TIAA-CREF institute

RESEARCH DIALOGUE

Issue no. 124

DECEMBER 2015

SAVE MORE LATER? THE EFFECT OF THE OPTION TO CHOOSE DELAYED SAVINGS RATE INCREASES ON RETIREMENT WEALTH

John Beshears
Harvard University and NBER

Hengchen Dai
University of Pennsylvania

Katherine L. Milkman
University of Pennsylvania

Shlomo Benartzi
University of California, Los Angeles

ABSTRACT

Prior research in economics and psychology has documented that individuals exhibit time-inconsistent preferences when faced with the opportunity to take an action that involves immediate costs in return for future benefits – the notion of implementing such an action now is unappealing, but the notion of implementing the same action later is attractive. Because increasing contributions to a retirement savings plan requires a reduction in current consumption (an immediate cost) in order to increase consumption in old age (a future benefit), individuals may be more likely to agree to a contribution rate increase if they have the option to have the increase implemented at a delay. We conducted a field experiment with several universities to test whether the option to choose a delayed contribution rate increase boosts savings. Relative to employees who are offered a convenient mechanism for increasing their contribution rates immediately, employees who are offered a convenient mechanism for increasing their contribution rates immediately *or* at a delay are no more likely to agree to an increase. In fact, the latter group exhibits lower savings rates over the coming months, as the delayed option attracts some employees. However, when the delayed option is framed as being implemented after a psychologically meaningful moment, such as an employee's next birthday, the negative effect of offering a delayed option is undone.

We thank our partners at the universities and at the retirement savings plan administrator for implementing the experiment, and we thank Hae Nim Lee for excellent research assistance. We acknowledge financial support from the National Institute on Aging (grants P01AG005842 and P30AG034532), the Social Security Administration (grant RRC08098400-06-00 to the National Bureau of Economic Research as part of the SSA Retirement Research Consortium), and the TIAA-CREF Institute. The opinions and conclusions expressed are solely those of the authors and do not represent the opinions or policy of NIA, SSA, any agency of the Federal Government, the TIAA-CREF Institute, or the NBER. Benartzi is the Chief Behavioral Economist at the Allianz Global Investors Center for Behavioral Finance. See the authors' websites for a complete list of outside activities.

It is more important than ever to find effective ways to encourage workers to set aside money for retirement. This is due to the recent increase in defined contribution pension plans in the United States and simultaneous decline in defined benefit pension plans. Since they are now responsible for their own long-term financial well-being, and since savings rates are quite low, Americans must begin saving at a dramatically higher rate; if they do not, millions will not have enough resources to support themselves in retirement (Munnell, Webb and Golub-Sass, 2012). One major psychological obstacle to increasing savings rates is present bias, or the tendency to dramatically overweight immediate utility relative to future utility. In light of present bias, making short-term sacrifices like spending less to produce long-term benefits like a comfortable retirement is a major challenge for many individuals (Angeletos et al., 2001; Benartzi, Peleg, Thaler, 2012). In this paper, we rely on a field experiment to test the efficacy of two novel interventions designed to tackle present bias as an obstacle to increasing retirement savings rates.

A large and influential literature suggests that choosing for later (as opposed to now) reduces present bias, making it more likely that we will do what is in our long-term best interest (see Milkman, Rogers and Bazerman, 2008 for a review). For example, making choices that will take effect in the future rather than now leads people to select healthier foods (Read and Van Leeuwen, 1998; Milkman, Rogers and Bazerman, 2010) and more educational films (Read, Loewenstein and Kalyanaraman, 1999; Milkman, Rogers and Bazerman, 2009), donate more to charity (Rogers and Bazerman, 2008; Breman, 2011), and discount future cash flows less steeply (Ainslie and Handel, 1983). In the domain of retirement savings, the benefits of choosing in advance have not been explicitly tested, but one influential field study of a program called "Save More Tomorrow" (SMarT) revealed that people save dramatically more for retirement when offered the opportunity to commit to diverting a subset of the proceeds of their future pay raises to a retirement savings account (Benartzi and Thaler, 2004). SMarT's success has been attributed to two sources. First, SMarT allows people to start saving later rather than now, and as described above, choosing for later typically leads us to do what is in our long-term best interest (e.g., saving) at a higher rate. Second, SMarT prevents savers from experiencing a decrease in their take-home pay, since the program only takes savings out of raises; this may contribute to its appeal because people find losses from a current reference point (like a reference paycheck) extremely aversive (Kahneman and Tversky, 1979). Importantly, however, the benefits of SMarT have not been tested experimentally, nor have scholars confirmed the presumed sources of the program's effectiveness. One goal of this paper is to isolate the effect of offering individuals an opportunity to begin saving later. A second goal is to evaluate *what* proposed time delay for increasing saving produces the highest net retirement savings contribution rates.

A third goal of this paper also relates to temporal effects on retirement savings, namely, the open question of whether delayed savings can be made yet more attractive by leveraging cyclical declines in present bias. Research on "the fresh start effect" suggests that there are certain, recurring points in time when we are particularly motivated to engage in future-oriented behaviors, or in other words, when we are less present-biased. Specifically, we make more future-oriented choices following "temporal landmarks" (Dai, Milkman and Riis, in press; 2014), or dates such as birthdays and holidays that segment our continuous lifetimes by "stand[ing] in marked contrast to the seemingly unending stream of trivial and ordinary occurrences that happen to us everyday" (Shum 1998, p. 423). Recent studies have shown that people search more for the term "diet" on Google, visit the gym more frequently, and create more health-related and health-irrelevant goals following temporal landmarks (Dai, Milkman and Riis, in press). Temporal landmarks that stand between us and a future date make that future date feel more distant (Tu and Soman, 2013). Further, when they arise, temporal landmarks segregate us from our past failures, creating the perception that the "old me" failed, but the "new me" has a clean slate and is thus more capable of taking difficult but beneficial future-oriented actions (Dai, Milkman and Riis, 2014). Merely reminding someone about an upcoming temporal landmark in the laboratory (e.g., that March 20th is the first day of spring) increases that individual's interest in pursuing future-oriented behaviors (i.e., goal pursuit) following the upcoming date in question. In this paper, we explore whether offering people the opportunity to begin saving after a future date that is highlighted as a temporal landmark (e.g., "following your next birthday"; "following New Year's") may increase retirement savings contributions over and above simply offering the opportunity to delay savings increases by an equivalent amount.

In order to (1) test whether people save more for retirement when given the option to put off savings increases until the future, (2) evaluate the ideal time delay to offer, and (3) examine the benefits of framing the chance to delay as an opportunity to start saving *after* a temporal landmark, we conducted a between-subjects field experiment with a sample of 8,251 employees of four major U.S. universities.[1] We studied employees' retirement savings contribution rates for nine months following their receipt of a mailing encouraging them to either enroll in a retirement savings plan or increase their monthly contributions to an existing retirement savings plan. The mailings allowed employees to enroll in a retirement savings plan at a default savings rate in a default investment vehicle (or increase their contribution rate in an existing investment up to a default quantity) by returning a signed, pre-stamped, pre-addressed postcard with a box checked indicating that they wanted to begin saving now (or later, in some experimental conditions). Past research has shown that such simplified enrollment and escalation mailings are an effective means of increasing retirement savings rates (Beshears et al., 2013). We randomly assigned participants to receive mailings that invited them to begin saving more (a) now (*no delay condition*), (b) now *or* later (*standard delay*), or (c) now *or* after a temporal landmark (e.g., after their next birthday, after New Year's; *framed delay*). We also experimentally varied the time delay offered in the delay conditions, which ranged from two months to six months. We predicted that we would observe the largest net increase in employees' retirement contributions over the nine-month period following our mailing in the *framed delay condition*, followed by the *standard delay condition*, with employees in the *no delay condition* contributing the least to their retirement savings plan.

2. FIELD EXPERIMENT: HOW DELAYED OPTIONS AFFECT RETIREMENT SAVINGS

2.1. Experimental Methods

The four U.S. universities involved in our field experiment first identified a retirement savings plan to which they would like to increase employees' contributions (hereafter referred to as the *targeted plan*). In all universities, mailings were sent out to employees who were not enrolled in the targeted plan and had a contribution rate of zero. In one university (hereafter referred to as School D), mailings were also sent out to employees who had a positive contribution rate but were not contributing at the level necessary to obtain the full employer match. One of the retirement plan record keepers for these universities sent out mailings in early October 2013 to university employees' homes. The mailings provided employees with an opportunity to either begin saving (for those not enrolled) or increase their savings contributions (for those enrolled but saving at a low rate) by filling out and mailing back a simple form.

Randomization was stratified at the birth month level, and employees were randomized into three primary conditions: the *no delay condition*, the *standard delay condition*, and the *framed delay condition*. Employees assigned to the no delay condition were encouraged to sign up to save (or to save more) immediately. Those assigned to the standard delay condition were given the opportunity to sign up to save (or to save more) either immediately or after a time delay (e.g., "in three months") ranging from two to six months. Finally, those in the framed delay condition received a mailing identical to those received by employees in the standard delay condition, except the time delay reference (e.g., "in three months") was replaced by a reference to a temporal landmark with the same time delay (e.g., "following your next birthday," "following Thanksgiving"). The temporal landmarks were either holidays (Thanksgiving, New Year's, Martin Luther King Day, Valentine's Day, and the first day of spring) or employees' birthdays.

Since delayed savings opportunities were offered in the five months following our experimental mailing (November 2013–March 2014), only employees whose birthday fell into this period could be randomized to receive a message offering them the opportunity to begin saving after their next birthday. Thus, prior to randomization, employees were divided into two sub-groups: those with birthdays between November and March (hereafter the *birthday group*), and others (hereafter the *no birthday group*). They were then randomized to conditions as illustrated in Figure 1. Specifically, those with birthdays between November and March were divided evenly between four experimental conditions: the no delay condition, the

1 We originally included a fifth university in the experiment. However, this university offers generous employer contributions that are not contingent on employee contributions, and it requires employees to elect dollar contribution amounts instead of contribution rates. As a result, the mailings used for this university required a different design, and response rates to the mailings at this university were extremely low, making it impossible to perform a meaningful analysis of the effect of different experimental treatments. We therefore drop this university from our analysis.

standard delay condition, and two sub-categories of the framed delay condition—the *birthday-framed delay condition* that offered employees an opportunity to begin saving following their next birthday and the and the *holiday-framed delay condition* that associated the time delay with a future holiday. The delay offered to employees in the birthday group was determined by their birth month. For instance, consider an employee whose birthday is in December. Recall that our mailings went out in early October. If this employee were assigned to the standard delay condition, she would be offered the opportunity to start saving "in three months" (or in January).

If she were assigned to the holiday-framed delay condition, she would be offered the opportunity to start saving after New Year's (or in January), since New Year's corresponds to a three-month delay. If she were assigned to the birthday-framed delay condition, she would be offered the opportunity to start saving after her next birthday (again, in January).

Those with birthdays between April and October were divided evenly between the no delay condition, the standard delay condition, and the framed delay condition—which was essentially the holiday-framed delay condition. The delay offered to employees in the no birthday group was randomized to be from two to six months (in the standard delay condition) or from Thanksgiving to Spring Equinox (in the framed delay condition). For proper comparison across assigned groups, every employee in the framed delay condition was yoked with an employee in the standard delay condition who was offered the opportunity to start saving (or save more) at the same time delay. For example, an employee who was randomly assigned to have the opportunity to begin saving after New Year's was yoked with an employee who had the opportunity to begin saving in three months. Notably, past research suggests that New Year's is a particularly meaningful fresh start opportunity (Dai, Milkman and Riis, 2014). Thus, among employees in the framed delay condition, we oversampled assignment to the "after New Year's" time delay. Correspondingly, we oversampled assignment to the three-month delay in the standard delay condition.

To protect the anonymity of our four university partners, we will simply refer to them as Schools A, B, C and D. For all schools, the targeted fund was a lifecycle fund. Lifecycle funds enable employees to have a diversified portfolio with a mixture of equity, bond and money market funds tailored to the employee's age. The contribution rate suggested by the mailings sent out was 3% of the employee's pay for all partners but School D, which had a suggested rate of 5%. The suggested rate was 5% for School D because School D matches employees' contributions dollar-for-dollar up to 5% of the employee's base salary. Detailed information about the targeted plans can be found in Table 1, and information about non-targeted savings plans is in Appendix A.

2.2. Data

We analyze the data provided by four university partners. These universities pulled a cross-sectional snapshot of all employees in August 2013 including information about each employee's: (1) current contributions to the savings plan targeted in our mailings, (2) current contributions to all other non-targeted savings plans, (3) birth date, (4) hire date, (5) termination date, (6) salary, and (7) position (indicator for faculty versus staff). We relied on information from this first data pull to conduct our stratified random assignment of employees to experimental conditions. We then received data from our university partners including information on each employee's contributions to the targeted retirement savings plan and all other retirement savings plans as well as their pay for each pay cycle through June 2014.

2.3. Variables and Analysis Strategy

To capture the effect of the different experimental treatments on savings, we use the two outcome variables described below and calculate these variables for both the targeted plan and all available plans (including the targeted and non-targeted plans) for each employee.

Average contribution rate. For every employee, we calculate her average contribution rate during November 2013 through June 2014. Specifically, we calculate the total number of dollars the employee contributed to the targeted plan (or all plans) during November 2013 through June 2014, divided by her total pay during November 2013 through June 2014.

We calculate a savings rate over this time period because November 2013 is the first month during which contribution rate increases triggered by responses to our mailing were implemented, while June 2014 is the latest month for which we have data on contributions and pay.

Higher contribution indicator. For every employee, we construct a variable indicating whether or not the employee's May 2014 contribution rate to the targeted plan (or all plans) is higher than the employee's September 2013 contribution rate to the targeted plan (or all plans). We choose September 2013 and May 2014 as the two relevant months because the mailings were sent in October 2013 and because April 2014 was the last month during which contribution rate increases triggered by responses to the mailing were implemented. Thus, comparing September 2013 to May 2014 captures all contribution rate increases that could have been the direct result of our mailing.

We use ordinary least squares (OLS) regressions to predict our outcome variables, *average contribution rate* and *higher contribution indicator*. We first rely on the following regression specification to test the differences in average contribution rate between the no delay, standard delay, and framed delay conditions:

$$average\ contribution\ rate_i = framed\ delay\ indicator_i + delay\ indicator_i + X_i + \varepsilon_i \qquad (1)$$

where *i* indexes an employee. The first predictor variable, the *framed delay indicator*, indicates whether or not a given employee received a mailing offering a delayed option that was associated with a temporal landmark (either a holiday or the employee's next birthday). This variable takes a value of one for employees in the framed delay condition and zero for employees in any of other conditions. Our second predictor variable, the *delay indicator*, indicates whether or not a given employee received a mailing offering any form of time delay option. This variable takes a value of one for both employees in the standard delay condition and those in the framed delay condition. Altogether, the coefficient on the framed delay indicator reflects the difference in average contribution rates between the standard delay and framed delay conditions, whereas the coefficient on the delay indicator reflects the difference in average contribution rates between the standard delay and no delay conditions. X_i is a vector of controls, including gender, age decile, tenure decile, salary decile, faculty status, and birth month. We allow the coefficients on the control variables to vary by university and calculate decile breakpoints separately for each university.[2] We report robust standard errors (ε_i).

We conduct further analysis to understand whether it is more effective to associate a time delay with a future holiday or with an employee's next birthday. As described earlier in the Methods section, employees in the birthday group with November–March birth months were randomly assigned to four groups: the no delay group, the standard delay group, the birthday-framed delay group, and the holiday-framed delay group. Employees in the no birthday group with April–October birth months were randomly assigned to eleven different groups: the no delay group, standard delays of 2-6 months (i.e., five sub-groups of the standard delay condition), and holiday-framed delays of 2-6 months (i.e., five sub-groups of the framed delay condition). As a result, we can only compare the effect of birthday framing with the effect of holiday framing among employees in the birthday group. Consequently, we use the following regression specification to separately estimate the effects of different framings and delays for employees with November–March birth months versus those with April–October birth months:

$$\begin{aligned} &average\ contribution\ rate_i = \\ &(birthday\text{-}framed\ delay\ indicator_i + \ holiday\text{-}framed\ delay\ indicator_i + \\ &delay\ indicator_i) + \\ &indicators\ of\ different\ delay\ options\ for\ the\ no\ birthday\ group_i + X_i + \varepsilon_i \end{aligned} \qquad (2)$$

2 As explained earlier, School D sent mailings to employees who were not enrolled in the targeted plan as well as employees who were not contributing sufficiently to obtain the full employer match. We allow the coefficients on the control variables and decile breakpoints to differ between these two groups of employees in School D.

where *i* indexes an employee and X_i is the same vector of controls included in (1). The first three predictor variables were used to classify employees in the birthday group based on the experimental group they were randomly assigned to. Specifically, the *birthday-framed delay indicator* equals one if a given employee in the birthday group received a mailing offering her the opportunity to begin saving after her next birthday, and equals zero otherwise. The *holiday-framed delay indicator* equals one if a given employee in the birthday group received a mailing offering her the opportunity to begin saving after a holiday, and equals zero otherwise. The *delay indicator* equals one if a given employee in the birthday group received any of the three delay options (i.e., standard delay, birthday-framed delay, or holiday-framed delay), and equals zero otherwise. These three predictor variables allow us to compare the effects of birthday framing, holiday framing, and neutral framing on savings among employees in the birthday group.

$Indicators\ of\ different\ delay\ options\ for\ the\ no\ birthday\ group_i$ represent a vector of predictor variables that classify employees in the no birthday group based on the experimental group they were randomly assigned to. Specifically, we include indicators for five standard delay groups and five holiday-framed delay groups, with the no delay group being the omitted reference group. These predictor variables allow us to compare the effect of offering a standard delay with the effect of framing the same time delay in relationship to a holiday. Also, the indicators for the five standard delay groups allow us to compare across different lengths of delays, and the indicators for the five holiday-framed delay groups allow us to compare across different holiday framings.[3]

To examine how our interventions affect the likelihood of employees increasing their contribution rates from September 2013 to May 2014, we use the same regression specifications (1) and (2) to predict the other outcome variable, the higher contribution indicator.

2.4. Results

2.4.1. Employee Characteristics across Conditions

Table 2 summarizes the characteristics of the employees in our experiment. Slightly more than half of the employees are female. The mean age is 43 years, and the mean tenure at the university is 9.5 years. The mean salary is nearly $60,000 annually, and slightly more than one in ten employees in the sample is a faculty member. Statistical tests comparing these characteristics across our three primary experimental conditions (no delay, standard delay, and framed delay) indicate that the conditions are balanced. The only statistically significant differences are for the mean salary of the no delay condition, which is less than the mean salary of the standard delay condition and the mean salary of the framed delay condition. The no delay condition also has a higher fraction of females compared to the framed delay condition, although this difference is only marginally statistically significant. We control for all of these characteristics in our analysis of treatment effects.

2.4.2. The Effect of the Mail Campaign Overall

Before studying the effect of different versions of our mailing on savings, we analyze the effect of the mail campaign overall. That is, we first examine whether sending people mailings like ours *per se* can increase retirement savings. Mailings were sent to employees' homes in October 2013, and employees who responded to the no delay mailing had their contribution rate increases implemented over the course of November 2013. To capture the overall impact of the mailing, we examine employees who received the no delay mailing, and compare their contribution rates in the targeted plans in December 2013 to their contribution rates in the targeted plans in October 2013. We observe that slightly more than 6% of employees in the no delay condition had a higher contribution rate in December 2013 than in October 2013. As a benchmark, we study the same group of employees but compare their contribution rates in the targeted plans in October 2013 to their contribution rates in the targeted plans in August 2013. Since targeted employees were identified by each

3 Recall that employees in the no birthday group were *randomly* assigned to have a delay corresponding one of the five lengths of delays or one of the five holidays; however, employees in the birthday group received a time delay that was determined by their birth month and thus was not exogenous. Therefore, we can only examine the effects of different lengths of delays and different holiday framings among employees in the no birthday group.

university in August 2013, increases in contribution rates between August 2013 and October 2013 (the time of our mailing) reflect how contribution rates might have changed between October 2013 and December 2013 if our mail campaign were not implemented. Less than 4% of employees had a higher contribution rate in October 2013 than in August 2013. The difference between the August–October rate of contribution increases and the October–December rate of contribution increases is highly statistically significant ($p < 0.001$). While we cannot rule out seasonal effects as an alternative explanation for this finding, the evidence suggesting that the mailing has a positive overall impact on savings is consistent with previous work on simplified contribution increase mechanisms (Beshears et al., 2013).

2.4.2. The Effect of Fresh Start Framing

Table 3 reports the results from OLS regressions where the dependent variable is the average contribution rate or the higher contribution indicator for either targeted plans or all plans. Model 1 shows the results from a regression predicting the average contribution rate for targeted plans. The positive coefficient on the framed delay indicator ($p < 0.10$) indicates that relative to the standard delay condition, the framed delay treatment marginally significantly increases average contribution rates for targeted plans by 10 basis points of pay. Model 2 examines differences in average contribution rates for all plans and shows that the framed delay condition has (directionally) higher average contribution rates than the standard delay condition ($p = 0.19$). In Models 3 and 4, the dependent variable is the higher contribution indicator. These models show that employees in the framed delay condition are more likely than employees in the standard delay condition to have a higher contribution rate in May 2014 relative to September 2013, although the differences are not statistically significant for either targeted plans ($p = 0.60$) or for all plans ($p = 0.43$).

To further understand what drives the positive framing effect on average contribution rates, we separately test the effects of birthday framing and holiday framing using regression specification (2) described earlier. First, we focus on employees with November–March birth months. The first half of Table 4 suggests that the positive effect of a framed delay on savings is concentrated in the birthday-framed delay group. Specifically, Model 1 shows that compared with the standard delay group, associating a time delay with an employee's next birthday increases average contribution rates for targeted plans by 22 basis points of pay ($p < 0.05$). Model 2 suggests that the effect of birthday framing on savings becomes stronger for all plans, with birthday framing increasing average contribution rates for all plans by 33 basis points of pay ($p < 0.05$). Further, Models 3 and 4 indicate that the birthday-framed delay group also has a higher likelihood of exhibiting a higher contribution rate in May 2014 versus September 2013 than the standard delay group ($p < 0.10$ for targeted plans and $p < 0.05$ for all plans). In terms of the effects of holiday framing, Models 1–4 altogether show that average contribution rates and the likelihood of exhibiting a higher contribution rate in May 2014 versus September 2013 are higher in the holiday-framed delay group than in the standard delay group, but the differences are not statistically significant (all p's > 0.20). Figure 2 displays the predicted values of our outcome variables (the average contribution rate and the higher contribution indicator) in each condition for both targeted plans and all plans among employees with November–March birth months. All control variables are fixed at their means.

The second half of Table 4 compares different holidays to their corresponding standard delays among employees with April–October birth months. The only holiday that is remarkable is the spring equinox, which leads to the highest average contribution rate and the highest likelihood of exhibiting increased contribution rates from September 2013 to May 2014 among all of the ten delay groups (including five standard delay groups and five holiday-framed delay groups).[4] However, this finding is not predicted ex ante and likely the result of sampling noise.

4 Compared to its corresponding six-month standard delay, framing a six-month delay in relation to the spring equinox increases average contribution rates ($p < 0.05$ for targeted plans and $p < 0.10$ for all plans).

2.4.3. The Effect of Offering a Delayed Option

Next, we turn to examine how offering a delayed option per se without framing affects savings. Contrary to our hypothesis, Model 1 in Table 3 indicates that offering a standard delay, which does not frame the delay in terms of temporal landmarks such as holidays or birthdays, decreases average contribution rates for targeted plans by 14 basis points of pay ($p < 0.05$). Model 2 indicates a stronger negative effect of offering a standard delay on savings for all plans: average contribution rates for all plans are lower in the standard delay group than in the no delay group by 27 basis points of pay ($p < 0.01$).

The impact of offering a delayed option on average contribution rates can be broken down into two different effects. First, the availability of a delayed option may cause an employee to agree to increase her contribution rate when that employee would not have otherwise agreed to such an increase. This first effect should lead to an increase in savings. Second, the availability of a delayed option may decrease savings by shortening the length of time during which an employee has a higher contribution rate. The finding that the standard delay group has lower savings overall than the no delay group (Models 1 and 2 in Table 3) indicates that the second effect dominates. However, it is theoretically possible that a longer time horizon for measuring average contribution rates would reverse this conclusion, as the greater number of people saving at a higher contribution rate eventually outweighs the temporarily low contribution rates induced by the delayed option. Models 3 and 4 in Table 3 where the dependent measure is the higher contribution indicator suggest that this possibility is unlikely. If anything, employees in the standard delay group are *less* likely than employees in the no delay group to have a higher contribution rate in May 2014 versus September 2013, although this effect is not statistically significant for targeted plans or all plans (both ps > 0.17).

The aforementioned results with respect to the effect of offering a standard delay option are replicated in Table 4. Among employees with November–March birth months, offering a standard delay option lowers both average contribution rates and the likelihood of employees increasing their contribution rates from September 2013 to May 2014, although the differences are not statistically significant (all p's > 0.11). Among employees with April–October birth months, average contribution rates and the likelihood of exhibiting a higher contribution rate in May 2014 versus September 2013 are generally lower for the standard delay groups than the no delay group regardless of the length of delay. In fact, there is no discernible pattern related to the number of months of delay.

2.4.4. Robustness Checks

Our results are robust to various robustness checks (e.g., using a logistic regression rather than an OLS model to predict the higher contribution indicator), though the statistical significance of a few predictor variables changes in a couple of cases. Detailed descriptions and regression results are reported in Appendix B.

2.5. Discussion

Our field experiment has two primary findings. First, it shows that relative to offering people the option to save more at a standard time delay (e.g., "in two months"), associating the time delay with a future temporal landmark—particularly with an employee's next birthday— can increase average contribution rates. Second, contrary to our hypothesis, offering the standard delay option does not lead more people to sign up to increase their savings. As a result, the presence of a standard delay option decreases overall retirement wealth because some people selected the delayed option and had a higher contribution rate for a shorter period of time. The negative effect of offering a standard delay option on savings seemingly contradicts the well-established success of the SMarT program (Benartzi & Thaler, 2004) as well as past research showing that choosing for later (as opposed to now) increases people's willingness to pursue their long-term interests (e.g., Milkman et al., 2009). As explained in the introduction, it is important to note that our experimental design differs in a few important aspects from (a) SMarT's design and (b) the paradigm that past research has used to examine dynamic inconsistency. Specifically, employees in the standard delay condition of our field experiment were offered both the option to save more later and the option to save more now. When the immediate enrollment option and the delayed enrollment option were simultaneously presented, employees might infer that the human resources (HR) department

at their university did not strongly recommend retirement savings because otherwise the HR department would have prompted them to sign up immediately by only offering the immediate enrollment option. Such an inference about the HR department's recommendation may lead employees to sign up for the savings program at a lower rate than they otherwise would if they were only provided with the immediate enrollment option. We conducted a laboratory experiment to test this possibility.

3. LABORATORY EXPERIMENT: RECOMMENDATION IMPLICIT IN MAILINGS

3.1. Method

We recruited participants through Amazon's Mechanical Turk (an online labor market) to take a short survey. Participants were first asked to imagine that the human resources (HR) department at Company X planned to send its employees mailings about the company's retirement savings program and was choosing between two messaging strategies suggested by an outside consultant. This laboratory experiment compared three messaging strategies. See Supplementary Materials for our complete study materials.

- The *no delay mailing* encourages employees to sign up for Company X's retirement savings plan immediately. We adapted the mailing from the mailings sent to employees in the no delay condition of our field experiment but replaced references to universities and their specific retirement savings plans with references to Company X and its hypothetical retirement savings program.
- The *standard delay mailing* offers employees two options: the option to start contributing to Company X's retirement savings program immediately and the option to start contributing in six months. We adapted the mailing from the mailings sent to employees in the six-month standard delay condition of our field experiment.
- The *make-up delay mailing* consists of two stages. At Stage I, the mailing is identical to the *no delay mailing* which invites employees to enroll in Company X's retirement savings program immediately. If an employee does not reply to the no delay mailing quickly, the HR department will go on to Stage II and send the employee a follow-up mailing that offers her the opportunity to enroll in the program in six months. We adapted the Stage II mailing from the *standard delay mailing* but only kept the delayed option. This messaging strategy was designed to resemble how the SMarT program was implemented in some cases (Benartzi & Thaler, 2004).

Participants were randomly assigned to read two of the three messaging strategies. We used four comprehension check questions to assess participants' understanding of (a) what options employees would have if Company X chose a given messaging strategy and (b) how an employee's average contribution to Company X's retirement savings plan would change in eight months if he chose to enroll later (as opposed to now). The 473 participants (40% females, two unspecified; M_{age} = 33.07) who passed our comprehension check questions went on to complete our survey and comprised our actual study sample. Participants who failed our comprehension check questions exited our survey.

Participants were asked to imagine that the HR department decided to use one of the two messaging strategies. Hereafter, we refer to the selected messaging strategy as the *endorsed strategy* and the unselected messaging strategy as the *alternative strategy*. Each participant was presented with one of three pairs of messaging strategies and was informed that one of the two strategies within the pair had been selected as the endorsed strategy. Thus, we had a 3 x 2 between-subjects design with six experimental conditions. For each pair of messaging strategies, we counterbalanced the presentation order of the two strategies as well as whether the first or second strategy was endorsed. There was no order effect on our measure of interest described below (all p's > 0.15). Therefore, we collapsed the data to only focus on the six between-subjects experimental conditions when reporting the results later.

Our primary measure of interest is participants' inferences about how urgently and strongly the HR department encourages retirement savings (adapted from McKenzie, Liersch, & Finkelstein, 2006). Specifically, participants were asked to rate what they thought "choosing this messaging strategy (rather than the other messaging strategy) says about

the HR staff's view about what employees should do" on a 1–5 scale (1 = Their choice tells me nothing about their views on what employees should do; 5 = Their choice tells me they believe it is urgent that employees should enroll in the retirement savings program).

3.2. Results

Figure 3 plots the mean of participants' ratings about how strongly the HR department encouraged retirement savings based on the endorsed strategy. First, we examine responses from participants who were randomly assigned to compare the no delay mailing and the standard delay mailing, the two version of mailings that corresponded to the no delay and standard delay conditions in our field experiment. We expected that compared with the no delay mailing, offering a delayed option in the standard delay mailing would signal that the HR department was not strongly encouraging the sign up for the savings program. Indeed, the company's decision to use the standard delay mailing implied to participants that the HR department was less enthusiastically recommending retirement savings (M = 2.92, SD = 1.17), compared with the company's decision to use the no delay mailing (M = 4.05, SD = 1.12), $t(169) = 6.41$, $p < 0.0001$. This comparison is depicted in Panel A of Figure 3.

Next, we compare the standard delay mailing with the make-up delay mailing (Panel B of Figure 3). Though both mailing strategies involve offering a delayed option, the timing of the delayed option is different. The standard delay mailing—which offers a delayed option simultaneously with an immediate enrollment option—may be interpreted as a signal that the HR department was not seriously recommending increasing savings. In contrast, the make-up delay mailing strategy—which offers people the option to save more later in a second mailing *only* if they do not respond to the first mailing encouraging immediate enrollment—may be interpreted as a signal that the HR department considers retirement savings to be hugely important. Indeed, participants believed that enrolling in the retirement savings program was recommended by the HR department less zealously if the HR department chose the standard delay mailing (M = 2.86, SD = 1.00) than if the HR department chose the make-up delay mailing (M = 3.78, SD = 1.31), $t(156) = 2.69$, $p < 0.0001$.

Last, we compare the no delay mailing with the make-up delay mailing (Panel C of Figure 3). Note that the two mailings are identical except that the make-up delay mailing strategy involves a second-stage mailing targeted at people who did not respond to the initial, no-delay mailing at the first stage. Thus, we expected that the make-up delay mailing should signal the HR department's strong recommendation. Indeed, participants rated that the HR department was more enthusiastically recommending employees to enroll in the retirement savings program if the HR department chose the make-up delay mailing (M = 4.00, SD = 1.02) than if the HR department chose the no delay mailing (M = 3.49, SD = 1.18), $t(142) = 2.69$, $p < 0.0001$.[5]

CONCLUSION

Despite the suggestion from previous research that having the option to delay the implementation of a contribution rate increase leads to higher savings, our field experiment indicates that offering an option to delay leads to less retirement wealth accumulation. However, the evidence suggests that framing the delay in relationship to a future temporal landmark, such as a birthday, increases savings relative to framing the delay in a neutral fashion. Future research should explore techniques for taking advantage of framing related to future temporal landmarks without triggering the negative consequences of the availability of delayed implementation.

5 We also collected a secondary measure that asked participants to predict which one of the two messaging strategies presented to them would lead to higher average contribution rates. Consistent with our speculation that recommendation implicit in mailings affects savings, people tended to expect that the messaging strategy which signaled the HR department's stronger recommendation would result in higher total contributions than the messaging strategy which signaled the HR department's weaker recommendation. See Appendix C for details about the measure and results.

REFERENCES

Ainslie, G., & Haendel, V. (1983). The motives of the will. In E. Gottheil, K. A. Druley, T. E. Skoloda, & H. M. Waxman (Eds.), *Etiologic Aspects of Alcohol and Drug Abuse*. Springfield, IL: Charles C. Thomas, 119-140.

Angeletos, G. M., Laibson, D., Repetto, A., Tobacman, J., & Weinberg, S. (2001). The hyperbolic consumption model: Calibration, simulation, and empirical evaluation. *Journal of Economic Perspectives*, 15(3), 47-68. doi: 10.1257/Jep.15.3.47

Benartzi, S., Peleg, E., & Thaler, R. H. (2012). Choice Architecture and Retirement Saving Plans. In E. Shafir (Ed.), *The Behavioral Foundations of Policy*. Princeton, NJ: Russell Sage Foundation and Princeton University Press.

Beshears, J., Choi, J. J., Laibson, D., & Madrian, B. C. (2013). Simplification and saving. *Journal of Economic Behavior and Organization*. 95, 130-145.

Breman, A. (2011). Give more tomorrow: Two field experiments on altruism and intertemporal choice. *Journal of Public Economics*, 95(11), 1349-1357.

Dai, H., Milkman, K. L., & Riis, J. (in press). The fresh start effect: Temporal landmarks motivate aspirational behavior. *Management Science*.

Dai, H., Milkman, K. L., & Riis, J. (2014). Put your imperfections behind you: Why and how meaningful temporal landmarks motivate aspirational behavior. Working Paper.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the Econometric Society*, 263-291.

Milkman, K. L., Rogers, T., & Bazerman, M. H. (2008). Harnessing our inner angels and demons what we have learned about want/should conflicts and how that knowledge can help us reduce short-sighted decision making. *Perspectives on psychological Science*, 3(4), 324-338.

Milkman, K. L., Rogers, T., & Bazerman, M. H. (2009). Highbrow films gather dust: Time-inconsistent preferences and online DVD rentals. *Management Science,* 55(6), 1047-1059.

Milkman, K. L., Rogers, T. & Bazerman, M. H. (2010). I'll have the ice cream soon and the vegetables later: A study of online grocery purchases and order lead time. *Marketing Letters,* 21(1), 17-36.

Munnell, A. H., Webb, A., & Golub-Sass, F. (2012). *The National Retirement Risk Index: An Update*, Center for Retirement Research at Boston College, Chestnut Hill, MA., Issue in Brief, 12–20.

Read, D., & Van Leeuwen, B. (1998). Predicting hunger: The effects of appetite and delay on choice. *Organizational Behavior and Human Decision Processes*, 76(2), 189-205.

Read, D., Loewenstein, G., & Kalyanaraman, S. (1999). Mixing virtue with vice: Combining the immediacy effect and the diversification heuristic. *Journal of Behavioral Decision Making,* 12(4), 257-273.

Rogers, T., & Bazerman, M. H. (2008). Future lock-in: Future implementation increases selection of 'should' choices. *Organizational Behavior and Human Decision Processes*, 106(1), 1-20.

Shum, M. S. (1998). The role of temporal landmarks in autobiographical memory processes. *Psychological Bulletin*, 124(3), 423.

Thaler, R. H., & Benartzi, S. (2004). Save More Tomorrow™: Using behavioral economics to increase employee saving. *Journal of Political Economy*, 112(S1), S164-S187.

Tu, Y., & Soman, D. (2013). Getting things done: The categorization of time and its role in task initiation. Working paper, University of Chicago, Chicago, IL, and University of Toronto, Toronto, ON.

TABLE 1. DESCRIPTIONS OF TARGETED PLANS

School	Eligibility	Employer Contribution
A	Employees on University payroll with FICA deductions	None
B	Any employee whose annual contribution limit to the targeted plan is at least $200	None
C	All paid employees and students with a stipend	None
D	Eligibility for Employee Contribution - Regular full-time staff (monthly and weekly-paid) OR - Full-time faculty and academic support staff in a benefits-eligible title OR - Limited-service staff scheduled to work at least 35 hours/week, 9 months/year (monthly and weekly-paid) Eligibility for Employer Contribution - Eligible employees at least 21 years of age - Must have at least one year of prior service	- Dollar-for-dollar match on employee contributions up to 5% for all ages Automatic Contribution (without employee contribution): - age < 30: 1.5% of salary - 30–39: 3% of salary - 40 or over: 4% of salary

TABLE 2. SUMMARY STATISTICS BY CONDITION

This table summarizes key control variables used in our analyses by each experimental condition. The last three columns show the *p*-values comparing the means between any two conditions.

	No Delay	Standard Delay	Framed Delay	No Delay vs. Standard Delay	No Delay vs. Framed Delay	Standard Delay vs. Framed Delay
				p-value		
Percent Female						
Mean	52.65%	51.85%	50.29%	0.56	0.07	0.23
Age (years)						
Mean	43.20	43.00	43.44	0.55	0.45	0.15
(Std. Dev.)	(12.32)	(11.77)	(11.93)			
Tenure (years)						
Mean	9.51	9.54	9.52	0.91	0.97	0.93
(Std. Dev.)	(9.14)	(8.93)	(9.05)			
Baseline Salary ($)						
Mean	56505.19	58505.26	59509.52	0.04	0.00	0.31
(Std. Dev.)	(35234.21)	(36111.88)	(39849.63)			
Percent Faculty						
Mean	11.62%	12.75%	12.77%	0.21	0.18	0.99

TABLE 3. THE EFFECT OF OFFERING A DELAYED OPTION AND THE EFFECT OF ASSOCIATING THE DELAY WITH A TEMPORAL LANDMARK

This table reports the results of ordinary least squares regressions where the dependent variable is either the average contribution rate of employees during the experimental period of November 2013–June 2014 (Models 1 and 2) or an indicator variable for having higher contribution rates in May 2014 than September 2013 (Models 3 and 4). The same regression specifications are used for targeted plans as well as for all plans available to employees. All regressions include a constant and all controls are interacted with university.

Dependent variable	Average contribution rates		Higher contribution indicator	
	Model 1: Targeted plans	Model 2: All plans	Model 3: Targeted plans	Model 4: All plans
Delay indicator	−0.139**	−0.270***	−0.0109	−0.0136
	(0.0701)	(0.0993)	(0.00911)	(0.00984)
Framed delay indicator	0.101*	0.113	0.00454	0.00734
	(0.0612)	(0.0859)	(0.00859)	(0.00933)
Control variables				
university x female	Yes	Yes	Yes	Yes
university x age decile	Yes	Yes	Yes	Yes
university x tenure decile	Yes	Yes	Yes	Yes
university x salary decile	Yes	Yes	Yes	Yes
university x faculty status	Yes	Yes	Yes	Yes
university x birth month	Yes	Yes	Yes	Yes
R-squared	0.0885	0.519	0.0596	0.0900
Observations	8682	8682	8682	8682

Robust standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 4. THE EFFECTS OF DIFFERENT FRESH START FRAMINGS AND THE EFFECTS OF DIFFERENT LENGTHS OF STANDARD DELAYS

This table reports the results of ordinary least squares regressions where the dependent variable is either the average contribution rate of employees during the experimental period of November 2013–June 2014 (Models 1 and 2) or an indicator variable for having higher contribution rates in May 2014 than September 2013 (Models 3 and 4). The same regression specifications are used for targeted plans as well as for all plans available to employees. All regressions include a constant and all controls are interacted with university.

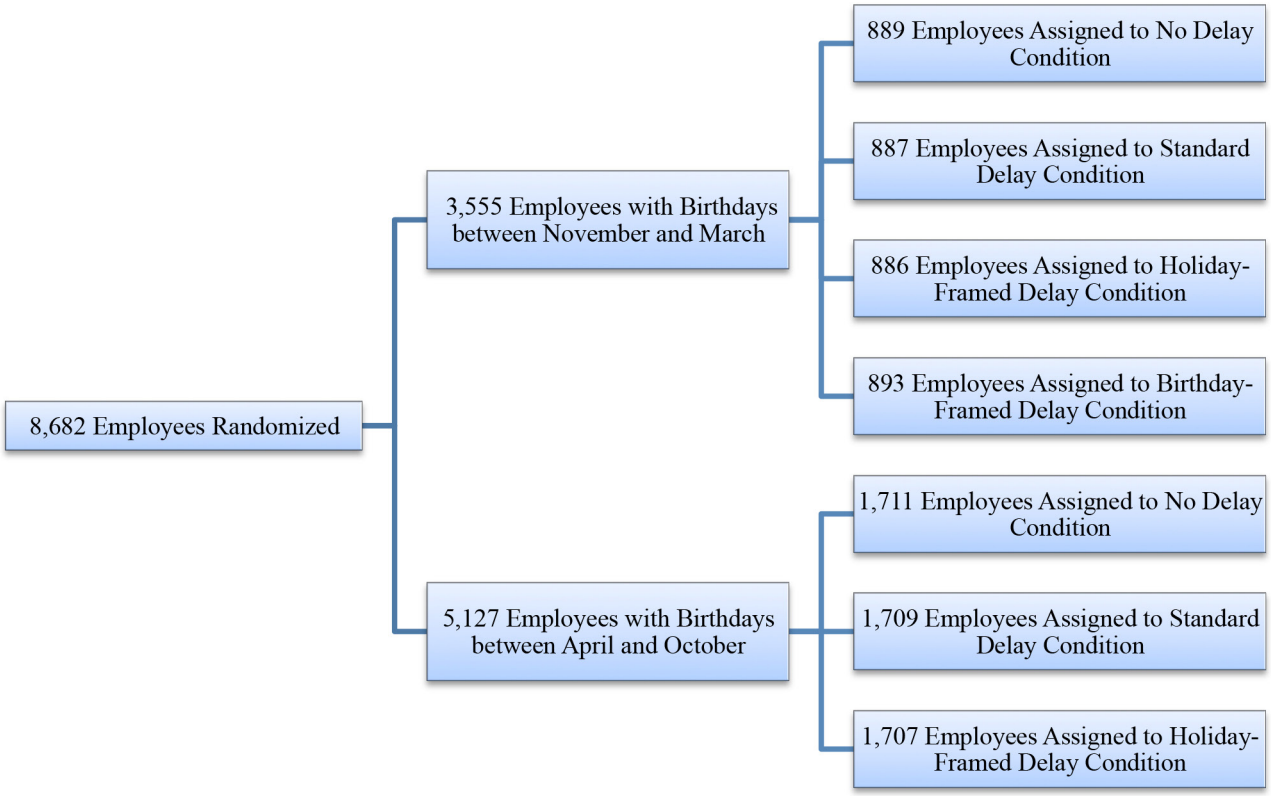
Dependent variable	Average contribution rates		Higher contribution indicator	
	Model 1: Targeted plans	Model 2: All plans	Model 3: Targeted plans	Model 4: All plans
Birth Month November–March				
Delay indicator	−0.0982	−0.229	−0.0120	−0.0273
	(0.124)	(0.172)	(0.0157)	(0.0170)
Holiday-framed delay indicator	0.0358	0.190	0.00479	0.0168
	(0.0982)	(0.148)	(0.0155)	(0.0169)
Birthday-framed delay indicator	0.220**	0.326**	0.0281*	0.0403**
	(0.111)	(0.160)	(0.0161)	(0.0174)
Birth Month April–October				
2-month delay option available	−0.214**	−0.463**	−0.0206	−0.00925
	(0.108)	(0.185)	(0.0208)	(0.0227)
3-month delay option available	−0.172	−0.395***	−0.00768	0.00425
	(0.105)	(0.152)	(0.0159)	(0.0173)
4-month delay option available	−0.153	−0.160	−0.0219	−0.0230
	(0.157)	(0.241)	(0.0202)	(0.0221)
5-month delay option available	−0.0296	0.106	−0.00104	−0.00681
	(0.149)	(0.223)	(0.0213)	(0.0231)
6-month delay option available	−0.228*	−0.445**	−0.00423	−0.00933
	(0.129)	(0.173)	(0.0203)	(0.0219)
Delay framed as post Thanksgiving	0.140	0.0372	−0.00418	−0.00489
	(0.201)	(0.275)	(0.0265)	(0.0296)
Delay framed as post New Year's	−0.00102	0.00873	−0.0143	−0.0324
	(0.117)	(0.171)	(0.0192)	(0.0208)
Delay framed as post Martin Luther King Day	−0.0552	−0.248	−0.0186	−0.0115
	(0.168)	(0.268)	(0.0256)	(0.0281)
Delay framed as post Valentine's Day	−0.253	−0.487*	−0.00384	0.0125
	(0.159)	(0.259)	(0.0285)	0.0311)
Delay framed as post Spring Equinox	0.622**	0.652*	0.0279	0.0241
	(0.313)	(0.354)	(0.0285)	(0.0302)

Control variables				
university x female	Yes	Yes	Yes	Yes
university x age decile	Yes	Yes	Yes	Yes
university x tenure decile	Yes	Yes	Yes	Yes
university x salary decile	Yes	Yes	Yes	Yes
university x faculty status	Yes	Yes	Yes	Yes
university x birth month	Yes	Yes	Yes	Yes
R-squared	0.0903	0.520	0.0609	0.0912
Observations	8682	8682	8682	8682

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

FIGURE 1. STUDY FLOW



*Note: 42 randomized employees were not included in this figure and in the analysis because either they did not have data collected, were terminated before the baseline data collection, or had conflicting dates of birth.

FIGURE 2. THE EFFECTS OF DIFFERENT FRAMINGS FOR THE DELAYED OPTION (FIELD EXPERIMENT)

Figure 2 shows the predicted average contribution rate (Panels A and B) and the predicted likelihood of increasing contribution rates from September 2013 to May 2014 (Panels C and D) for an average employee whose birth month is between November and March.

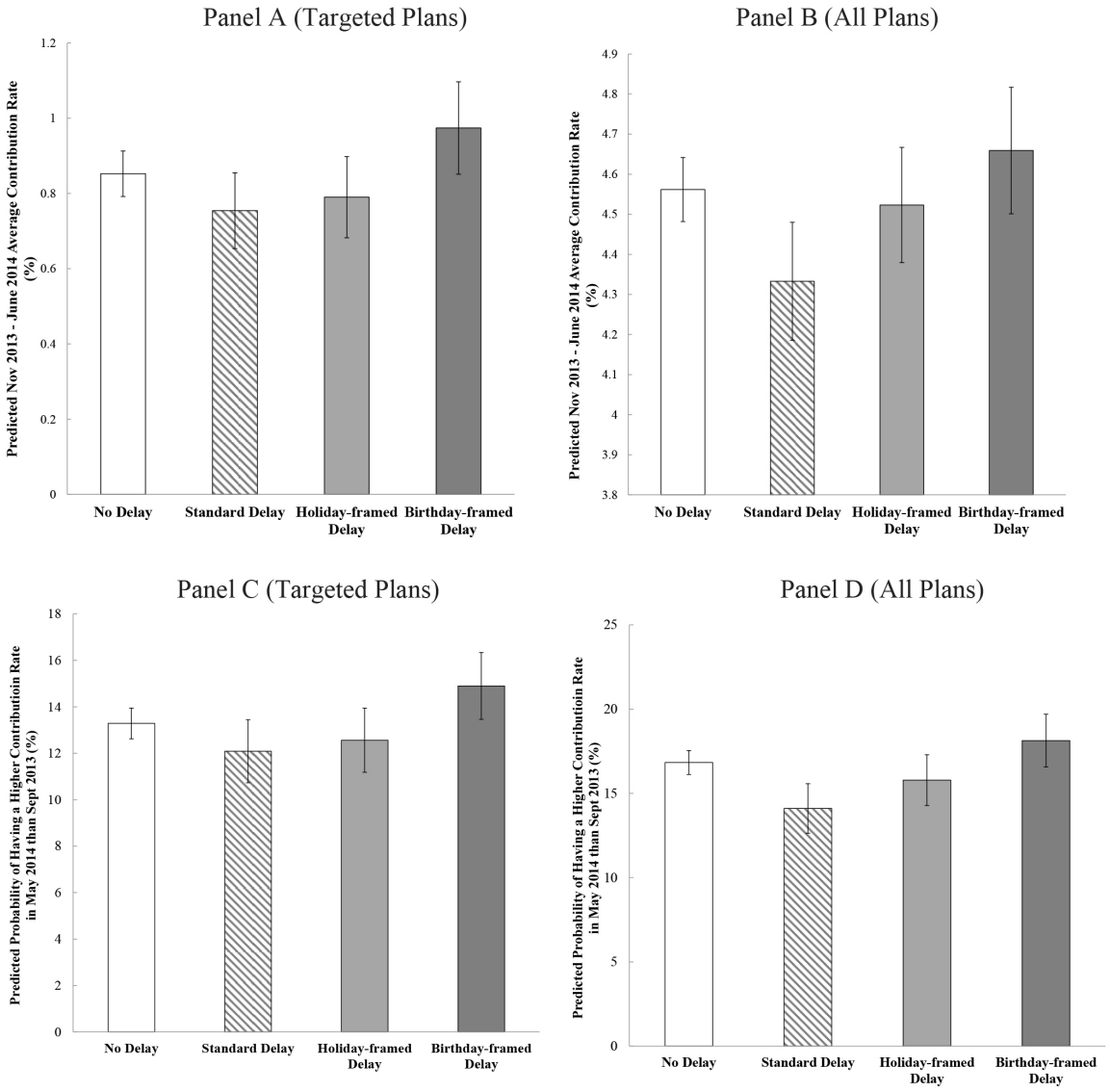
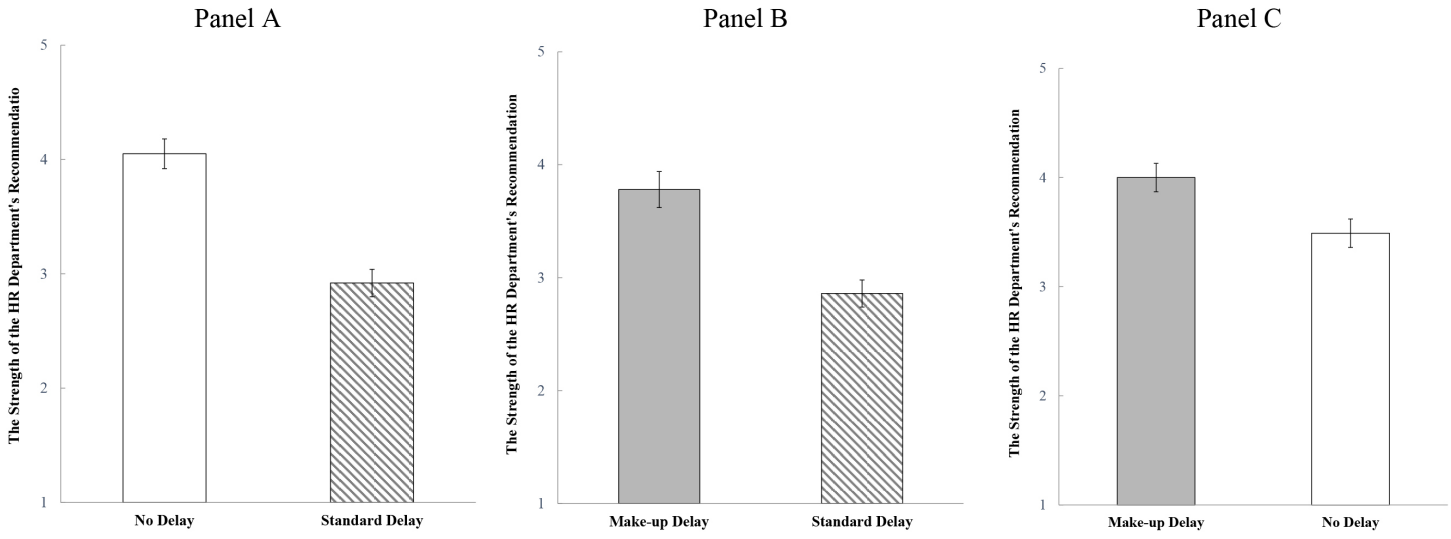


FIGURE 3. THE EFFECTS OF MESSAGING STRATEGIES ON INFERRED RECOMMENDATION (LABORATORY EXPERIMENT)

Panels A–C plot participants' ratings of how strongly the Human Resources Department recommended retirement savings based on which messaging strategy was selected. Participants were presented with two messaging strategies. Each panel represents one pair of messaging strategies.



Note. Error bars represent standard errors.

APPENDIX A. DESCRIPTIONS OF NON-TARGETED PLANS

School	Plan	Eligibility	Employee Contribution	Employer Contribution	Automatic Sign-Up
A	Plan 1	Employees based upon job position and scheduled hours of service.	None	- University pays the full cost by contributing 10% of the employee's base pay. - Base pay limit: $255,000 for 2013 and $260,000 for 2014	No
B	Plan 1	A regular or fixed-term employee scheduled to work a minimum of 1,000 hours per fiscal year, who is not currently actively participating Plan 2	1% of the employee's eligible gross earnings on a pretax basis	Matched by a 8% contribution from the University	No
	Plan 2	A regular or fixed-term employee hired prior to June 30, 1993, who is scheduled to work at least 20 hours per week for a minimum of 720 hours per fiscal year	1% of employee's eligible gross earnings on an after-tax basis	There are several benefit calculation formulas. The Plan uses the formula that maximizes benefit.	No
C	Plan 1	Benefits eligible faculty and staff member of age 21 and older.	None	- Within Social Security Wage base: 7% (age < 50) and 10% (age ≥ 50) - Above Social Security Wage base: 12% (age < 50) and 15% (age ≥ 50)	Yes
	Plan 2	Any employee earning at least 140% of the Social Security Wage Base	Elected amount of deferral of compensation with pre-tax dollars	None	No
D	Plan 1	All employees except for student workers, hospital employees, leased employees, and those in post-doctoral positions.	Elected percentage of employee's pre-tax basis salary.	None	No
	Plan 2	Employees not covered by the targeted plan and who work at least 1,000 hours per year	None	Final average pay X Years of Plan 2 participation X 1.25% (final average pay = average of highest 5 years of earnings of employee out of 10 years of participation in the Plan)	Yes

APPENDIX B. DESCRIPTIONS OF ROBUSTNESS CHECKS AND REGRESSION RESULTS

A. Our results remain qualitatively unchanged if we drop employees whose total annual contributions to all of the non-targeted plans prior to our experiment exceeded the IRS limit of $17,500 because those employees would not have been able to save more in the targeted plan. Specifically, we multiply employees' total contribution rates to all of non-targeted plans prior to our experiment by their annual salary. For employees whose total contribution rate to all non-targeted plans was zero or missing, we use their cumulative dollar contributions from January 2013 to September 2013 to extrapolate their contributions in the year 2013. Then we drop individuals whose 2013 dollar contributions to all non-targeted plan was over $17,500 prior to our experiment.

B. Some employees have missing data on salary or contributions. Our results reported in the paper assigned a value of zero to missing data. Our results are robust if we drop employees who have missing data on salary or contributions.

C. To calculate an employee's contribution rate in a given month, we divide her dollar contributions by her salary in the same month. Since we construct the higher contribution indicator by comparing our *imputed* contribution rates in May 2014 vs. September 2013, we want to ensure that our results are not spuriously driven by how we round our imputed contribution rates. For example, if an employee had an imputed contribution rate of 5.03% in September 2013 and 5.303% in May 2014, it is unlikely that this employee increased her contribution rate by 0.003% but rather this reflects an issue of rounding contribution rates. Thus, we have rounded contribution rates in multiple ways and obtained similar results.

D. Our results remain meaningfully unchanged when we use logistic regressions (rather than OLS regressions) to predict the higher contribution indicator, though the delayed option now only leads to a statistically insignificant decrease in the likelihood of increasing contribution rates for all plans between September 2013 and May 2014 (Model 2 of Panel D).

APPENDIX C. ADDITIONAL ANALYSIS OF OUR LABORATORY EXPERIMENT

In our laboratory experiment, participants were asked to indicate how they thought "the fact that the HR department chose this messaging strategy (rather than the other messaging strategy) will affect the total amount of money that employees contribute to the retirement savings program (say, over the coming 8 months)." Three options were: (a) their choice will lead to lower total contributions to the retirement savings program; (b) their choice will make no difference; (c) their choice will lead to higher total contributions to the retirement savings program. We first examine responses from participants who were presented with the no delay and standard delay mailings. When the standard delay mailing was selected by the HR department, 42.27% of participants believed that it would lead to higher total contributions than the no delay mailing as the alternative strategy. However, 74.32% of participants believed that the no delay mailing as the endorsed strategy would lead to higher total contributions than the standard delay mailing as the alternative strategy (two-sample proportion test, $p < .0001$). Next, we compare the standard delay mailing with the make-up delay mailing. When the standard delay mailing was endorsed, 40.79% of participants believed that it would lead to higher total contributions than the make-up delay mailing as the alternative strategy. However, when the make-up delay mailing was endorsed, 62.2% of participants believed that it would result in higher total contributions than the standard delay mailing (two-sample proportion test, $p = .001$). Last, we compare the no delay mailing with the make-up delay mailing. When the no delay mailing was endorsed, 38.55% of participants believed that it would lead to higher total contributions than the make-up delay mailing. However, when the make-up delay mailing was endorsed, 77.05% of participants expected it to outperform the no delay mailing (two-sample proportion test, $p < .0001$). As described in the paper, people inferred that the HR department recommended retirement savings more strongly if the HR department chose the make-up delay mailing than if the HR department chose the no delay mailing, which in turn implied stronger recommendation of the HR department than the standard delay mailing. Combining the results in the paper with the findings presented in this Appendix, we find that people tend to predict that the messaging strategy which signals the HR department's stronger recommendation would result in higher total contributions than the messaging strategy which signals the HR department's weaker recommendation. This is consistent with our speculation that recommendation implicit in mailings affects savings.