



# ASSOCIATION FOR CONSUMER RESEARCH

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## **Causes and Consequences of the Expense Prediction Bias**

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The present research develops, tests, and validates a simple cognitive tool that markedly improves consumers' expense prediction accuracy. Underlining the importance of this tool, we also provide evidence that EPB is associated with lower savings and higher debt.

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# Perceiving Financial Resources in the Present and Future

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## Paper #1: A Slack-Based Account of Pain of Payment

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## Paper #2: How Temporal Separation in Budgeting Affects Spending Behavior

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## Paper #3: The Last Hurrah Effect: End-of-Week and End-of-Month Time Periods Increase Financial Risk-Taking

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## Paper #4: Causes and Consequences of the Expense Prediction Bias

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### SESSION OVERVIEW

When a consumer contemplates a purchase, she must determine whether she currently has sufficient funds, and whether the purchase would leave her with enough funds for the future. Such decisions require judgments about both present and future financial resources.

A growing literature investigates perceptions of present and future financial flexibility. People generally believe they will have more time and money in the future (Zauberman and Lynch 2005). Perceptions of resource availability alter the strategies by which people plan, and whether they feel they must make sacrifices due to a paucity of resources (Fernbach, Kan and Lynch 2015). Perceptions of future resources are skewed by the future feeling closer, and more typical, than the past (Caruso and Van Boven 2013; Sussman and Alter 2012). The papers in this session build on prior research, investigating how perceptions of financial resources in the present and future influence spending and saving.

The first paper offers a novel influence on the pain of payment. The authors link pain of payment and financial slack, arguing that perceived decreases in financial slack are one possible antecedent to the pain of payment. They demonstrate an association between the extent to which a purchase reduces perceived slack, and the extent to which it is painful.

The second paper demonstrates that the effectiveness of budgeting is not uniform in time. When consumers create a budget, they experience some degree of pain due to a new financial commitment. However, over time they hedonically adapt, incorporating the new commitment into their status quo. As such, the effect of the budget dissipates. Four studies—including including scenarios and real-world manipulations—provide evidence consistent with their hypotheses.

The third paper demonstrates a simple tool for de-biasing consumers' predictions about their future financial situations. Because people anticipate the future being more typical than the present, they have trouble imagining unplanned expenses arising in the future. The authors demonstrate with lab and field data that simply asking people to list reasons why future expenses may be *atypical* can mitigate or entirely eliminate this bias.

The fourth and final paper, demonstrates that approaching the end of a budgeting cycle can alter behavior. Analogous to a lab group attempting to spend money that will disappear at the end of a fiscal period, consumers become less thrifty and more risk-seeking towards the end of their budgeting periods.

Our session contains four papers that shed new light on how perceptions of financial resources in the present and future influence saving and spending. The papers offer lab and field / secondary evidence across multiple studies, and each aims to be published in a top tier marketing journal. We believe that the present session will have specific appeal to researchers studying consumer financial decision making. We also believe the session will generate interest more broadly, as the topics—spending, budgeting, saving, and accruing debt—are important consumer topics that manifest in many subfields of study.

### A Slack-Based Account of Pain of Payment

#### EXTENDED ABSTRACT

Pain of payment is the negative emotion a person may feel when making a purchase. We propose a novel influence on pain of payment that builds from prior work on financial slack (Zauberman and Lynch 2005) and mental accounting (Henderson and Peterson 1992; Thaler 1985, 1999).

Financial slack is “the perceived surplus (or deficit) of spare money an individual has at a given point in time” (Berman et al. 2016). People are averse to reductions in financial resources (Hobfoll et al. 2003), here operationalized as perceptions of financial slack. We propose that the more a purchase decreases one's slack, the more psychologically painful it will feel.

Consistent with past research, we suggest that slack judgments are formed in a manner consistent with mental accounting—people behave as if they (i) identify the mental accounts relevant to financial slack, (ii) judge each account's balance, and (iii) combine these judgments into an overall evaluation of financial slack. Critically, each mental account a consumer has may factor more or less into judgments of slack (Morewedge, Holtzman, and Epley 2007; Sussman and Shafir 2012). We predict that the more a mental account factors into judgments of slack, the more painful it will be to deplete.

We test this idea in study 1. We ask participants to rate nine financial profiles of other individuals. The profiles are comprised of four accounts (checking, savings, credit card debt, physical cash) that vary in value, allowing us to recover which accounts are most mentally related to slack for each individual. We then ask participants how painful it would be for them (the participants) to make purchases out of each of the four accounts. We find that the extent to which an account contributes to slack judgments predicts pain of payment out of that account ( $\beta = 1.90$ ,  $t(131.98) = 2.59$ ,  $p = .011$ ). Two replications (omitted for brevity) lend additional support, and suggest that the more frequently an account is used, the more it loads on judgments of slack, and the more painful it is to deplete.

Studies 2–4 seek to manipulate the extent to which a mental account factors into slack judgments, thereby manipulating pain of payment from them. In study 2, participants ( $n = 101$ ) imagined having \$1000 divided between either five different or two different mental accounts (between subjects). We reasoned that the more mental accounts present, the less any one would factor into judgments of slack (Anderson 1974; Kruglanski et al. 2002). As predicted, equat-

ing total amount of money one has, an equivalent transaction reduced perceived slack more (7-pt scale;  $M = 3.10$  vs  $3.80$ ,  $t = 2.60$ ,  $p = .01$ ) and was more painful (7-pt scale;  $M = 3.21$  vs  $3.80$ ,  $t = 1.78$ ,  $p = .08$ ) when consumers had fewer total mental accounts.

Study 3 manipulates the extent to which a mental account contributes to slack using the phenomenon of *earmarking* (designating funds for a specific purchase). When funds are earmarked, they feel as though they have already been spent (Webb and Spiller 2014). Given that they feel spent, they should not contribute to one's sense of financial slack. By virtue of not contributing to slack, they should be less painful to spend. Participants ( $n = 299$ ) imagined spending money on either a book, a gift, or car repairs. As a manipulation of earmarking, they imagined either spending out of their checking account (non-earmarked), or a purchase-specific fund (e.g. a car-repair fund; earmarked). Across products, participants rated spending earmarked funds as less painful than spending non-earmarked funds ( $\beta_{\text{earmarking manipulation}} = -.80$ ,  $t(296.04) = -3.05$ ,  $p = .003$ ). This effect was mediated by perceived decreases in slack (95% BCCI [.04, .29]).

Study 4 manipulated the extent to which mental accounts were factored into slack by manipulating the fungibility of a mental account. We reasoned that more fungible resources (resources that have fewer limitations on where and how they can be spent; e.g. cash versus a gift card) should contribute to slack more. Participants ( $n = 200$ ) imagined that they had to purchase a textbook on Amazon.com, and were randomized into one of two scenarios: high fungibility (their purchase would be made with a regular gift card to Amazon) or low fungibility (their purchase would be made with a gift card to Amazon that could only be used to purchase books). As predicted, participants who paid with the more fungible asset felt that the purchase cut into their slack more (7-pt scale;  $M = 5.51$  vs  $3.43$ ,  $t = 9.00$ ,  $p < .001$ ), and found the purchase to be more painful (7-pt scale;  $M = 3.54$  vs  $2.97$ ,  $t = 2.11$ ,  $p = .036$ ).

Previous studies have shown that buy-now-pay-later purchases are less painful (Prelec and Loewenstein 1998). This is consistent with our theorizing so long as the consumer believes, as is typical, that she will have more slack in the future (Zauberman and Lynch 2005). However, we argue if the consumer believes she will have *less* slack in the future, the future payment would require more of the consumer's available slack and should be *more* painful.

Study 5 tests this prediction: 100 participants imagined an increasing or decreasing salary over the course of their career as a manipulation of slack. They then rated how painful two payment options for the same product would be: payment now versus payment in 20 years (in both cases the product would be owned immediately). We replicate previous findings when slack is increasing in the future: paying later is rated as less painful ( $t(100) = 3.71$ ,  $p < .01$ ). However, when slack is decreasing in the future, people rate the later payment as *more* painful ( $t(96) = 4.47$ ,  $p < .01$ ).

## How Temporal Separation in Budgeting Affects Spending Behavior

### EXTENDED ABSTRACT

A common strategy for controlling spending is to decide how much consumers want to spend before they begin shopping. Consumers often use mental accounts as budgets, allocating resources for specific expenses before they are incurred. Because mental budgets are set in advance of purchase opportunities, there is typically some amount of temporal separation between the moment that a budget is set and the moment that a purchase is made. Although it is relevant to real life budgeting experiences, little is known about how the temporal separation between budgeting and purchase influences

spending behavior. We suggest that consumers become increasingly likely to overspend the budgeted amount as temporal separation in budgeting increases.

One possible underlying reason for this effect is diminishing pain of paying towards the budgeted money. Prior research demonstrates that people gradually adapt to the hedonic cost, or pain, of a purchase over time (Gourville and Soman 1998). Consumers first open a mental account for a purchase, and as time passes since the payment was made, they slowly incorporate the payment into their status quo, reducing pain of paying (Soman 2001). While pain of paying is typically explored in the context of actually spending money (e.g., Shah et al. 2015, Soster et al. 2014), people may also experience similar feelings when they make the decision to spend money and budget for an upcoming purchase. Simply earmarking money for a specific purpose can result in the sense of spending (Webb and Spiller 2014), showing that budgeting money may produce a similar experience to spending money. We suggest that after people set a budget for a purchase, they begin to adapt to the cost of that decision. As this adaptation increases over time, the pain associated with the decision lessens, which in turn increases the willingness to spend money when actual purchase occurs.

In Study 1, participants ( $N=248$ ) were randomly assigned to imagine that they had budgeted \$200 for a tablet PC either one-day, one-week, one-month, or six-months ago. Next, they indicated how likely they would be to spend \$250, instead of their \$200 budget, for the tablet PC to purchase 1) a premium version and 2) a more appealing option as a measure for overspending ( $= .79$ ). As hypothesized, the likelihood of overspending significantly rises as the temporal separation increases ( $b=.22$ ,  $p=.02$ ).

Study 2 was a two-phase experiment where participants experienced *actual* time separation between budget setting (phase 1) and a subsequent choice decision (phase 2) for a class ring. Undergraduate students ( $N=89$ ), who were close to purchasing their rings, were randomly assigned to experience either an eight-week vs. one-week separation between phase 1 and 2. In phase one, participants set a ring budget based on actual prices and options. In phase two, they selected their ring from a set that included additional options at higher price. Overspending was calculated by subtracting the amount budgeted from the amount spent. Participants in the eight-week separation condition showed significantly greater likelihood to overspend ( $M=55.12$ ) than those in the one-week condition ( $M=2.83$ ;  $F(1,87)=3.76$ ,  $p=.05$ ). A post-experiment survey completed by recent ring purchasers ( $N=247$ ) showed that greater temporal separation significantly predicted overspending ( $b=6.10$ ,  $p=.03$ ), concluding that people are increasingly likely to overspend as temporal separation increases.

Study 3 investigated the proposed process. Because hedonic purchases generally induce greater pain of paying (Kivetz and Simonson 2002), we reasoned that the effect of temporal separation would be stronger for hedonic than utilitarian purchases. Participants ( $N=354$ ) imagined setting aside \$300 either two-months or one-week ago to purchase a tablet PC that provided either hedonic or utilitarian benefits. Overspending was measured by asking about willingness to buy a premium version of the tablet PC for \$330 on a seven-point scale (1=very unlikely, 7=very likely). We found a significant interaction between the temporal separation and the benefit type ( $F(1,350)=3.84$ ,  $p=.05$ ). For the hedonic-framed good, participants in the two-month condition showed greater likelihood to overspend ( $M=5.61$ ) than those in the one-week condition ( $M=5.10$ ;  $F(1,350)=4.83$ ,  $p=.03$ ). However, overspending did not differ across the time condition for the utilitarian-framed good ( $M_{\text{utilitarian*distant}} = 5.46$ , vs.  $M_{\text{utilitarian*near past}} = 5.59$ ;  $F < 1$ ).

Study 4 also investigated the process. When consumers experience temporal separation, they may reevaluate their budget as they search for and acquire more information about their potential purchase. If it is true that this effect is driven by pain produced at the time one budgets one's money, then prolonging the budgeting decision through increased deliberation should effectively reduce the temporal separation between the final budget and actual purchase, increasing pain and mitigating overspending. We employed a minimalistic experimental paradigm to explore this issue in the lab. Participants ( $N=211$ ) received a set number of credits to allocate to watching films. To manipulate temporal distance, participants set a budget for how many credits to spend on films they would watch following either a 5 or 20 minute wait period. To manipulate deliberation during the wait period, participants either engaged in an unrelated task, or were asked to repeatedly reconsider their options and adjust their film budget as necessary. Thus, the final budget decision in both 5-minute and 20-minute deliberation conditions were made at the same time; consequently, there should be no difference in overspending between these two groups. After the wait period elapsed, participants purchased films to watch using their credits. We calculated the difference between budget and purchase to measure overspending. A two-way ANOVA revealed a significant interaction ( $F(1,207)=3.94, p=.05$ ); non-deliberators were more likely to overspend when the film budget was set 20-minutes ago ( $M=3.40$ ) than 5-minutes ago ( $M=-3.58$ ). However, for deliberators, overspending was no longer different ( $M_{\text{deliberator*20-minutes}}=-3.52$  vs.  $M_{\text{deliberator*5-minutes}}=-3.24$ ). Furthermore, greater temporal separation raised overspending through lower pain of paying for non-deliberators ( $b=.63, 95\% \text{ CI: } [.01, 2.07]$ ), but not for deliberators ( $b=-.45, 95\% \text{ CI: } [-1.96, .12]$ ).

Together, our findings explore how temporal separation in budgeting affects spending behavior. We found that as the temporal separation between budget setting and actual purchase increases, people are increasingly likely to overspend their budget. The results provide preliminary evidence of an unintended side effect of greater temporal separation in budgeting.

## Causes and Consequences of the Expense Prediction Bias

### EXTENDED ABSTRACT

A number of important financial decisions that consumers face require them to accurately predict their future expenses. For example, a consumer's decision about how much money to save or borrow today hinges on knowing how much money they will spend in the future. However, past research suggests that consumers will tend to under-predict their future expenses (Ulkumen et al., 2008; Sussman and Alter, 2012), a phenomenon we label the expense prediction bias (EPB). The present research introduces a simple cognitive tool that markedly improves consumers' expense prediction accuracy. Underlining the importance of such a tool, we also provide evidence that EPB is associated with lower savings and higher debt.

To develop this tool we theorize that people mentally represent the future using prototypes, which we define broadly as cognitive "blueprints" based on the central or typical instances of a category. This proposition is consistent with research showing that the future is mentally represented in relatively more prototypical terms than the past (Kane, Van Boven, & McGraw, 2012). We further propose that prototypical prospection causes consumers to under-predict their future expenses because behavioural predictions are based on mental representations of the future (Buehler, Griffin, and Peetz, 2010), and prototypes lack contextual detail (Van Boven, Kane, and McGraw, 2009). Accordingly, we also propose that decreasing perceived typicality of future expenses will increase expense prediction accuracy.

Study 1 ( $n = 485$ , Mturk) tested the hypotheses that consumers believe their future expenses will be lower and more typical than their past expenses. Participants first reported and predicted their expenses for the past and the next week, then indicated how typical they perceived their expenses for each week to be. In support of our hypotheses, participants predicted their future expenses would be more typical than their past expenses, ( $M_{\text{nextweek}} = 5.03, M_{\text{pastweek}} = 4.71, p < .001$ ), and that their future expenses would be 10.80% lower than their past expenses ( $M_{\text{nextweek}} = \$161.43, M_{\text{pastweek}} = \$180.98, p < .001$ ).

Study 2 ( $n = 1048$ , nationally representative sample from T.E.S.S.) tested the hypothesis that experimentally decreasing perceived typicality of future expenses will increase consumers' expense predictions. Participants were randomly assigned to one of three conditions: control, typical, or atypical. In the control condition participants recalled and predicted their expenses for the past and next week as in study 1. Participants in the typical condition also recalled and predicted their expenses but were instructed to list three reasons why their expenses for next week would be similar to a typical week before making their prediction. We hypothesized that this would not significantly impact predictions (vs. control) because, if our theory is correct, predictions in the control condition should already be based on a prototypical mental representation of the future. The atypical condition tested our tool which instructed participants to list 3 reasons why their expenses for next week might be different from a typical week. We hypothesized that this would decrease perceived typicality of future expenses and therefore increase expense predictions. As expected, predicted expenses were significantly lower than recalled expenses in the control condition ( $t(415) = 2.76, p = .006$ ) and typical condition ( $t(331) = 2.07, p = .039$ ), but statistically equivalent in the atypical condition ( $t(299) = -1.49, p = .14$ ).

In study 3 ( $n = 302$ , Prolific Academic) participants were randomly assigned to predict their expenses for the coming week in one of the three conditions from study 2. Then, over the next seven days, they reported their expenses at the end of each day in an online financial diary. This allowed us to test the hypothesis that consumers under-predict their future expenses as compared to their actual expenses. Predicted expenses were significantly lower than actual expenses in all three conditions ( $ps < .001$ ), but the size of the bias was 30.7% lower in the atypical condition vs. control. A 3(condition: control vs. typical vs. atypical) x 2(expenses: predicted vs. actual) between-within ANOVA confirmed a condition by expenses interaction ( $F(2, 299) = 3.26, p = .040$ ), and planned contrasts further confirmed that expense predictions were significantly higher in the atypical condition ( $M_{\text{atypical}} = \$210.61$ ) than in the control ( $M_{\text{control}} = \$165.67, t(299) = 2.01, p = .046$ ) and typical conditions ( $M_{\text{typical}} = \$142.59, p = .001$ ). The data also revealed that higher EPB was associated with lower savings, ( $r(299) = -.14, p = .02$ ), more frequent credit card interest charges ( $r(216) = .16, p = .02$ ), lower credit scores ( $r(206) = -.13, p = .06$ ), and greater self-expressed need to repay debt ( $r(300) = .17, p < .01$ ).

In study 4 we conducted a five week field study with 187 clients of a midsized North American bank. On the Sunday preceding week 1 of the study participants predicted their expenses for the next week and next month. On the Sunday of each subsequent week participants reported their actual expenses for the target week from their online bank account, and predicted their expenses for the coming week. They also indicated how typical they perceived their expenses for the past and next week to be. For the last week of the study, half of our sample was randomly assigned to receive our "atypical" intervention. In each of the first four weeks of the study participants predicted that their expenses for the next week would be more typical

than they had been in the past week ( $ps \leq .005$ ), and correspondingly, expense predictions were significantly lower than actual expenses in each week ( $ps < .01$ ). Participants also under-predicted their expenses for the month ( $M_{\text{diff}} = \$416.77, p < .01$ ). In the last week of the study EPB was replicated in the control condition ( $M_{\text{diff}} = \$79.99, p = .002$ ) but completely neutralized by our intervention in the atypical condition ( $M_{\text{prediction}} = -\$6.65, p = .85$ ).

In sum, this research identifies a key driver and several consequential correlates of EPB. Importantly, it also provides a simple intervention that policymakers and FinTech companies can use to improve consumers' financial predictions, and in turn, their financial well-being.

### **The Last Hurrah Effect: End-of-Week and End-of-Month Time Periods Increase Financial Risk-Taking**

#### **EXTENDED ABSTRACT**

“TGIF: Thank Goodness it’s Friday.” It is a phrase that is ubiquitous in modern society and used to signify the positive feelings associated with the transition between the work-week ending and the weekend beginning. Modern society is filled with examples of various temporal landmarks, largely driven by social construction, that have subsequently created clear associations structuring individuals’ memories and experiences (Robinson 1986; Shum 1988), but also our current behavior as well. The end-of-the week, in particular, has had a pervasive impact on the way we dress, behave, and make decisions at work. For example, it is not unusual for individuals to dress a bit more casually or have that extra beer during a happy hour event. This feeling of slack has spilled over to work habits as well. A recent survey of HR professionals found that a majority of workers reportedly felt the least productive in the office on Fridays. This brings up a natural question: Could this end-of-the-week effect affect decision-making as well? More specifically, does the potential slack associated with the end of a period affect investors’ risk tolerance and risky decision-making?

Understanding when people are most prone or vulnerable to making budgeting errors and risky choices is important for many reasons. For many individuals, just a few poor investment decisions may be quite consequential for one’s likelihood to go into debt. Moreover, these small decision biases can have a major impact in terms of how markets are constructed and perform. DellaVigna and Pollet (2009) document significant under reaction to information in earnings announcements when the announcements came on Fridays—a time period when individuals, they argue, are more inattentive to the news relative to other days of the week. While a number of articles have identified calendar effects in financial domains, the literature has largely focused on how the end-of-week create led to abnormal trading volumes and returns as evidenced by delays in response or action. But what happens to individuals who are *actively* making investment choices? Could the end-of-week, or end-of-period effects, influence optimism and perceptions of slack that could subsequently increase the risk investors are willing to tolerate?

Using a unique panel dataset of peer-to-peer lending loans, combined with a lab experiment, we find that investors are significantly more likely to invest in riskier loans at the end of a work week or end of the month, subsequently yielding worse returns in comparison to non-end of week periods. We obtained data from Prosper.com, a platform that provides P2P lending service in America but allows both investors and borrowers to set their own interest rates. A borrower can post an auction style listing specifying the maximum interest rate (reserve interest rate) he is willing to accept and the

amount he requests. Borrowers who set their reserve interest rate high are more likely to default. On the other hand, lenders can expect higher lender rate (the interest rate a lender receives on a loan) when they invest in a loan with higher reserve interest rate. Lenders (investors) on this platform face the trade-off between high interest rate and high riskiness.

In particular, we collected all bidding data from Nov 09, 2005 to Oct 14, 2008. The data includes 5,829,817 different bids submitted by 54,821 lenders. We find that investors (i.e., lenders) are significantly more likely to invest in listings with higher reserve interest rates on Fridays (the end of week) ( $p < .001$ , robust to various individual-level such as experience and average interest rate of loans for the investor, as well as firm-level controls, such as availability of loans, proportion of risky to riskless loans). To rule out the possibility that Friday is intrinsically different from other weekdays, we also test Wednesdays and Thursdays that are ends of working periods. We find similar patterns in lenders bidding behavior. To address the concern that our findings are driven by holiday effect, we provide evidence that at the end of a month, lenders prefer high reserve interest rate listings as well. We also rule out the potential that ego depletion is driving our results by looking at end-of-day effects. When mental energy is low, self-control is likely to be impaired, potentially leading to less consideration of the costs or losses. However, we did not find a significant relationship between the time of day (measured as either the last two hours of the work day or last two hours of the day). Finally, we compare the payoff rates lenders receive on regular working days and end of period working days. We find lenders risk seeking bidding behavior on end of period working days results in lower payoff rate on average.

In order to get a better idea of the mechanism driving these effects, we ran a follow-up laboratory experiment where we investigated the proportion of risk individuals were willing to take as a function of whether the decision was in the middle (control group) or end of a cycle (end-of-period). More specifically, we asked individuals to complete a series of tasks, one of which was to allocate \$100,000 to either risky (stock) versus riskless (bond) asset. Individuals who had the risk decision at the end of the cycle were significantly more likely to put more money into stocks (vs. bonds) relative to those who made the allocation decision in the middle of the cycle ( $p = 0.014$ ). Both increased feelings of happiness and perception that there will be a fresh start partially mediate the relationship between the end-of-period effect and risky decision-making.

Across two empirical studies—panel data from real investment decisions and a laboratory experiment on asset allocation—we find evidence that individuals are prone to an end-of-week bias. Investors are more likely to select riskier loans due to feeling more positive and believing that the next period offers a fresh start, despite the fact that these loans and end of period working days result in lower payoff rate on average.

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