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Abstract

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The Consequences and Correction of Inflation in Personal Savings Estimates in Specific Future Time Frames

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The Consequences and Correction of Personal Savings Estimate Inflation in Specific Future Time Frames

ABSTRACT

We examined the consequences of personal savings estimate inflation which occurs when decision makers provide savings estimates for specific future months when compared to the next month or the next year time frames (Tam & Dholakia, 2011), along with a method to attenuate this bias. The results of three experiments showed that the savings estimate inflation leads to significantly larger estimates of desired nest egg size (Experiment 1) and preference for riskier choices in other financial domains such as investment and employment decisions (Experiment 2). An attempt to attenuate this bias revealed it is corrected when individuals provide a budgeting estimate prior to giving a savings estimate (Experiment 3). The theoretical and practical implications of the findings are discussed.

KEY WORDS: personal savings, duration, delay, time frame, future optimism, risky financial decision making

The Consequences and Correction of Personal Savings Estimate Inflation in Specific Future Time Frames

INTRODUCTION

In many countries around the world, one of the most pressing social and economic issues is the low personal savings rates of individuals. For instance, in the United States, the personal savings rate turned negative (-.5%) in 2005 for the first time since 1933. That year, American households altogether spent a total of $41.6 billion more than they earned (Waggoner, 2006). Although the rate of personal savings has increased during the economic recession that followed (Glick & Lansing, 2011), trend-wise, its decline can be traced to 1984, when it stood at 10.8 percent of after-tax income (Crutsinger, 2006).

On the basis of such statistics, many social scientists are concerned that Americans are not saving enough for their futures (e.g., Garner, 2006; Lansing, 2005). Similar concerns have been voiced in other countries such as Australia, Denmark, and South Korea (e.g., OECD, 2009; Yonhap, 2010). Accordingly, researchers have given considerable attention to examining the issue of low personal savings rates from economic, sociological, and psychological perspectives (e.g., Benartzi & Thaler, 2007; de Graaf, Waan, & Naylor, 2005; Lusardi, 2008; Schor, 1998; Sherraden & McBride, 2010). Both the reasons why people save so little for their futures and methods to get them to save more money have been studied (e.g., Wiener & Doescher, 2008).

Much of the prior psychological research on these issues employs one of two distinct theoretical perspectives (see Angeletos et al., 2003, for a review). One perspective uses a judgment and decision making lens, viewing inadequate savings as resulting from decision "mistakes" like inertia, procrastination, and discomfort with the financial decision making process (e.g., Benartzi & Thaler, 2007), or because of using biased heuristics in deciding when and how much to save. The second approach employs a motivation and self-regulation lens (e.g., de Graaf et al., 2005; Faber & Vohs, 2004), viewing the individual's inability to save adequately as arising either from improper goal setting or from pursuing the chosen goal through ineffective means. Alternatively, a low rate of personal savings is seen as a spending problem, fueled by a lack of control over one's spending activities. Although studies employing one or the other of these perspectives have shown that individuals can be encouraged to save more through various decision aids and interventions (e.g., Madrian & Shea, 2001; Thaler & Benartzi, 2004), relatively little research has considered how consumers decide how much money to save.

Combining these two perspectives, Tam and Dholakia (2011) recently studied the role of time frames in the provision of personal savings estimates by decision makers. They investigated how savings estimates vary with duration and delay of the future time period for which they are given, where duration is defined as the *length of the future time period* during which the decision maker will save money, for example, over the next month vs. over the next year, and delay concerns *when, i.e., how far in the future* the time period is during which the decision maker will save money, for example, next month vs. a particular month six months from now. They found that when compared to decision makers who provided savings estimates for either the next month or the next year, those providing estimates for a future month were likely to provide an inflated (as much as three times higher) estimate. The individuals who provided inflated savings estimates went on to save significantly less money when compared to the other two groups. They explained these results by showing that these latter decision makers are more optimistic about saving money and frame the savings task in more concrete, specific terms in line with the Construal level theory (Trope & Liberman, 2003). This theory posits that for shorter durations, decision makers think of judgment and estimation tasks more concretely using a lower level construal and may be able to think of more specific ways in which they will be able to save money, in comparison to longer durations where the task is considered in more abstract terms with higher-level construal.

However, at least two significant questions remained unanswered in Tam and Dholakia's (2011) study. First, the authors did not examine the consequences of providing inflated savings estimates on the individual's other financial decisions. This question is particularly important because many decision makers make concurrent personal finance decisions such as how to allocate money between various investment vehicles when deciding how much to save (e.g., Vlaev, Chater, & Stewart, 2008). For instance, when starting a new job, many new employees must not only decide what percentage of their paychecks to withhold in a retirement savings account through their employer, but they must also choose the money market funds, mutual funds, or other investment vehicles to allocate these withheld savings (e.g., Duflo & Saez, 2002). Both financial decisions are usually made at the same time, and therefore one decision (deciding how much to save) may potentially impact others (which investment vehicles to save in). It could also impact related financial assessments such as the desired level of savings (i.e., the nest egg) one would like to have.

Second, it was not clear from Tam and Dholakia's (2011) study what, if anything, could be done to correct the inflation bias found when decision makers provide savings estimates for a future month. This issue is important because, as the study showed, decision makers providing inflated estimates under this time frame saved less money than those providing savings estimates under other time frames. Correcting the inflated estimate is not only likely to result in greater personal savings for the decision maker but it is also likely to provide additional useful insights into the psychological mechanism underlying the personal savings decision making of individuals.

Our goals in the current research are to address these questions, and to build on the Tam and Dholakia (2011) study by examining the effects of personal savings estimate inflation on financial decision making, and the process by which the savings estimate inflation can be corrected. Specifically, in this paper, we study: (1) the effects of providing inflated savings estimates on the decision maker's desired nest egg size, and risk preferences for investments and employment opportunities, and (2) a means of correcting the inflation of savings estimates in the future month time frame.

The results of three experiments show that decision makers in the future month condition provide a significantly higher estimate of their desired nest egg (Experiment 1), and are likely to prefer riskier options in both investment and employment domains after providing the inflated estimate, when compared to those in the next month or next year time frames (Experiment 2). In considering correction of this observed bias, we find that the bias is attenuated when decision makers provide a budgeting estimate first (Experiment 3), and these individuals also save more money afterwards. Taken together, these findings offer useful theoretical and practical insights into the phenomenon of savings estimate inflation in the future month time frame by decision makers more specifically, and a better understanding of financial decision making regarding personal savings more generally.

OVERVIEW OF RELEVANT SAVINGS DECISION MAKING RESEARCH

Much of the existing research on personal savings decision making can be traced to Modigliani and Brumberg's (1954) life-cycle savings model, which posits that people make rational, consistent, intertemporal decisions to spend and save money over the course of their lives, so as to maximize their lifetime utility functions. Decision makers tailor their consumption patterns to their needs at different ages, this model posits, independently of their incomes at each age. Through savings, they accumulate assets in their working years, which they utilize during retirement (e.g., Angeletos et al., 2003; Nyhus & Webley, 2006). Thus, saving for retirement is viewed as the primary personal savings goal of individuals. The life-cycle model assumes that decision makers not only have knowledge of their lifetime utility functions, but they also possess the willpower to execute the utility-maximizing plan of consumption and saving over a lifetime.

Subsequent research[1] has focused on challenging the assumptions of the Modigliani and Brumberg (1954) model by studying how individuals actually decide and what they actually do. This research has found that, in practice, decision makers employ various heuristics and are susceptible to biased decision making when saving (or trying to save) money. One consistent finding in these empirical studies is that, by and large, individuals do not save enough money for their future to replace their income in retirement or if they are faced with job loss, unforeseen adverse medical events, etc.

As one example, data from the Survey of Consumer Finances reveals that less than a quarter of American households have three months of emergency funds to replace lost income, and less than fifteen percent of the households have six months or more of such funds (Bhargava & Lown, 2006; Bucks et al., 2009). Many studies have also found that employees are reluctant to join defined contribution savings plans[2] they are eligible for even when it is favorable to do so (their contributions are tax deductible, accumulations are tax deferred, and employers match contributions up to a certain percentage, e.g., Madrian & Shea, 2001; Thaler & Benartzi, 2004; see Benartzi & Thaler, 2007, for a review). Results from consumer surveys and field experiments attribute such biased decision making and inaction to a sense of discomfort with making personal savings decisions, to procrastination in acting after such decisions are reached, and to improper formulation of the savings task.

Contributing to the complexity of personal savings decision making is the issue of self-regulation. There is considerable and accumulating evidence that a majority of individuals have a problem with controlling themselves when spending money (e.g., Baumeister, et al., 2008). For instance, when queried about their low savings rate, many decision makers report

[1] Unless otherwise noted, the research discussed here concerns American decision makers and households. We discuss the generalizability of our findings to other settings in the General Discussion section.

[2] In the United States, defined contribution savings plans are offered by employers. Employees join such plans voluntarily and select their own savings rate and investment vehicles. This money is then deducted from their pay-check every pay period and may be augmented by "matched" contributions from the employer up to a certain maximum amount. In contrast, a defined benefit savings plan promises the participant with a specific monthly benefit at retirement without the need to make any contributions from one's paycheck. Over the past twenty years, there has been a widespread shift away from defined benefit, and toward defined contribution, savings plans among American employers.

that they would like to save more money but lack the willpower to do so. In a survey of 401(k) savings program participants conducted by Choi et al. (2004), two-thirds of the respondents candidly reported that their savings rate was "too low". This research also found evidence of procrastination. Specifically, although 35 percent of the self-reported under-savers resolved to increase their savings rate, a vast majority of them (86 percent) had made no changes four months later.

Not surprisingly, by the end of 2006, 40 percent of American households spent more than they earned annually, 60 percent had credit card accounts that were not paid off each month (leading to interest and finance charges), and average debt, excluding mortgage debt, was approximately $14,500 per household (Scurlock, 2007). Interestingly, recent research has found that susceptibility to spending is amplified when consumers frame savings goals unambiguously, as "all-or-nothing" goals instead of open-ended goals (Soman & Cheema, 2004). Take the example of an individual who sets the goal of saving $500 each month. After a month in which this specific savings goal is violated, the person becomes more amenable to overspending, without adequately considering whether the savings goal will become more difficult to achieve in future months because of the current splurging (Soman & Cheema, 2004). Over time, the individual will likely abandon the savings goal entirely (Bagozzi & Dholakia, 1999).

To summarize, a common theme running through the research on personal savings decision making is that, by and large, individuals do not give enough thought, effort, and self-regulation to the task of saving money; consequently, they often fail to save adequately. Under these circumstances, getting decision makers to think and to form savings goals could have positive effects on savings behavior (e.g., Thaler & Benartzi, 2004), and eliciting personal savings estimates, the focus of the present research, marks an important first step in this process.

PERSONAL SAVINGS ESTIMATE INFLATION IN SPECIFIC FUTURE MONTH TIME FRAMES AND ITS CONSEQUENCES

When saving money is concerned, time frame is an essential part of the task definition. For instance, when saving for retirement, individuals must choose the amount to be withheld from their paychecks; in this case, the pay period influences the amount saved (e.g., Loibl & Scharff, 2010). Likewise, decision makers must also consider delay from the time when the decision is made. Many personal finance experts recommend making specific future plans for saving money to increase personal savings (e.g., Eisenberg, 2006), the benefits of which have also been validated by psychologists (Gollwitzer, 1999; Henderson, Gollwitzer, & Oettingen, 2007). Individuals may use one of several different future time frames such as next month, next year, or a specific future month when making decisions regarding when and how much to save.

Normatively, neither the time frame's duration nor its delay should have effects on the magnitude of the decision maker's savings estimate. In other words, there should be no difference in the estimate regardless of whether the individual is estimating savings for the next month, the next year, or for a future month. However, considerable evidence from prior research suggests that using different time frames in assessing the same information can lead to stark differences in judgments and decisions (e.g., Buehler & Griffin, 2003; Chandran & Menon, 2004; Tam & Dholakia, 2011; Ülkümen, Thomas, & Morwitz, 2008).

Tam and Dholakia (2011) recently showed that when decision makers use a future month frame to provide a savings estimate, a combination of two processes influences the estimate given. First, decision makers tend to be *more optimistic* about being able to save money in the distant future and therefore provide a much higher estimate than those providing an estimate of how much they will save in the near future such as during the next month (Nussbaum, Liberman, & Trope, 2006; Zauberman & Lynch, 2005). Concurrently, a second process of goal construal also comes into play whereby the savings task is framed in *more* *concrete terms* in the future month condition (given the shorter duration) when compared to the next year condition (Trope & Liberman, 2003). This leads to a higher savings estimate in the former case[3]. The net result is that decision makers provide significantly inflated estimates for specific future months when compared to the next month or the next year time frames. Because future optimism increases with delay and savings task construal decreases with duration, they influence savings estimates in opposite directions. The two processes, future optimism resulting from a longer delay and the more concrete task construal in the shorter duration cancel each other out resulting in more-or-less similar savings estimates in the next month and the next year time frames.

Because of their potential theoretical and practical significance, the consequences of providing an inflated savings estimate are important to consider in depth. Personal finance decisions, like other life decisions, are rarely made in isolation by individuals (e.g., Eisenberg, 2006; Tufano, 2009). The consideration of one financial decision such as how much one should save, naturally leads to the consideration of other related personal finance questions such as how much of a nest egg one needs in order to feel comfortable (‘The Number’; Eisenberg, 2006), and where (i.e., in which specific savings or investment vehicles) the saved money should be invested. These decisions are equally, if not more, important to the individual’s longer-term financial well-being. To the extent that they are considered concurrently by the decision maker, these decisions may be affected by the savings estimate inflation.

We examine the decision of minimum desired savings in Study 1. Specifically, the minimum desired level of savings reflects the amount that the individual needs for his or her nest egg, and is viewed as an important variable by many personal finance experts. This amount not only influences the person’s current lifestyle, but also the approaches s/he will

[3] Note that when comparing decision makers’ personal savings estimates in a ‘year’ duration with a ‘month’ duration, unitized estimates are used such that the annual estimates are divided by twelve to make them comparable to monthly estimates. We follow this procedure in all the experiments reported in this paper.

use when investing and making personal finance decisions (Basu & Drew, 2009; Eisenberg, 2006). One consequence of the savings estimate inflation in the future month condition will be an inflation in the amount of savings that is considered as desirable to have for a nest egg. Thus, we hypothesize that those providing a savings estimate for a future month will report requiring a significantly larger nest egg than those providing an estimate for either the next month or the next year. Note that this prediction is consistent with recent research on 'goal ladders' which has shown that the definition and pursuit of more challenging sub-goals increases an individual's aspirations regarding super-ordinate goals (Koo & Fishbach, 2010). It also follows from Tam and Dholakia's (2011) finding that these decision makers are more optimistic about being able to save money than those in the next month or next year time frames. Such heightened optimism may also lead to the estimation of a larger nest egg.

Furthermore, one additional issue with Tam and Dholakia's (2011) findings must also be pointed out. They did not examine the role of the long duration–long delay time frame (distant future year) in any of their experiments, and so were not able to completely rule out a parsimonious account of *hyperbolic discounting* for some of their findings. H*yperbolic discounting* is the well-established effect whereby decision makers exhibit present-biased preferences when making intertemporal decisions (e.g., Ainslie, 1975; Kirby & Marakovic, 1995; Benzion, Rapoport, & Yagil, 1989), meaning that they give more weight to rewards in the first time period than in later periods, and this disproportionate weight is greater as the first period is closer to the time that the decision is made.

Thus, a hyperbolic discounting explanation would posit that the decision maker will value spending more in the next period (whether it is a month or a year), and thus save less money. In contrast, in a more distant period (month or year), s/h would value spending less, and therefore save more. Note that because the future month is a part of the next year time frame, this explanation is silent regarding whether next year or future month will yield higher savings estimates.

Including a long duration – long delay condition allows us to test this possibility across different durations. Specifically, if this explanation applies, not only should the estimate provided for next month be lower than that provided for future month, but the estimate provided for next year should also be lower than that provided for future year.

EXPERIMENT 1

Accordingly, the goals of Experiment 1 were to: (1) replicate the main result of the Tam and Dholakia (2011) study, that is, to verify savings estimate inflation in the future month condition relative to other time frames, and additionally to study whether such an inflation also occurs for a future year condition relative to the next year condition, and (2) to determine the effect of the savings estimate inflation on decision makers' assessment of their desired nest egg's size. We employed a 2 (duration: short, long) x 2 (delay: short, long) experimental design to accomplish these goals.

Participants and Procedure

One hundred and forty-five employed students[4] working at least 20 hours a week (52% females, average age=25 years, age range=20-57) were recruited from a public university and participated in this experiment in exchange for partial course credit. Participants were told that the study was about personal savings and were randomly assigned to one of the 2 duration (short, long) x 2 delay (short, long) conditions. The short duration was one month and the long duration was 12 months (a year). The short delay was next month (or the next 12 months), the long duration was the month a year from now (or the 12-month period starting with that month).

[4] In all the studies reported in this paper, we collected data only from participants who were employed either part-time or full-time based on the reasoning that at least some income is necessary in order to save money (e.g., Sherraden & McBride, 2010). Students who did not meet the employment requirement were offered other studies to participate in, in order to receive the same amount of course credit.

Participants were first asked to think about how much money they would save in the time period corresponding to the condition to which they were assigned. For example, in the "Next Month" condition, participants were told, "Think ahead to next month and think about putting money into your savings accounts. Savings accounts can include any accounts (savings, checking, investment, retirement) or cash." Similar instructions were given to participants in the other three time frames.

After providing the savings estimate, participants were asked a question regarding the size of their desired nest egg. Specifically, they were asked to provide the minimum amount of money they would need in their savings in order to feel comfortable about the future. Finally, they were thanked and debriefed.

Results

Savings estimates. Results of a 2 duration (short, long) x 2 delay (short, long) ANOVA with unitized savings estimates as the dependent variable, and gender, age, employment status, and household income included as covariates revealed an interaction of duration and delay ($F(1,137) = 2.99$) that was marginally significant at the $p = .08$ level, but no significant main effects of either factor ($F(1,137) = 1.81$, $p > .18$ for duration and $F(1,137) = 2.73$, $p > .10$ for delay). None of the covariates[5] had significant effects either ($F(1,137) < 0.01$, $p = .99$ for gender; $F(1,137) = 0.06$, $p = .81$ for age; $F(1,137) = 0.45$, $p = .51$ for employment status; $F(1,137) = 0.33$, $p = .57$ for household income).

A planned contrast revealed that consistent with Tam and Dholakia's (2011) finding, there was no significant difference between respondents in the next month (M = \$186) and the next year (M = \$254, $F(1,137) = 1.09$, $p = .30$) conditions. The future month's estimate was significantly higher than the future year's estimate ($M_{\text{Future Month}}$ = \$756 vs. $M_{\text{Future year}}$ = \$247, $F(1,137) = 5.09$, $p < .05$), and was also higher than the short delay conditions ($F(1,137) = 6.70$, $p = .01$; $F(1,137) = 4.25$, $p < .05$, for next month and next year estimates,

[5] All results described in Experiment 1 are consistent as reported when: 1) no covariates were included in the analysis, and when 2) only income was included as a covariate.

respectively). Estimates in the remaining three conditions (next month, next year, and future year) did not vary significantly from one another ($F(2,137) = 0.03$, $p = .97$).

Desired level of savings needed to feel comfortable. Results for estimates of minimum desired level of savings revealed that although there were no significant differences between respondents in the next month (M = \$12,464), the next year (M = \$12,177), and the future year conditions (M = \$8,854, $F(2,137) = 0.04$, $p = .96$), decision makers in the future month condition provided a significantly higher estimate of desired savings level --- more than four times as much --- compared to the other three groups ($M_{\text{Future Month}}$ = \$44,809 vs. $M_{\text{Other time groups}}$ = \$11,056, $F(1,137) = 4.20$, $p < .05$).

Discussion

These results replicate the main findings of Tam and Dholakia (2011); additionally, they allow us to rule out a simple hyperbolic discounting explanation for the savings estimate inflation in the future month condition. Specifically, because the savings estimate inflation found in the short duration, long delay condition does not carry over to the long duration, long delay condition, a parsimonious explanation based on hyperbolic discounting is not sufficient to explain the effects of time frames on savings estimates. Furthermore, after providing the inflated savings estimate, decision makers go on to provide a significantly larger estimate of the nest egg they would need in order to feel comfortable. This result is in line with increased optimism and consistent with the studies on goal ladders (Koo & Fishbach, 2010). Another possibility which helps explain this finding is that upon provision of a (relatively) high savings estimate in the future month time frame, the decision maker may feel obligated to maintain consistency and therefore provides a proportionally higher estimate for desired nest egg.

This is a practically important finding with mixed implications from the standpoint of getting individuals to save. On the one hand, this result is positive in the sense that it has the potential to increase individuals' motivation to save more money (e.g., Skinner, 2007).

However, on the negative side, these decision makers may gravitate toward riskier investment approaches to increase their nest egg faster, with potentially negative personal consequences. Prior research has shown that higher estimates of minimum desired savings are associated with riskier investment choices (e.g., Agnew, Balduzzi, & Sunden, 2003; Bajtelsmit & VanDerhei, 1997) suggesting that the provision of inflated savings estimates is likely to affect other financial decisions of the individual.

EFFECTS OF SAVINGS ESTIMATE INFLATION ON FINANCIAL DECISION MAKING

The results of Experiment 1 are indicative of the possibility that upon providing inflated savings estimates for a future month, decision makers may become more risk seeking in their financial decision making. This hypothesis is further supported by a large body of psychological literature which has shown that the selection of relatively more difficult goals can motivate individuals to strive harder, and take on more risk (e.g., Knight, Durham, & Locke, 2001). Larrick, Heath and Wu (2009) recently found that when compared to an ambiguous goal, pursuing a specific, challenging goal consistently increased risky behavior of decision makers. They suggested that a goal serves as a reference point, creating a region of perceived losses for outcomes that fall short of the chosen goal, influencing the decision maker’s risky behavior in line with Prospect Theory (Kahneman & Tversky, 1979). Support for this hypothesis is also provided by Tam and Dholakia’s (2011) finding that decision makers providing savings estimates for a future month have greater optimism in their abilities. Therefore, we expect that upon providing an inflated savings estimate, individuals assigned to the future month condition will engage in riskier choices in other financial domains such as choosing investments (e.g., Felton et al., 2003), for example, by choosing a riskier vs. a more conservative investment, as well as employment selection, preferring a job that offers high pay but low job security than a job offering low pay with high job security, when compared to individuals assigned to either the next month or next year conditions. Experiment 2 was conducted to test this hypothesis.

EXPERIMENT 2

Participants and Procedure

One hundred twenty nine employed students working at least 20 hours a week participated in this experiment (61% female, average age=25 years, age range=20-60) in exchange for partial course credit. They were randomly assigned to one of Next Month, Next Year, or Future Month time frame conditions. Study participants first provided their savings estimates using the same method as Experiment 1, then assessed their future optimism for saving money. After completing an unrelated filler task which took approximately five minutes to complete, participants made a series of three financial decisions. Finally, they were thanked for their participation in the study and debriefed.

Future optimism. Participants reported their future optimism regarding saving money with the following four items: (1) I will probably have more money to spend in the future than I have now; (2) In the future, my income flow will be a lot higher than it is now; (3) I feel optimistic that I will be able to save more in the future in comparison to what I can save now; and (4) I will be able to control my spending more in the future than I do now. All responses were obtained using seven-point Likert scales anchored with 1=strongly disagree and 7=strongly agree. The reliability of this scale was $\alpha = .87$, thus the four items were averaged for use in the analysis. A higher value indicates that the individual is more optimistic about being able to save money in the future, and vice versa.

Financial decision making tasks. To assess risky decision making, participants completed three tasks. In the first task, participants were told to imagine they received $20,000 as an inheritance recently, and had two investment opportunities to choose from to invest the money. The first one was a business venture with a 70% chance of earning an 18%

annual return and a 30% chance of losing 11% annually. This was the high risk, high reward option. The second investment opportunity, a low risk, low reward option, was a mutual fund with a 90% chance of earning a 10% annual return, and a 10% chance of losing 5% annually. Participants were instructed to allocate the $20,000 between the two investment opportunities. The amount invested in the riskier business venture was the dependent variable in the analysis.

For the second task, participants were told to imagine that they had some savings from before and would like to choose an investment strategy to increase their savings that best reflected their risk tolerance. They were then presented with two investment portfolios. One option, titled “conservative portfolio”, had a mix of 50% guaranteed return, 30% equities, 10% real estate, and 10% fixed income. The description for this portfolio was given as “I would feel very uncomfortable if the value of my investments dropped, even in the short term. I’m willing to accept a lower long-term growth rate in order to reduce my risk.” The second option was an “aggressive portfolio” with a mix of 75% equities, 15% real estate, and 10% fixed income. It was described as: “My priority is significant long-term growth. I’m willing to accept a drop in my investments’ value, even for several years, in the hope of achieving greater longer-term growth.” Participants were asked to indicate their relative preference for these two portfolios on a 7-point scale where “1” was anchored with “I prefer the conservative portfolio” and “7” was anchored with “I prefer the aggressive portfolio.”

Finally, the third financial decision making task was an evaluation of two job opportunities. The first job, Job A had a high salary with low job security, whereas the second one, Job B, had an average salary but enjoyed high job security. Participants were asked to indicate which of the two jobs they found to be more attractive on a 7-point scale, where “1” was anchored with “I find Job A more attractive” and “7” as “I find Job B more attractive.” After completing these tasks, study participants were thanked and debriefed.

Results

***Savings estimates*.** Replicating the results of Experiment 1, and indicative of savings estimate inflation, participants assigned to the future month condition (M = \$740) provided a significantly higher estimate when compared to those in either the next month (M = \$389, $p < .01$) or the next year (M = \$303, $p < .01$) conditions.

***Future optimism regarding saving money*.** Results of an ANOVA with gender, age, employment status, and household income as covariates[6] revealed a significant difference in future optimism across the three time frames ($F(2, 122) = 9.37$, $p < .01$). None of the covariates showed significant effects ($F(1, 122) = 0.13$, $p = .72$ for age, $F(1, 122) = 0.20$, $p = .66$ for gender, $F(1, 122) = 3.00$, $p = .09$ for employment status, and $F(1, 122) = 2.45$, $p = .12$ for household income). Participants in the next month ($M = 4.48$) and the next year ($M = 4.82$) conditions did not differ from each other in their future optimism ($F(1,122) = 1.62$, $p = .21$). Those in the future month condition, however, reported a significantly higher level of future optimism regarding saving money ($M = 5.42$) than the other two conditions ($F(1,122) = 14.27$, $p < .001$ and $F(1,122) = 5.05$, $p < .05$, compared to the next month and next year conditions, respectively).

Allocation of inheritance. Results revealed a significant main effect of time frame on amount invested in the riskier venture ($F(2,122) = 3.46$, $p < .05$). Planned contrasts further revealed that participants in the future month condition (M = \$7,655) invested significantly more money in the risky venture than either the next month (M = \$5,198, $p < .05$) or the next year (M = \$5,795, $p < .05$) conditions.

Preference for aggressive portfolio. Analysis also revealed that those in the future month condition preferred the aggressive portfolio ($M = 4.33$) to a greater extent than either the next month ($M = 3.49$, $p < .05$) or the next year ($M = 3.34$, $p < .05$) conditions.

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[6] All results described in Experiment 2 are consistent as reported when: 1) no covariates were included in the analysis, and when 2) only income was included as a covariate.

Preference for job. Finally, participants in the future month condition rated the low pay/ high job security job (M = 3.88) as significantly less attractive than either the next month (M = 4.70, $p < .05$) or next year (M = 4.84, $p < .05$) conditions.

Future optimism as mediator. To test the mediation effects of future optimism on the financial decision making tasks, we closely followed the approach recently suggested by Zhao, Lynch, and Chen (2010) instead of Baron and Kenny's (1986) more commonly used methodology. Zhao, Lynch and Chen (2010) have pointed out a number of issues with the Baron and Kenny (1986) procedure and suggested a revised testing approach that provides a more nuanced analysis of mediation effects. In a nutshell, these authors recommend replacing the Baron-Kenny "three tests + Sobel" approach with a single bootstrap test of the indirect (mediated) effect (which is the multiplicative product of the path from the independent variable to the mediator and the one from the mediator to the dependent variable; Preacher & Hayes, 2008; see Zhao et al., 2010, for a detailed discussion). The results for each of the financial decision making tasks are discussed.

The findings for allocation of inheritance revealed the mean indirect effect for future optimism from the bootstrap analysis was positive and significant (575.56), with a 95% confidence interval that excluded zero (89.32 to 1278.53). In the indirect path, a change from the other time frames to future month time frame increased future optimism by .78 units on a 1 to 7 scale; holding the time frame constant, a unit increase in future optimism increased the amount invested in the riskier venture by $738.71. Furthermore, the direct effect (1579.20) of the future time frame on allocation of inheritance in riskier venture was marginally significant (p=.071); holding constant future optimism, a change from the other time frames to future time frames increased investment in the riskier venture by $1579.20. Since the indirect effect was significant and the product term of direct and indirect effects for future optimism was positive (575.56*1579.20 = +908924.35), we concluded that future optimism is a *complementary mediator* for investment in riskier venture.

The results for the respondent's preference for the aggressive portfolio (vs. the conservative one) revealed that the mean indirect effect for future optimism from the bootstrap analysis was positive and significant (.225), with a 95% confidence interval that excluded zero (.034 to .508). Considering the indirect path, a change from the other time frames to the future month time frame increased future optimism by .780 units on the 1 to 7 scale; holding the time frame constant, a unit increase in future optimism increased the preference for the aggressive portfolio by .289. In this case too, the direct effect (.694) of the future time frame on the preference for the aggressive portfolio was marginally significant (p=.056); holding constant future optimism, a change from the other time frames to the future month time frame increased the preference for the aggressive portfolio by .694 unit (on the 1-7 scale). Here, since the indirect effect was significant and the product term of direct and indirect effects for future optimism was positive (.225*.694 = +0.156), we concluded that future optimism is a *complementary mediator* for preference for aggressive portfolio.

The results for the job preference dependent variable indicated that the mean indirect effect for future optimism from the bootstrap analysis was positive and significant (.331), again with a 95% confidence interval that did not include zero (.110 to .691). In the indirect path, a change from the other time frames to the future month time frame increased future optimism by .425 units on the 1 to 7 scale; holding the time frame constant, a unit increase in future optimism decreased preference for the low pay/high job security job (relative to the high pay/low job security job) by .889. Furthermore, the direct effect (-1.221) of the future time frame on the preference for the low pay/high job security job was significant (p=.001); thus, holding future optimism constant, a change from the other time frames to the future month time frame decreased the preference for the low pay/high job security job by 1.221 unit, as measured using the 1-7 scale. Unlike the first two dependent variables, since the indirect effect was significant and the product term of direct and indirect effects for future optimism is negative (0.331*-1.221 = -0.404), we concluded that future optimism is a *competitive mediator* for the preference for low pay/high job security job.

Thus, the results of our analysis indicate that the mediation effects are consistent across all three financial decision making tasks. They show that future optimism enhances risky financial decision making. Using Baron and Kenny's (1986) terminology, these findings may be interpreted as indicating that future optimism is a *partial mediator* in all three cases.

Discussion

The results of Experiment 2 revealed that consistent with our predictions, decision makers providing a personal savings estimate for a future month not only reported higher levels of future optimism regarding saving money but also made riskier decisions in three different financial domains: those related to investing money received as an inheritance, preference for a risky vs. conservative investment strategy for their personal savings, and preference for a less stable but more financially lucrative job afterward, when compared to those providing savings estimates for either the next month or the next year. Furthermore, the decision maker's future optimism was found to fully mediate the effects of time frame on allocation of inheritance and preference for aggressive portfolio, and partially mediate the effects of time frame on job preference.

These results indicate that providing inflated estimates for a future month makes these individuals willing to make riskier financial decisions than the other groups, showing that a relatively innocuous factor such as a time frame for the savings decision has the potential to significantly impact the long-term financial outcomes for the decision maker.

CORRECTION OF SAVINGS ESTIMATE INFLATION IN THE FUTURE MONTH CONDITION

Although recommended by many personal finance experts, the results of the first two experiments indicate that providing savings estimates for a future month influences not only the magnitude of the estimate provided, but also concurrent decision making regarding personal finances. Such decision makers require a significantly larger nest egg to feel comfortable (Experiment 1), and demonstrate a preference for riskier investment and employment options (Experiment 2). Coupled with the fact that these decision makers save significantly less money subsequently (Tam & Dholakia, 2011), it appears that the savings estimate inflation in the future month condition is associated with potentially adverse financial outcomes for the individual. Next, we consider how to correct this inflation.

EXPERIMENT 3

The goal of Experiment 3 was to explore one approach to reduce the inflation bias in savings estimates generated in the future month condition. A financial planning perspective on decision making holds that when thinking about personal money management, individuals should make savings decisions in conjunction with budgeting decisions (e.g., Chieffe & Rakes, 1999; Leimberg et al., 2009). Many individuals naturally set budget limits for themselves, earmarking a certain amount of money for expenditure for a certain time period, and tracking expenses across these limits (Ülkümen, 2007). Although prior research has found that budgeting decisions are also sensitive to time frames (Ülkümen et al., 2008), the effects of providing budgeting and savings estimates jointly has not yet been examined.

However, in practice, when individuals make decisions on how much money they will save, they can use one of two different approaches: 1). How much do I think I will save? and 2). How much money will I have, after all my expenses are budgeted for? In the first case, the savings goal is considered first, gaining primacy in the decision maker's financial planning process (e.g., Clason, 2004). As results thus far have shown, such an approach results in an inflation of savings estimate for future months. The second approach, in contrast, views the savings task differently. Personal savings are viewed as money that is left over after one's expenditures have been planned, or alternatively they may be characterized as one of many expenditure categories within one's budget (Ramsey, 2007). We expect that in this latter case, because the decision maker considers the allocation of his or her monetary resources in a more holistic and comprehensive manner, the inflation bias will be ameliorated.

This is because prior research has shown that setting budgets provides a more accurate assessment of one's resources and abilities, helps in self-regulation, and enables decision makers to evaluate the affordability of goods and to allocate expenses across categories (Heath & Soll, 1996; Thaler, 1999; Ülkümen, et al., 2008). Consequently, we expect that when decision makers have to provide budgeting estimates first, they will be more realistic in their assessment, and provide a less inflated savings estimate in the future month time frame.

A second goal of this experiment was to assess the effects of savings estimates under the different conditions on actual savings behavior. Accordingly, unlike the previous experiments, this one had a second stage in which we revisited study participants and assessed their actual savings behavior. To summarize, Experiment 3 explores the effects of giving savings estimate alone versus including budgeting estimates with a 3 (time frame: next month, future month, next year) x 3 (method: savings only, savings first and then budgeting, budgeting first and then saving) experimental design to test the effects of duration and delay on individuals' personal savings estimates and their actual saving behavior.

Participants and Procedure

Two hundred and forty employed students working at least 20 hours a week (59% females, mean age=27 years, age range=20-56) were recruited from a public university and participated in this experiment for partial course credit. The study was conducted in two stages. In the first stage, participants were told that the study was about personal savings. They were randomly assigned to one of the nine between-subjects conditions. The same procedure as the previous studies was used to elicit savings estimates. Participants in the experimental conditions that included budgeting estimates were asked to think about their budget for expenses in the time period corresponding to the condition to which they were assigned. For example, in the "Next Month" condition, participants were told, "Think ahead to next month and think about all your expenses including food, entertainment, and rent/mortgage."

At the end of this stage, participants were told that they would be contacted again via email after a month and asked to provide their actual savings. They were asked to keep track of their savings carefully during this time period. As scheduled, we contacted participants after one month had passed and asked them their actual savings during the prior month. The savings estimate they had provided in the first stage was included in this follow-up email to eliminate any potential biases due to not remembering the estimate (e.g., Roy, Christenfeld, & McKenzie, 2005). After one email reminder, all participants in the first stage completed this short second-stage survey.

Results

***Savings estimates*.** Results of a 3 (time frame) x 3 (estimation method) ANOVA with gender, age, employment status, and household income as covariates[7] revealed only a significant main effect of time frame ($F(2, 227) = 11.20$, $p < .001$), but no significant effect of estimation method ($F(2, 227) = 1.674$, $p = .19$) or interaction effect of these two factors ($F(4, 227) = 1.18$, $p = .32$). A summary of the savings estimates by groups is provided in Table 1[8].

[Insert Table 1 about here]

[7] All results reported in Experiment 3 are consistent as reported when: 1) no covariates were included in the analysis, and 2) when only income was included as a covariate.
[8] To address a potential concern raised by a reviewer that the dependent variables are positively skewed, we log –transformed the savings estimates and actual savings variables, and re-conducted all the analysis that is reported here. The results obtained were substantively similar and are available upon request. Here, for ease of interpretation, we report results for the raw (untransformed) dependent variables.

To further examine the significant effect of time frame, 3 one-way ANOVAs for each of the three estimation methods were conducted because of the heterogeneous variances in different estimation methods. Each model had the savings estimate as the dependent variable, the time frame as the fixed factor, and gender, age, employment status, and household income as covariates. Results from savings estimates only condition and savings estimates first, then budgeting estimates condition revealed a significant effect of time frame (savings estimates only: $F(2,74) = 3.56$, $p = .03$; savings estimates first, then budgeting estimates: $F(2,67) = 5.53$, $p = .006$).

Replicating the results of prior studies, planned contrasts showed that participants in the next month and next year conditions did not vary in their savings estimates (savings estimates only condition: M = \$271 for next month vs. M = \$272 for next year, $F(1,74) = 0.04$, $p = .84$; savings estimates first, then budgeting estimates condition: M = \$194 for next month vs. M = \$218 for next year, $F(1,67) = 0.08$, $p = .78$) while those in the future month conditions provided a significantly higher savings estimate than either the next month (savings estimates only condition: M = \$699 for future month vs. M = \$271 for next month, $F(1,74) = 4.77$, $p = .03$; savings estimates first, then budgeting estimates condition: M = \$614 for future month vs. M = \$194 for next month, $F(1,67) = 9.13$, $p = .003$) or next year savings estimates only condition: M = \$699 for future month vs. M = \$272 for next year, $F(1,74) = 4.81$, $p = .03$; savings estimates first, then budgeting estimates condition: M = \$614 for future month vs. M = \$218 for next year, $F(1,67) = 10.30$, $p = .002$) conditions.

For the one-way ANOVA for budgeting estimates first, then savings estimates condition, the time frame effect is no longer significant ($F(2,78) = 2.46$, $p = .09$). Planned contrasts showed that when participants provided their budgeting estimates first followed by savings estimates, the savings estimates for the future month (\$355) were no longer significantly different from the ones given for the next month (\$169, $F(1,78) = 3.89$, $p = .052$) or next year (\$294, $F(1,78) = 0.69$, $p = .41$) conditions. Furthermore, the next month and next year savings estimates in this condition were similar ($F(1,78) = 2.31$, $p = .13$). These results largely supported our prediction that budgeting corrects the time frame bias on savings estimates.

Actual savings. Recall that study participants provided their actual savings for the one month after the estimates were elicited. We subjected this variable to a 3 time frame x 3 estimation method ANOVA with gender, age, employment status, and household income included as covariates. Results revealed only a significant main effect of estimation method ($F(2, 227) = 3.31$, $p < .05$), but no significant main effect of time frame ($F(2, 227) = 0.220$, $p = .80$) or interaction effect of these factors ($F(4, 227) = 0.30$, $p = .88$). A summary of the actual savings by condition is provided in Table 2.

[Insert Table 2 about here]

Similar to the analysis of savings estimates reported above, 3 one-way ANOVAs were conducted for each of the three time frames to further examine the significant effect of the estimation method. Each model had actual savings as the dependent variable, estimation method as the fixed factor, and gender, age, employment status, and household income as covariates. In the one-way ANOVAs for next month and next year conditions, the estimation method was not significant ($F(2,85) = 0.49$, $p = .62$ and $F(2,68) = 0.87$, $p = .42$ for next month, and next year models, respectively). Specifically, contrasts showed that none of the estimation methods generated different actual savings from others ($Fs(1,85) < 1.05$, $ps > .31$ for next month conditions and $Fs(1,68) < 2.35$, $ps > .13$ for next year conditions). Estimation method revealed a significant effect ($F(2,66) = 3.70$, $p = .03$) on actual savings in the one-way ANOVA for future month conditions. Contrasts showed that the savings estimates only condition ($156) and the savings estimates first, then budgeting condition ($215) did not vary in actual savings ($F(1,66) = 0.59$, $p = .45$), while budgeting estimates first, then saving estimates condition generated significant higher actual savings ($369) than either savings estimates only ($156, $F(1,66) = 7.35$, $p = .009$) or savings estimates first, then budgeting estimates condition ($215, $F(1,66) = 3.99$, $p = .049$).

A planned contrast showed that participants in the next month (*M* = $223), next year (*M* = $262), and future month (*M* = $246) conditions did not vary from each other in their personal savings estimates ($F(2,227) = 0.41$, $p = .52$) when combined across the different estimation methods. Additionally, results of a planned contrast revealed that aggregating across time frames, participants in the budgeting estimate then saving estimate condition (*M* = $333) saved significantly more money than those in the savings estimate only (*M*= $203) and saving estimate then budgeting estimate (*M* = $196) conditions ($F(1,227) = 7.35$, $p < .01$). Furthermore, the salutary effect of providing budgeting estimates first on actual savings was observed only for the future month condition ($F(1,227) = 4.13$, $p < .05$) but not for the next month ($F(1,227) = 0.88$, $p = .35$) or the next year condition ($F(1,227) = 2.69$, $p = .10$).

We also compared actual savings for the future month time frame across the estimation methods. Results revealed that respondents who formed budgeting estimates first before providing their savings estimate for the future month saved significantly more money than the other two conditions ($F(1,227) = 3.78$, $p = .05$).

***Savings estimates vs. actual savings*.** Finally, we examined whether study participants saved as much, less or more than they said they would by comparing the differences between savings estimates and actual savings within each condition. We conducted a within-group 3 (time frame) x 3 (estimation method) ANOVA with saving type (estimates vs. actual) as a fixed variable and gender, age, employment status, and household income as covariates. Results revealed a significant main effect of time frame ($F(2, 466) = 7.353$, $p < .001$) and saving type ($F(1, 466) = 4.734$, $p < .05$), but no significant main effect of estimation method ($F(2, 466) = 0.336$, $p = .71$) or interaction effect of time frame and estimate method ($F(4, 227) = 0.541$, $p = .70$). Among the covariates, household income showed a significant effect ($F(1, 466) = 4.617$, $p < .05$) indicating that higher household income generated higher saving estimates and actual savings. None of the other covariates was significant in the analysis ($Fs(1, 466) = 2.381$, $ps > .12$).

To examine the difference between saving estimates and actual savings, planned contrasts were constructed for each of the nine experimental conditions. Results showed that participants' saving estimates and actual savings were significantly different for only two of the nine experimental conditions: specific future month/saving estimates only: \$699 vs. \$156 for saving estimates and actual savings, $F(1, 466) = 17.94$, $p < .001$, and specific future month/saving estimates before budgeting estimates: \$614 vs. \$215 for saving estimates and actual savings, $F(1, 466) = 10.123$, $p < .01$). All other conditions showed that the savings estimates generated by participants were not significantly different from their actual savings (next month/saving estimates only: \$271 vs. \$208 for saving estimates and actual savings, $F(1, 466) = 0.246$, $p = 0.60$, next month/saving estimates before budgeting estimates: \$194 vs. \$182 for saving estimates and actual savings, $F(1, 466) = 0.014$, $p = 0.91$, next month/ budgeting estimates before saving estimates: \$169 vs. \$278 for saving estimates and actual savings, $F(1, 466) = 0.689$, $p = 0.41$, next year/saving estimates only: \$272 vs. \$243 for saving estimates and actual savings, $F(1, 466) = 0.005$, $p = 0.94$, next year/saving estimates before budgeting estimates: \$218 vs. \$190 for saving estimates and actual savings, $F(1, 466) = 0.026$, $p = 0.87$, next year/ budgeting estimates before saving estimates: \$352 vs. \$294 for saving estimates and actual savings, $F(1, 466) = 0.195$, $p = 0.66$, and future month/ budgeting estimates before saving estimates: \$355 vs. \$369 for saving estimates and actual savings, $F(1, 466) = 0.002$, $p = 0.97$).

Taken together, the results are consistent with the results reported by Tam and Dholakia (2011) which showed that individuals saved significantly less money after providing an estimate for a future month. Additionally, we find that this negative effect of providing future month estimates disappears when the decision maker provides budgeting estimates first followed by the savings estimate.

Discussion

The results of Experiment 3 yield a number of interesting and practically useful findings. In examining savings estimates provided in the various conditions, our results reveal that when the decision maker provides budgeting estimates first, the savings estimate inflation observed in other conditions disappears. Study participants provided about the same level of estimates in the future month condition as they did in the next month and next year conditions in this case.

Even more interesting, when examining actual savings of respondents during the following month, results showed that future month participants in the budgeting then savings condition saved significantly more money than the conditions where savings estimates were elicited alone or before the budgeting estimates, indicating that not only does the bias disappear but this method of eliciting estimates encourages the greatest amount of actual savings. Finally, our results show that the negative effect of providing future month savings estimates --- saving significantly less money than estimated --- disappears when budgeting estimates are provided first by decision makers. Together, these results indicate that taking a holistic view of their financial situation and allocating savings after considering expenses appears to be a fruitful way for decision makers of correcting for the inflation bias. Although we did not measure respondents' optimism, we note that one possible explanation for this correction is that the greater optimism in the future month condition is reduced when the decision maker has to provide budgeting estimates first.

GENERAL DISCUSSION

To combat the low personal savings rates prevalent in the United States over the last decade, many personal finance experts have suggested that individuals should make savings plans in specific future terms (e.g., Eisenberg, 2006; Ramsey, 2007). However, recent research, including the studies reported in the present paper, has found that decision makers consistently over-estimate how much they will save during a specific future month, when compared to other time frames such as next month or next year. In the current paper, we examined the consequences and correction of this savings estimate inflation in greater depth.

Across the three experiments reported herein, we found no significant differences between the next month and next year time frames in unitized savings estimates or in financial variables such as desired size of nest egg or preferred riskiness of investment or employment decisions. In contrast, after providing an inflated savings estimate, decision makers in the specific future month condition not only reported requiring a substantially larger nest egg to feel comfortable (Experiment 1) but they also preferred significantly riskier financial options in various domains (Experiment 2) such as allocating more of an inheritance to a risky business venture, preferring an aggressive investment portfolio over a conservative one, and favoring a job with high pay but low job security (vs. one with low pay and high security) to a much greater extent, when compared to the next month and next year conditions. These findings suggest that from a practical standpoint, the recommendations of many personal financial planners to make detailed savings estimates for specific future time frames may not be the best approach to get people to save money or to encourage them to make financial decisions with a greater likelihood of long-term success. The results also provide a compelling glimpse into the interconnectedness of personal finance decisions of individuals, by showing that a single financial decision – in this case, an estimate of how much money one will save in a specific time period – can impact a variety of other personal finance assessments.

Our main finding of Experiment 2, which was that the inflation bias produces riskier financial decision making in other domains, is worth exploring further. Although we found perceived optimism to mediate the effects of time frame on financial decision making, the underlying process for the working of optimism is not clear. One possibility could be that decision makers in the specific month time frame perceive the risks differently, for example, weighting the likelihoods of negative outcomes much less than those in the other time frames. Alternatively, fueled by a rosy-eyed view of the future (e.g., "I will have plenty of savings in the future"), they may be willing to take on more risk. Note that this possibility follows directly from research on the "cushioning effect" (Hsee and Weber 1999) which shows that when decision makers feel supported due to a particular reason such as having family and friends to help them should they fail, they take on more financial risk. Understanding which of these processes (or something else) drives the mediating role of optimism on financial risk taking in other domains following savings estimate inflation is a promising future research opportunity.

The present research also examined one potential means of correcting inflated savings estimates of decision makers in the specific future month time frame. Specifically, the results of our last study revealed that the savings estimate inflation can be corrected by having decision makers estimate their spending budgets before they estimate their personal savings (Experiment 3). It appears that examining one's future financial situation holistically – that is, both spending and saving – may be sufficient to counter the greater optimism induced by the specific future time frame, resulting in a more realistic and uninflated assessment of one's ability to save in the future. This particular result suggests that, for decision makers who follow the recommendations of personal financial planners and make detailed savings estimates for specific future time frames, an additional initial step of estimating spending budgets for the corresponding time frame may be crucial in generating an inflation bias-free (and more achievable) savings estimate, which could lead to actually saving more money (Tam & Dholakia, 2011). As such, these findings offer a practically feasible yet effective means of overcoming the savings estimate inflation bias and the resulting adverse effects on one's financial decisions in specific future time frames. One possibility for this finding could be participants treat the exercise of estimating a budget as if they were actually setting a budget, which takes immediate effect regardless of the budget time frame and leads to less spending. Alternatively, estimating a budget before savings could change the priority or hierarchy of spending and saving goals that controlling spending is more saliently viewed as a mean to achieve the saving goal. A third possibility could be that budgeting leads to more realistic and achievable targets, which increases motivation, and thus leads to higher savings. In contrast, failing to reach an ambitious savings goal leads to demotivation, and thus generates lower savings (Soman & Cheema, 2004).

It is important to point out here that one aspect of saving money that we did not consider, but which warrants further attention in light of the present research, is the prior track record of decision makers. People who have been making budgets, saving money and reviewing their personal finances regularly in the past are likely to form more accurate estimates of spending and saving and are likely to have well-developed personal finance plans (Ramsey, 2007). In contrast, those who have not saved money regularly or paid attention to their personal finances before are likely to form more biased estimates and will be more likely to over-predict how much money they will save. Although our experimental approach ensured random assignment of decision makers with different track records of savings across the different duration and delay conditions in the four experiments, the interaction of prior savings track record with duration and delay of the savings time period needs further study.

The current research focused on the consequences of biased personal savings estimates in financial decision making. Another important piece is the antecedents of biased personal savings estimates. Fishbach and Dhar (2005) found the “goal as excuse” effect which is that people with higher perceived goal progress were more likely to engage in goal-incongruent choices. When considering personal savings, people face at least two incongruent goals: saving for future security versus spending for present pleasure. According to the “goal as excuse” effect (Fishbach & Dhar, 2005), people who have made better progress in their personal savings goal are more likely to spend than save. Again, although our experimental design was geared to apply random assignment of participants with various degree of perceived goal progress of their personal savings – a factor which we did not explicitly consider herein, future study should examine the effect of this factor on personal savings decisions specifically, and financial decision making more generally.

Finally, it is worth pointing out that the participants in our experiments were predominantly working and college-going American adults. As such, we do not advocate generalizing the results of our studies beyond these national and socio-economic boundaries. Unlike many other psychological phenomena, savings decision making has significant cultural and societal elements in how it unfolds. For example, given the high savings rate in China (25% of disposable household income, 42.5% of Gross Domestic Product, see Kuijs, 2005), the baseline for formulating a savings goal is likely to be starkly different there. Delaying saving money in favor of consuming now would imply the implicit acceptance of a much higher and an almost impossible-to-achieve goal in the future in this case. Therefore, it seems crucial to us to replicate the current studies in other cultures and communities to get a better sense of how decision makers that belong to those groups make personal savings and other financial decisions. Along similar lines, it is important to extend the findings of the present study by examining personal savings decision making even among low-income US households, who face a unique and significant set of challenges when attempting to save money (Sherraden & McBride, 2010). The challenges faced by these decision makers, such as lack of access to savings instruments, unstable employment, and vulnerability to predatory lenders, are likely to significantly affect savings decisions and behaviors, which merit research attention.

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TABLE 1. Actual savings in month after intervention, Experiment 3.

	Next month	Next year	Future month	Average (across time frames)
Savings estimate only	$271	$272	$699	$395
Savings estimate first, then budgeting estimate	$194	$218	$614	$345
Budgeting estimates first, then saving estimate	$169	$294	$355	$271
Average (across elicitation methods)	$209	$265	$559	$334

TABLE 2. Actual savings by time frame and elicitation method, Experiment 3.

	Next month	Next year	Future month	Average (across time frames)
Savings estimate only	$208	$243	$156	$203
Savings estimates first, then budgeting estimates	$182	$190	$215	$196
Budgeting estimates first, then saving estimates	$278	$352	$369	$333
Average (across elicitation methods)	$223	$262	$246	$247