as prohibiting gifts in exchange for filling out credit card applications and college disclosure of any marketing deals they make with credit card companies (Choi and Connelly 2010). Although these regulatory changes are a step in the right direction, they do not address the issue of credit card balances increasing spending uncovered in this research. Findings from this research have implications for marketing and public policy by providing insights into questions such as, How does regulation or industry practice of lowering credit limits affect spending behavior? For example, newly enacted laws now require credit card statements to state explicitly how long it will take consumers to pay off their balances by making minimum payments. Recent research documents that presenting minimum payment information has a negative impact on repayment but that increasing the minimum required level has positive effects on repayment for most consumers (Navarro-Martinez et al. 2011). Extensions of our work should explore whether highlighting the credit card balance influences wise or unwise subsequent financial behavior.

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