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Saving for the future: Dynamic effects of time horizon

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Saving for the future: Dynamic Effects of Time Horizon

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Abstract

Why is the public so underprepared for retirement? We studied the saving behavior of a large cross-section of adults to investigate age differences in motivations to save across adulthood. Our investigation revealed that both a future oriented mindset as well as adequate financial knowledge may be necessary for younger adults to engage in saving for their retirement. This finding is consistent with a theoretical account in which younger adults who have long time horizons prioritize preparatory goals and knowledge seeking. As time horizons shorten, motivations to realize goals replace motivations to gather knowledge. Accordingly, future oriented attitudes were more directly associated with saving with advancing age, such that future oriented adults who were approaching retirement saved regardless of their level of financial knowledge. Our findings reveal a dynamic character of saving tendencies across adulthood and imply age differences in the psychological factors that motivate saving behavior.

Keywords: Saving, retirement, financial planning, time horizon, financial knowledge

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51 Saving for the future: Dynamic Effects of Time Horizon

52 *We meet at a moment of great uncertainty for America. The economic crisis we*
53 *face is the worst since the Great Depression. Markets across the globe have become*
54 *increasingly unstable, and millions of Americans will open up their 401(k)*
55 *statements this week and see that so much of their hard-earned savings have*
56 *disappeared.*

57 —Obama Oct. 13, 2008 economic crisis speech
58

59 **1. Introduction**

60 The global financial crisis of 2008 has shown with devastating consequences that the future is
61 highly uncertain. Rising life expectancies in past decades has lengthened retirement years (Lee, 2001)
62 and greater access to employment-based retirement plans has forced financial decisions about the
63 future into the hands of workers (Gough & Niza, 2011). Yet, the American public (Topoleski, 2013)
64 and people in other countries (Crossley, Emmerson, & Leicester, 2012) are seemingly underprepared
65 for retirement, and many retirees live below the poverty threshold (Lusardi & Mitchell, 2007a). Policy
66 initiatives can stimulate saving behavior (Thaler & Benartzi, 2004), but will be most effective if
67 informed by sound psychological principles.

68 In the U.S., the 401(k) plan is the principal employment-based retirement scheme. Workers
69 who opt into the plan can decide on the contribution they wish to make to their pension account. Some
70 companies in the U.S. offer 401(k) plans that enable workers to choose how to invest their
71 contributions in stocks, bonds, and the money market (Gough & Niza, 2011). The 401(k) plan and
72 other saving schemes offered by employers bestow in their workers a financial independence and

personal liability, but also raise the need to ensure that people possess the adequate knowledge and future oriented mindset necessary to make advantageous decisions about their financial future (Chan & Stevens, 2008; Choi, Laibson, Madrian, & Metrick, 2002).

People who are future oriented are more likely than others to save for retirement (Hershey et al., 2007; Jacobs-Lawson & Hershey, 2005) and to enroll in employment-based retirement plans (Howlett, Kees, & Kemp, 2008; Munnell, Sundén, & Taylor, 2001). Future oriented attitudes are characterized by long planning horizons and a focus on future as opposed to present or past goals. In the Munnell et al. (2001) study, workers who expressed planning horizons of five years or longer were more likely than individuals with shorter planning horizons to enroll in the 401(k) plan and had made greater savings contributions. Lynch Jr, Netemeyer, Spiller, and Zammit (2010) distinguish between propensities to plan money and time in the short- and long-term, where only a propensity for long-term planning of money is shown to predict individuals' personal credit scores.

Future oriented individuals typically report that they are more knowledgeable of financial planning for retirement (Hershey, & Mowen, 2000; Hershey et al., 2007). Higher levels of financial literacy are associated with greater engagement in retirement planning (Hilgert, Hogarth, & Beverly, 2003; Lusardi & Mitchell, 2007a; 2009) and a reduced likelihood of having debt (Lusardi & Tufano, 2009). Concerns regarding low levels of financial literacy in the U.S. population have prompted researchers and institutions to develop education programs for improving financial literacy as a means of fostering financial investment for retirement (e.g., Jacob, Hudson, & Bush, 2000; Lusardi & Mitchell, 2011). However, relevant financial knowledge as well as a future oriented mindset may both be necessary for engagement in retirement saving. Among a sample of graduate students, Howlett, Kees, and Kemp (2008) found that only those who were both informed about how a retirement plan worked and were future oriented expressed a willingness to enroll in the plan. This implies that

education programs that target financial literacy may be insufficient in engaging retirement saving behavior unless also targeted at people's attitudes about the future.

Hershey and colleagues (Hershey et al., 2007) have proposed that a future oriented mindset triggers the pursuit of financial knowledge necessary for making informed decisions about saving. More generally, Carstensen and colleagues (Carstensen et al., 1999; Charles & Carstensen, 2009) have proposed that for young adults who have a long time horizon (e.g., until retirement), time is perceived as open-ended, and this prioritizes goals that are preparatory and which emphasize knowledge acquisition for future possibilities. For example, young adults will often prefer the company of a social partner that can offer novelty and new information (e.g., a book author) over the company of a close friend or family member (Fung, Carstensen, & Lutz, 1999). Although this account was developed as a theory of emotion regulation in social contexts (Charles & Carstensen, 2009), the notion that time horizon is important for goal setting is highly relevant to financial planning. Information seeking capitalizes on time available during early adulthood. A future oriented mindset may trigger the pursuit of financial knowledge in young adulthood by motivating goals to prepare for the future.

As time horizons shorten (e.g., with the passage of time), time constraints are perceived. Consequently, motivations to gather knowledge and seek new experiences are replaced with motivations to realize goals (Carstensen et al., 1999). This implies that in the financial context, future oriented attitudes may have a more direct influence on decisions about saving that are less dependent on financial knowledge as one approaches retirement. This is because as time horizons shorten, priorities shift away from preparatory goals (e.g., knowledge acquisition) and toward realizing goals (e.g., making savings contributions). An implication is that some adults who are approaching retirement may be motivated to make decisions about saving without seeking necessary financial

knowledge. Indeed, financial literacy is poor particularly among adults aged 50 years and older (Lusardi & Mitchell, 2011).

As retirement looms large on the horizon for individuals approaching retirement, the financial demands of retirement may become more salient. Construal level theory proposes that events that are far in the future are mentally represented abstractly and in terms of their goal-relevant features (Trope & Liberman, 2003). For young adults with a long time horizon, such goals are likely to be preparatory and motivate knowledge seeking. Events that are in the near future are perceived in more concrete detail and in a more contextualized form. For example, when asked to imagine reading a science fiction book either tomorrow or in one year, participants imagining the longer horizon described the activity in terms of higher-order goals (e.g., “broadening my horizons”), whereas those imagining the shorter horizon focused more on details of actions involved (e.g., “flipping pages”; Liberman & Trope, 1998). Hence, people’s mental representations of future events change as they approach those events in time. Similarly, individuals who are approaching retirement are likely to perceive retirement in more concrete terms that reflect the actual financial requirements of retirement.

Here, we investigate the association between future oriented attitudes and financial knowledge with retirement saving behaviors across the adult lifespan. We anticipate that a future oriented mindset will influence retirement saving by motivating knowledge acquisition during young adulthood, but will have a more direct influence on retirement saving as individuals approach retirement and their time horizons shorten.

2. Study 1

In Study 1, we investigate differences with age in the influence of future oriented attitudes and financial knowledge on retirement saving behavior. We reasoned that financial knowledge would mediate effects of future oriented attitudes on retirement saving in young adulthood, such that only

141 young adults who are both future oriented and knowledgeable of finance would engage in saving. This
142 would suggest that a future oriented mindset motivates preparatory goals and knowledge seeking
143 behavior among individuals who have long time horizons. We expected that future oriented attitudes
144 would have a more direct and un-mediated association with retirement saving in later adulthood as
145 people approach retirement. This would suggest that shortening time horizons prioritize realizing goals
146 (i.e., making savings contributions) over preparatory and knowledge seeking goals. Consequently,
147 some older adults may be motivated to make decisions about retirement without seeking the necessary
148 financial knowledge. Specifically, we hypothesized that (a) future oriented attitudes would be a
149 stronger predictor of retirement saving as age advanced toward retirement as the effects of a future
150 oriented mindset would depend less on an individual's financial knowledge. As future oriented
151 attitudes are proposed to have a more direct effect on retirement saving with advancing age, we further
152 hypothesized that (b) future oriented attitudes would interact with financial knowledge and age when
153 predicting retirement saving.

154 As discussed earlier, long planning horizons as opposed to a focus on short term outcomes may
155 motivate a future oriented mindset. Lynch Jr et al., (2010) have distinguished between the short- and
156 long-term planning of money and time, in which tendencies toward long-term planning of money are
157 found to predict personal credit scores. On the basis that financial planning can be distinguished from
158 other types of planning (e.g., planning of time), we hypothesized that (c) a tendency toward the long-
159 and away from the short-term planning of money would predict greater retirement saving. We further
160 hypothesized that (d) if financial planning of the future motivates a future oriented mindset, then future
161 oriented attitudes should mediate any effects of financial planning tendencies on retirement saving.

162 In addition to assessing effects of future oriented attitudes, planning horizons, and financial
163 knowledge on retirement saving we also assessed individuals' financial risk tolerance, as this also is

associated with more active engagement in retirement saving (Jacobs-Lawson & Hershey, 2005) as well as the accumulation of financial assets (e.g., Dulebohn, 2002). Risk taking in financial contexts, however, reduces with age (Rolison, Hanoch, & Wood, 2012; Rolison, Hanoch, Wood, & Liu, 2014), such that older adults are less willing than younger adults to engage with financial risks. Thus, individual differences in financial risk tolerance may predict engagement in retirement saving only among younger adults.

2.1. Method

2.1.1. Participants

The research materials and procedure were approved by the ethics committee at Scripps College, Claremont (U.S.). Prior to the study, participants were told that the purpose of the study was to assess their financial decision making, which would include assessments of their knowledge of financial matters, their financial plans for the future, and their financial risk attitude. Participants (N=448; 135 males, 313 females; age range=18–70, mean [M]=37.05, standard deviation [SD]=16.00) were recruited from three sources. Advertisements online (N=201; 33 males, 168 females; age range=18–69, M=34.13, SD=15.45) and Amazon Mechanical Turk (N=206; 84 males, 122 females; age range=19–67, M=35.08, SD=12.91) were used to recruit participants from the younger to middle age ranges. The former group was not compensated for their participation and the latter group received a token payment of 0.25 US dollars. The reliability of the Amazon Mechanical Turk participant sample has been validated elsewhere by comparisons with other samples and recruitment methods (Paolacci, Chandler, & Ipeirotis, 2010). Older adults (N=41; 18 males, 23 females; age range=19–70, M=61.27, SD=12.16) were recruited from a local community centre and were invited to Scripps College, CA to complete the study. The older adults were compensated with 10 US dollars to cover their travel expenses. All participants were US residents. The majority indicated high school (N=182; 40.63%) or

college (N=142; 31.70%) as their highest educational attainment, and over half (N=259; 57.81%) indicated an annual household income greater than 40,000 US dollars.

2.1.2. Materials and Procedure

Future oriented attitudes were measured using the 6-item future time perspective scale (e.g., “I enjoy thinking about how I will live years from now in the future”) developed by Hershey and Mowen (2000), to which participants responded on a 7-point scale (“Never like me” [1] to “Always like me” [7]). Scores were summed across items.

Propensities to plan time in the short- (e.g., “I set goals for the next few days for what I want to achieve with my time”) and long-term (e.g., “I set goals...1–2 months...my time”) and money in the short- (e.g., “I set financial goals...few days...my money”) and long-term (e.g., “I set financial goals...1–2 months...my money”) were assessed using the 6-item short- and long-term time and money planning scales developed by Lynch Jr, Netemeyer, Spiller, and Zammit (2010), to which participants responded on a 7-point scale (“Strongly disagree” [1] to “Strongly agree” [7]). Scores were summed across items.

Financial knowledge was assessed using four items taken from Van Rooij, Lusardi, & Alessie (2011) that assessed financial numeracy (“Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?” [1] More than \$102, [2] Exactly \$102, [3] Less than \$102), inflation (“Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?” [1] More than today, [2] Exactly the same, [3] Less than today), investment return (“Buying a company stock usually provides a safer return than a stock mutual fund. True or false?” [1] True, [2] False), and interest rates (“If the interest rate falls, what should happen to bond prices?” [1] Rise, [2] Fall, [3] Stay the same, [4] None

of the above). Participants could further respond “Do not know” or “Refuse to answer” to each item. Correct responses were summed across items.

Financial risk tolerance was assessed using a 5-item scale (e.g., “I am willing to risk financial losses”) developed by Jacobs-Lawson and Hershey (2005), to which participants responded on a 7-point scale (“Strongly disagree” [1] to “Strongly agree” [7]). Scores were summed across items.

Retirement saving tendencies were assessed using a 5-item (e.g., “I have made meaningful contributions to a voluntary retirement savings plan”) self-report scale developed by Neukam & Hershey (2002), to which participants responded on the same scale as the financial risk tolerance scale. Scores were summed across items.

2.1.3. Analytic strategy

Age differences in future orientation, financial knowledge, risk tolerance, retirement saving, and annual household income were examined in separate regression analyses that included age as a continuous predictor in a first block to assess linear age trends. In a second block, a quadratic term for age was included to test for quadratic age trends. Separate regression analyses were conducted to assess effects of income on future orientation, financial knowledge, risk tolerance, and retirement saving. Independent effects of age, future orientation, financial knowledge, and risk tolerance on retirement saving were assessed in a multiple regression analysis that included all predictors in a first block. All possible two-way interactions terms were included in a second block to test whether effects of future orientation and financial knowledge on retirement saving differed with age. We hypothesized that effects of future orientation would be less dependent on financial knowledge as age advanced into later adulthood. Hence, we also tested for a three-way interaction involving age, future orientation, and financial knowledge, including all possible three-way interaction terms in a third block. Propensity to plan time and money in the short- and long-term were included as predictors of retirement savings and

future orientation in separate regression analyses. The Sobel z test was conducted to establish mediating effects of future orientation on the association between propensity to plan and retirement saving.

2.2. Results and discussion

We assessed age trends in retirement saving, future orientation, financial knowledge, financial risk tolerance, and annual household income. Our regression analyses revealed quadratic age trends in retirement saving ($\beta_{\text{linear}}=.385, p<.001; \beta_{\text{quadratic}}=-1.529, p<.001$), financial knowledge ($\beta_{\text{linear}}=.300, p<.001; \beta_{\text{quadratic}}=-1.386, p<.001$), risk tolerance ($\beta_{\text{linear}}=.055, p=.245; \beta_{\text{quadratic}}=-.906, p=.004$), and household income ($\beta_{\text{linear}}=.219, p<.001; \beta_{\text{quadratic}}=-1.115, p<.001$), but not in future orientation ($\beta_{\text{linear}}=.048, p=.311; \beta_{\text{quadratic}}=-.335, p=.285$). Figure 1: Panel A provides the mean group values for 7-year age periods from youngest to oldest adults. Inspecting it, retirement saving increased from age 18–24 years ($M=2.57$ of a possible 7) until age 46–52 ($M=4.85$) whereupon saving reduced with age. Financial knowledge increased from age 18–24 years ($M=2.17$ of a possible 4) until a peak during late middle-age ($M_{46-52 \text{ years}}=3.31$). Risk tolerance increased from age 18–24 years ($M=3.15$ of a possible 7) to age 39–45 years ($M=3.69$) and there upon reduced with age. Annual household income was positively associated with future orientation ($\beta=.248, p<.001$), financial knowledge ($\beta=.341, p<.001$), and retirement saving ($\beta=.331, p<.001$), but was unrelated to risk tolerance ($\beta=-.018, p=.699$).

Next, we assessed effects of age, future orientation, financial knowledge, and financial risk tolerance on retirement saving. To control for effects of annual household income, we included income as a covariate in our regression model. This analysis revealed that age ($\beta=.286, p<.001$), future orientation ($\beta=.409, p<.001$), financial knowledge ($\beta=.106, p=.010$), and risk tolerance ($\beta=.195, p<.001$), all had positive effects on retirement saving. We hypothesized that (a) effects of future orientation and financial knowledge on retirement saving would differ across adulthood. As expected,

age interacted positively with future orientation ($\beta=.422, p=.020$), and not with financial knowledge ($\beta=.218, p=.140$). Figure 1: Panel B provides the results of our regression analysis conducted separately for each 7-year period across adulthood from younger to older adults. The asterisks indicate significant effects within each period. As age increased, the strength of the association between future orientation and saving increased. We further hypothesized that (b) effects of future oriented attitudes would depend on financial knowledge during young adulthood, but that future orientation would have a more direct effect on retirement saving in later adulthood. As expected, our regression analysis yielded a significant three-way interaction between age, future orientation, and financial knowledge ($\beta=-1.461, p=.033$). Figure 1: Panel C shows retirement savings estimated at high and low levels of future orientation and financial knowledge for each 7-year period. Observing it, the effects of future orientation on retirement saving during young adulthood (~18–45 years) depended on financial knowledge, such that saving was high typically only among individuals who were both future oriented and financially literate. Effects of future orientation on retirement saving were less dependent on financial knowledge with advancing age, and especially from age ~46+ years. Consequently, future orientation predicted retirement saving even among individuals of low financial knowledge. Our regression analysis also revealed that age interacted negatively with risk tolerance ($\beta=-.572, p<.001$), which indicates that risk tolerance predicted retirement saving less as age increased. Inspecting Figure 1: Panel B, risk tolerance predicted retirement saving until age 32–38 years.

Finally, we hypothesized that (c) a tendency toward long-term planning of money and away from short-term planning of money would predict greater retirement saving. Controlling for annual household income, we found that a propensity toward long-term ($\beta=.264, p<.001$) and away from short-term ($\beta=-.147, p=.011$) planning of money, but not short- ($\beta=-.073, p=.209$) or long-term ($\beta=-.018, p=.763$) planning of time predicted greater retirement saving. We further hypothesized that (d)

future oriented attitudes would mediate any effects of planning tendencies on retirement saving. Accordingly, a propensity to plan money in the long-term ($\beta=.411, p<.001$) and away from the short-term ($\beta=-.187, p=.001$) and not long-term planning of time ($\beta=-.029, p=.604$), predicted stronger future oriented attitudes. However, a propensity to plan time in the short-term also positively predicted future orientation ($\beta=.194, p=.001$), even though this was not related to retirement saving. The effect of a propensity to plan money in the long-term on retirement saving was mediated by individuals' future orientation (Sobel z test=2.944, $p=.003$) and no longer predicted retirement saving after controlling for future orientation ($\beta=-.013, p=.770$).

In sum, retirement saving, future orientation, financial knowledge, and financial risk tolerance increased with age until around middle-age (Figure 1: Panel A). Financial risk tolerance positively predicted saving, but only among younger adults (Figure 1: Panel B). Retirement saving was high during young adulthood only among individuals who were both future oriented and knowledgeable of finance (Figure 1: Panel C). Future orientation instead was more directly associated with saving with advancing age, such that future oriented individuals in later adulthood saved more regardless of their financial knowledge (Figure 1: Panel C). Finally, a tendency toward long- and away from short-term planning of money positively predict retirement saving and future oriented attitudes mediated effects of long-term planning of money on retirement saving.

3. Study 2

In Study 1, a future oriented mindset as well as relevant financial knowledge were both necessary for young adults to engage in saving for retirement. Future oriented attitudes had a more direct association with saving with advancing age, such that some adults who were approaching retirement indicated that they had made savings contributions despite low levels of financial

knowledge. These findings imply dynamic differences in motivations to save across the adult lifespan that depend on one's time horizon.

Events that are far in the future are mentally represented in terms of abstract goal-relevant features (Liberman & Trope, 1998; Trope & Liberman, 2003). For young adults who have a long time horizon, retirement may be perceived as distant and abstract, but nevertheless motivate preparatory goals and knowledge seeking among those who are future oriented. Events that are in the near future are perceived in more detail and in less abstract terms (Trope & Liberman, 2003). Consequently, retirement may loom larger on the horizon for older adults, such that they perceive retirement in more concrete terms that reflect the actual practicalities and financial requirements involved.

One method designed to increase saving behavior has been to target the connection between people's present and future selves (Dulebohn & Hershfield, 2012; Hershfield, et al., 2011). This approach draws on views in the psychology literature that people tend to perceive their future selves as though they were someone else. Enhancing people's connection with their future selves may then increase willingness to invest in the future. In the Hershfield et al. (2011) study, participants who interacted with age-progressed computer renderings of their future selves in a virtual reality environment indicated that they would make greater savings contributions.

One mechanism through which imagining one's future self might increase saving behavior is by making future retirement less abstract. In Study 2, participants are asked to reflect on how they might live in their retirement and to list some of the daily living requirements (e.g., food, medical care) and activities (e.g., travel, hobbies, visit family) they anticipate during their retirement. They are then asked to estimate how much money they think they would need to save for their retirement. Our intervention is designed to focus people's thoughts about retirement in more concrete terms that reflect the actual practicalities and financial expenses involved.

We hypothesized that participants who are provided the intervention would be more willing to save for their retirement and to pay for a one-to-one meeting with a professional retirement planner, but would also be less willing to make an immediate deduction from their Social Security fund.

3.1. Method

3.1.1. Participants

The research materials and procedure were approved by the ethics committee at Queen's University Belfast, Northern Ireland (U.K.). Prior to the study, participants were told that the purpose of the study was to investigate how people make financial decisions, such as decisions about how to save money for retirement. They were told that they would be asked a number of questions, including ones that would assess their knowledge of financial matters and financial planning. Participants (N=405; 238 males, 167 females; age range=19–70, M=41.93, SD=14.53) were recruited from Amazon Mechanical Turk and received a token payment of 0.50 US dollars. All participants were US residents. The majority indicated high school (N=117; 28.9%) or college (N=234; 57.8%) as their highest educational attainment, and over half (N=212; 52.35%) indicated an annual household income greater than 40,000 US dollars.

3.1.2. Materials and Procedure

Participants were randomly assigned to either the intervention condition (N=202) or a control condition (N=203). All participants were asked to make financial estimates about how much they would save for retirement, pay for financial advice, and claim from their Social Security fund. Prior to these questions, participants assigned to the intervention were first told:

The U.S. Government is coordinating an initiative designed to motivate individuals to prepare financially for their future. Financial experts and policymakers agree that individuals need to plan how they will live their lives years from now. At any age, it is crucial that everyone plans for their future to ensure that they can financially support themselves in years to come.

Please take a couple of minutes to imagine yourself in your retirement. Try to picture how you might live in your retirement. Think about how important aspects of your life will be in retirement. For example, try to imagine where you will live, your daily living requirements (e.g., food, medical care), and what kinds of activities you would like to do during your retirement (e.g., travel, hobbies, visit family).

Participants in the intervention condition were then asked to list up to 12 daily requirements that they will need in their retirement and activities that they would like to do in their retirement. They were then told:

Now, considering the activities that you wish to do in your retirement (travel, hobbies, visit family) and the daily requirements that you expect in your retirement (housing, food, medical care), think about how much money you will need to save for your retirement.

Participants in the intervention condition were then asked to provide a rough estimate of how much money they thought they would need to save for retirement. Participants in the control condition did not complete any prior task. All participants, including those in the control condition, were then asked:

Imagine that you have received an unexpected \$1,000 tax return from the Internal Revenue Service (IRS). How much of this would you be willing to put immediately into your retirement savings to be made available when you retire?
..... U.S Dollars

Imagine that you have received an unexpected \$1,000 tax return from the Internal Revenue Service (IRS). How much of this would you be willing to pay for a one-to-one meeting with a professional retirement planner who can help you better design a personal savings plan for your retirement?
..... U.S Dollars

You have the option of a cash advance on your Social Security fund. You can claim an advance of up to \$10,000, which you will receive immediately, but this will reduce your entitlement to Social Security benefits in your retirement. How much money would you like to claim as an immediate advance?
..... U.S Dollars

The order in which the above items were presented to participants was randomly generated for each participant.

Financial knowledge was assessed using the financial knowledge scale introduced in Study 1.

3.1.3. Analytic strategy

We conducted logistic regression modeling on whether individuals were willing to save any of the hypothetical \$1,000 tax return for their retirement, pay for a retirement planner, and claim from their Social Security fund. This analysis included age, financial knowledge, and condition (intervention vs. control) as predictors, and further included all possible two-way interaction terms and a quadratic term for age in a second block. We included the same predictors in a linear regression model to investigate predictors of the amounts identified by participants willing to make a saving, payment, or claim.

Age differences in annual household income were examined in a regression analysis that included age as a continuous predictor. Separate logistic regression analyses were conducted to assess effects of income on participants' willingness to save for retirement, pay for a retirement planner, and claim from their Social Security fund. Linear regressions analyses were used to assess effects of income on the amount individuals indicated that they would save for retirement, pay for a retirement planner, and claim from their Social Security fund.

3.2. Results and Discussion

Individuals in the intervention condition generated a mean of 8.40 (range=2-12, $SD=2.56$) examples of daily requirements and activities that they envisioned for their retirement and anticipated they would need to save a mean of \$772,915 (range=\$0-\$10 million; $SD=1.40$ million), after removing one participant who estimated they would need to save \$500 million. As age increased, participants

generated more examples of daily requirements and activities ($r(206)=.159, p=.023$) and estimated smaller personal saving requirements ($r(204)=-.170, p=.015$).

Across all participants, most (347/405; 86%) identified that they would save some of a hypothetical \$1,000 tax return for their retirement and indicated that they would save a mean of \$584. Fewer individuals (60%; 241/405) identified that they would spend any of a \$1,000 tax return on a retirement planner, indicating that they would spend a mean of \$177, and just over half (52%; 212/405) opted to claim from their Social Security fund, indicating that they would claim a mean of \$5,292 from a maximum \$10,000.

Annual household income did not differ significantly between intervention and control conditions ($\beta=.027, p=.423$). Income increased linearly with age ($\beta=.121, p=.015$) and was positively associated with financial knowledge ($\beta=.223, p<.001$). Although higher income individuals were not significantly more likely to save some of the hypothetical \$1,000 tax return ($\beta=.085, p=.097$), higher income was associated with greater contributions among those who saved ($\beta=.142, p=.004$). Higher income individuals were also less likely to indicate that they would claim from their Social Security fund ($\beta=-.157, p<.001$) and indicated that they would claim less overall ($\beta=-.189, p<.001$). Income was not associated with likelihood of paying for financial advice ($\beta=.048, p=.168$), nor the amount individuals were willing to pay ($\beta=.072, p=.148$). To adjust for effects of income in our following analyses, we controlled for income in our assessment of amount saved and Social Security claims.

Financial knowledge did not differ significantly between the intervention condition ($M=2.77, SD = 1.11$) and control condition ($M=2.69, SD = 1.11; \beta=-.037, p=.454$). Our intervention did not significantly increase the number of individuals willing to save for retirement (Odds Ratio [OR] =1.235, $p=.461$) and there was no effect of financial knowledge (OR=1.191, $p=.162$). Willingness to save followed a quadratic trend with age (OR=1.002, $p=.049$). While most individuals were willing to

make a saving contribution, overall numbers reduced from age 19–25 years ($M=88\%$) to their lowest among 47–53 year olds ($M=76\%$) and increased with advancing age (61–70 years; $M=92\%$). Among those willing to save, when controlling for annual household income, our intervention increased the amount individuals indicated that they would save ($M_{\text{(Intervention)}}=\622 ; $M_{\text{(Control)}}=\$551$; $\beta=.116$, $p=.027$). Savings increased linearly with age ($\beta=.155$, $p=.003$) and a quadratic trend with age was not significant. There was also a positive association with financial knowledge ($\beta=.136$, $p=.011$), such that more knowledgeable individuals indicated that they would save more ($M_{\text{(High knowledge)}}=\631 ; $M_{\text{(Low knowledge)}}=\542). There were no significant interactions.

The probability that participants would pay for a retirement planner was not increased by the intervention ($OR=1.055$, $p=.791$), which followed a quadratic trend with age ($\beta=1.002$, $p=.009$). Willingness to pay for a retirement planner reduced with age from age 19–25 years ($M=68\%$) to 40–46 years ($M_{\text{(40-46 years)}}=43\%$) before increasing with age ($M_{\text{(61-70 years)}}=67\%$). There was no effect of financial knowledge ($OR=0.929$, $p=.427$). Among those who were willing to pay for a retirement planner, those who were provided the intervention were willing to pay more ($M_{\text{(Intervention)}}=\200) than those in the control group ($M_{\text{(Control)}}=\$135$; $\beta=.138$, $p=.032$). There were no significant trends with age and no association with financial knowledge ($\beta=-.076$, $p=.236$).

When controlling for annual household income the probability that participants would claim from their Social Security fund was reduced among those who were provided the intervention ($M_{\text{(Intervention)}}=45\%$) compared to the control condition ($M_{\text{(Control)}}=58\%$; $OR=0.557$, $p=.006$). Individuals of higher financial knowledge were also less likely to claim ($M_{\text{(High knowledge)}}=39\%$; $M_{\text{(Low knowledge)}}=64\%$; $OR=0.630$, $p<.001$). There were no significant trends with age. Among those who wished to claim from their social security fund, when controlling for annual household income there was no significant effect of the intervention on the amount that individuals wished to claim ($\beta=.067$, $p=.329$). However,

individuals with high financial knowledge actually claimed more than those of lower financial knowledge ($M_{(\text{High knowledge})}=\$6,168$; $M_{(\text{Low knowledge})}=\$5,146$; $\beta=.203$, $p=.004$). Claim amounts followed a quadratic trend with age ($\beta=-1.199$, $p=.023$), increasing from age 19–25 years ($M=\$4,023$) until age 30–39 years ($M=\$6,533$).

In sum, most participants were willing to save for retirement at least some of an unexpected \$1,000 tax return and saving contributions generally increased with age. Our intervention, which was designed to make retirement less abstract, increased the amount individuals were willing to save and the amount they were willing to pay for a retirement planner as well as reduce their willingness to claim from Social Security. Financial knowledge was also relevant to individuals' savings decisions. More knowledgeable participants indicated that they would save more for retirement and were less willing to make a Social Security claim.

4. General Discussion

American workers are seemingly underprepared for retirement (Topoleski, 2013) as some financial experts warn that as much as one million dollars may be inadequate for retirement (Sommer, 2013). Nearly half of current American workers are expected to be unable to maintain their standard of living in retirement (Munnell, Webb, & Golub-Sass, 2009). After reflecting on how they might live in their retirement and some of the daily living requirements (e.g., food medical care) and activities (e.g., travel, hobbies, visit family) they anticipate during their retirement, participants here estimated that they would need to save around \$772,915. Hence, people's estimates of how much they need to save for their retirement are not so unrealistic when they unpack the financial requirements of retirement. Why then are American workers so underprepared for retirement?

Our findings, in support of other investigations (e.g., Hershey et al., 2007; Jacobs-Lawson & Hershey, 2005), suggest that future oriented attitudes are central to retirement saving. In Study 1,

individuals who were future oriented indicated that they had made greater retirement saving contributions than those who were less future oriented. Future orientation mediated the effects of a propensity toward long-term planning for future expenses on retirement saving. Accordingly, we asked participants in Study 2 to reflect on the future expenses that they anticipated in their retirement, which increased the amount they were willing to save and the amount they would pay for a one-to-one meeting with a professional retirement planner, as well as reduce their willingness to make an immediate claim from their Social Security fund.

While future oriented attitudes may be central to saving behavior, a future oriented mindset as well as relevant financial knowledge may both be necessary for young adults to engage in saving for retirement. Carstensen and colleagues (e.g, Charles & Carstensen, 2009) have proposed that in social contexts young adults who have a long time horizon perceive time as open-ended, which prioritizes preparatory goals and knowledge seeking. Events that are far in the future tend to be perceived abstractly in terms of goal-relevant features (Trope & Liberman, 2003). Our findings extend this line of reasoning to the financial domain and suggest that knowledge seeking behavior among young adults may be motivated by future oriented attitudes. Other researchers have highlighted a need for improving financial literacy among the public (e.g., Lusardi & Mitchell, 2011). Our findings imply that education programs designed to increase saving by targeting financial literacy may be inefficient unless also aimed at focusing young people's thoughts on the future.

Future oriented attitudes had a more direct association with saving with advancing age, such that future oriented individuals who were approaching retirement were willing to save independent of their financial knowledge. As proposed by Carstensen et al. (1999), as time horizons shorten (e.g., toward retirement), time constraints are perceived, which focusses attention on realizing goals (e.g., making savings contributions) and away from preparatory goals that might motivate knowledge

498 seeking. Additionally, as future events draw closer to the present (e.g., with the passage of time) they
499 are perceived in more concrete detail and in less abstract terms (Trope & Liberman, 2003). Our
500 intervention in Study 2 was designed to focus people's thoughts about retirement in more concrete
501 terms that reflect the actual practicalities and financial expenses involved, and this increased the
502 amount participants were willing to save for retirement. Our findings imply that some individuals who
503 are approaching retirement may be motivated to make decisions about saving without seeking
504 necessary financial knowledge. Consequently, policymakers and financial advisors should ensure that
505 older adults are adequately informed about retirement options when making decisions about their
506 savings.

507 Greater access to employment-based retirement plans has forced financial decisions about the
508 future into the hands of workers (Gough & Niza, 2011). In view of people's short-sighted saving
509 tendencies, some behavioral economists have recommended prescriptive savings plans. The Save
510 More Tomorrow™ plan uses automatic-payroll-deduction to commit workers to greater savings
511 contributions for future salary increases (Thaler & Benartzi, 2004). While effective for individuals
512 who enroll, only around a third of eligible workers reportedly participate in these plans (Helman,
513 Copeland, & VanDerhei, 2012). Here, we found that people's motivations to save for retirement
514 undergo changes across the adult lifespan. Participation in savings plans offered by employers might
515 be increased by tailoring plans in a manner that targets younger workers differently to those who are
516 closer to retirement.

517 The findings reported here imply dynamic differences in motivations to save across adulthood.
518 Such differences with age would be missed by methods that collapse across age. For example,
519 financial risk tolerance, which has been identified as an important predictor of retirement saving (e.g.,
520 Jacobs-Lawson & Hershey, 2005), was found to predict saving only among younger adults and was

less associated with saving with advancing age. This finding highlights a dynamic character of retirement saving and reveals a need to assess age-by-age differences in people's motivations to save for retirement across adulthood.

While our current research points to the importance of tracking dynamic differences in motivations to save across adulthood, a limitation of our studies is that they were cross-sectional in design. Generational changes in people's attitudes toward saving for the future, financial booms and busts (e.g., the global financial crisis of 2008), and government policies and initiatives must also impact on people's decisions to save. We cannot make claims about age changes in retirement saving behavior. However, our findings do suggest that currently the psychological factors that motivate young people to save are different to the factors that motivate saving behavior among adults who are closer to retirement. For example, the results of Study 1 suggest that adults approaching retirement, motivated by a future oriented mindset, may engage in decisions to save even if they lack adequate financial knowledge. This finding raises concern about the saving decisions of individuals for whom retirement looms on the horizon. A further limitation of our studies is that decisions about saving for retirement are likely to be shared by an individual with their partner. In Study 1, we used a self-report scale that questions individuals about their personal retirement saving tendencies (e.g., "I have made meaningful contributions to a voluntary retirement saving plan"; Neukam & Hershy, 2002). In Study 2, participants were asked to make hypothetical decisions about whether to save an unexpected \$1,000 tax return. Although having better financial knowledge was associated with more saving in both studies, we did not assess the financial knowledge or retirement saving tendencies of participants' partners or cohabitants. As such, our studies do not identify which individuals in a household are actually engaged in decision making about retirement. Our findings also neglect the potentially highly important role of shared decision making in this process (Clark, Knox-Hayes, & Strauss, 2009).

Moreover, women may be less engaged than men in decisions about retirement saving. For instance, Chen and Volpe (2002) found that, compared to men, women are less confident and enthusiastic about their personal finance. Their study showed that women are also less eager than men to learn more about financial matters.

In the current research we probed some of the psychological factors that potentially underlie saving behavior. A standard economic view is that people save when their income is high and their other expenses are low (Crossley, 2012). Our findings support that saving behavior increases with income. In Study 1, higher annual household income was associated with greater retirement saving and better knowledge of financial matters. In Study 2, individuals who had a higher annual household income had better financial knowledge and indicated that they would save more of an unexpected \$1,000 tax return for their retirement. They were also less likely to indicate that they would withdraw from their Social Security fund, and if they were to make a withdrawal, that they would withdraw less. In addition to psychological factors, such as one's future time perspective that can promote saving behavior, income is an important determinant of saving for the future.

In conclusion, a future oriented mindset is central to retirement saving behavior. However, motivations to save may differ dynamically across the adult lifespan, such that younger adults prioritize knowledge seeking in preparation for future possibilities whereas people approaching retirement prioritize realizing goals (e.g., making savings contributions). Future research that seeks to understand people's motivations to save should take account of the dynamic character of retirement saving.

Acknowledgements

The data are available online and on request.

5. Reference List

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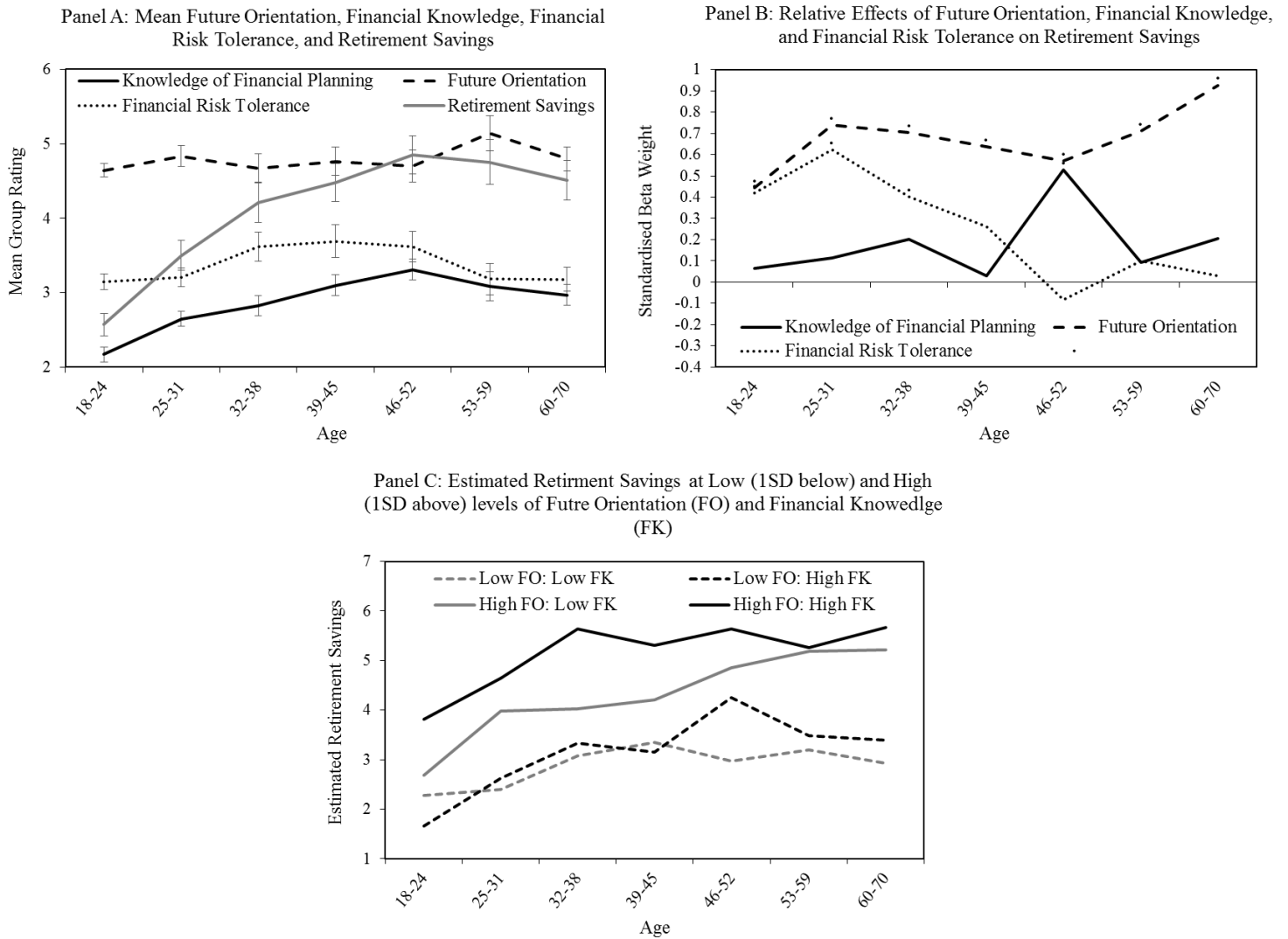
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652 *Figure 1. (A) Mean future orientation, financial knowledge, financial risk tolerance, and*
 653 *retirement saving, (B) Relative effects of future orientation, financial knowledge, and*
 654 *financial risk tolerance on retirement saving, and (C) Retirement savings estimated at low (1*
 655 *SD below mean) and high (1 SD above mean) levels of future orientation and financial*
 656 *knowledge. Note. Asterisks in Panel B indicate effects that are significantly above chance*
 657 *($p \leq .05$). Regression models used to conduct the analysis shown in Panels B and C controlled*
 658 *for annual household income.*