The Role of Behavioral Economics and Behavioral Decision Making in Americans' Retirement Savings Decisions

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[1] The research and opinions expressed in this paper do not necessarily reflect those of the Social Security Administration.

Abstract

Traditional economic theory posits that people make decisions by maximizing a utility function in which all of the relevant constraints and preferences are included and weighed appropriately (Simon, 1959).[2] *Behavioral* economists and decision-making researchers, however, are interested in how people make decisions in the face of incomplete information, limited cognitive resources, and the decision biases to which individuals often fall prey (e.g., Thaler, 1990; 1999; Tversky & Kahneman, 1974). Empirical findings in the areas of judgment and decision making (JDM) and behavioral economics demonstrate departures from the notion of man as economically rational, illustrating instead that people often act in ways that are economically suboptimal. In the following literature review, I outline findings from JDM and behavioral-economics literatures that focus on elements of the retirement savings decision.

[2] Traditional economic theory assumes that individuals have full information and are able to process this information, that individuals are rational decision makers, and that individuals' preferences are well-defined and constant over time (e.g., Becker, 1962; Thaler, 1990). These assumptions have been questioned by behavioral economists and decision-making researchers.

I. Introduction

The reality facing today's workers, that Social Security will not, nor was it intended to constitute the entirety of U.S. workers' retirement income (DeWitt, 1996), has highlighted the importance of personal financial responsibility. The growing number of employers offering defined contribution (DC) retirement plans (401(k)s) in addition to, or in lieu of, traditional defined benefit (DB) or pension plans (EBRI, 2007) further underscores the role of the individual in planning for his or her future financial well-being. As such, today's workers are charged with taking control of their financial futures by planning for retirement on their own. Unfortunately, decision makers face a multitude of problems when making all kinds of decisions, both simple and complex.

Research in the fields of JDM and behavioral economics[3] has much to say about how individuals may behave when deciding if, how, and when to save for retirement. Throughout this paper, I will highlight key JDM and behavioral-economics findings whose implications can help policymakers and financial planners understand what factors, aside from purely economic ones, may affect individuals' savings behavior. The concepts reviewed below fall loosely into four categories: informational issues; heuristics and biases; intertemporal choice; and the decision context (Table 1). Each of these categories reflects a class of impediments that individuals may encounter on their way to future financial well-being.

[3] For more information regarding the origins and history of JDM research, see Goldstein and Hogarth (1997), Hogarth (1993), and Kahneman (1991). For expositions on the development and recent increase in popularity of behavioral economics see Agner and Loewenstein (2007), Loewenstein and Camerer (2004), and Rabin (2002).

TABLE 1
Some Factors That May Affect Individual's Savings Behavior

Category	Examples
Informational Issues	Ambiguity Aversion
	Anecdotal Evidence
Heuristics and Biases	Rules of Thumb
	Status Quo Bias
	Default Bias
Intertemporal Choice	Self Control
	Procrastination
	Hyperbolic Discounting
	Emotions
Decision Context	Reference Dependence
	Choice Bracketing
	Framing Effects
	Choice Architecture

The first category deals with informational issues, such as the tendency for people to want to avoid making decisions when all of the relevant information is unknown or unclear (i.e., *ambiguity aversion*) and individuals' over-reliance on anecdotal evidence. Even if decision makers had complete and accurate information, however, empirical findings suggest that they would still make suboptimal savings decisions as a result of issues related to the second category: heuristics and biases. The tendency for individuals to disproportionately endorse the status quo alternative (i.e., *status quo bias*) and the systematic influence that the default option has on choice (i.e. *default effects*) represent anomalies or biases unaccounted for by traditional economic models. Additionally, individuals make use of *heuristics*, or rules-of-thumb, which are generally beneficial, but can also lead decision makers astray. The third category, issues dealing with intertemporal choice, introduces ways in which self-control, procrastination, time-inconsistent preferences (e.g., *hyperbolic discounting*), and emotions can affect savings behavior. Finally, JDM and behavioral-economics research has demonstrated the impact of the decision context (e.g., *reference dependence, choice bracketing, framing effects,* and *choice architecture*)

on choice; this research highlights how simple changes in the way options are presented, considered, or arranged can have profound effects on the choices individuals ultimately make.

Below I will explain how an awareness of these and other behavioral concepts can help policymakers and financial planners anticipate and plan for potential behavioral responses not accounted for in traditional economic models. The remainder of this literature review consists of three main sections. First, I will describe why JDM and behavioral-economics research is important for our understanding of savings behavior, particularly in the current economic climate. Next, I will outline findings from JDM and behavioral economics that fall into the four categories delineated above, citing relevant research and its implications for the savings decision. Finally, I offer some directions for future research in the application of JDM and behavioral economics to the study of retirement savings.

II. The Relevance of Behavioral Economics and JDM in the Current Savings Climate

At the same time that Americans are being called upon to take charge of their financial well-being for retirement, previous research has shown that people do not always act in their own best interest. Indeed, there is a wealth of JDM and behavioral-economics research demonstrating a disconnect between intentions and behavior (Loewenstein, 1996; Mitchell & Utkus, 2003; Thaler & Shefrin, 1981), and a disconnect between doing what we *ought* to do and what we *want* to do (O'Connor, et al., 2002). Survey research regarding retirement savings suggests a similar disconnect. For example, data from the 1996 Health and Retirement Survey (HRS) indicate that about 75 percent of participants felt that they had not saved enough for retirement and would have saved more if they could start over again (NIA, 2007). In 2001, the Consumer Federation of America and Bank of America (CFA/BOA, 2001) reported that 82 percent of participants surveyed would like to save money and "build personal wealth," yet 60 percent felt that the statement "I don't think I'm saving enough for the future" described them well or very well. Americans appear to want to make sound financial decisions: they want to spend less and save more. At the same time, however, Americans' actual saving rates represent less than 5 percent of their disposable income.[4] Researchers in the fields of behavioral economics and behavioral decision making seek to explain why individuals often make suboptimal decisions, even when they have good intentions.

The recent economic downturn has caused many investors to worry about their retirement savings (EBRI, 2009a). Individuals heavily invested in equities have been most hard-hit, and a

[4] According to the Bureau of Economic Analysis (BEA), personal savings as a percentage of disposable income was 4.8 percent in December, 2009. The BEA's full report can be found at http://www.bea.gov/newsreleases/national/pi/2010/txt/pi1209.txt. It should be noted that while the personal savings rate has vacillated recently, perhaps as a result of increased debt repayment during the recent economic downturn (Mui, 2010), personal savings in the US has declined over the past few decades and remains lower than in many modern nations (Jones, 2010).

significant percentage of older investors are among this group. A February, 2009 report from the Employee Benefit Research Institute (EBRI) and the Investment Company Institute (ICI) indicated that almost a quarter (22 percent) of those aged 56 to 65 included in the EBRI/ICI 401(k) database had 90 percent or more of their assets invested in equities. An additional 21 percent of participants in this age group had between 70 percent and 90 percent of their investments in equities (VanDerhei, 2009). Investors are often encouraged to shift the allocation of their retirement investments over time so that a greater proportion of their investments is moved into less-risky prospects as they age (see Viceira, 2007, for a recent review); the recommended allocation shift helps ensure that retirement funds will not be drastically reduced for the retiree in the event of a stock market decline. With such recommendations in place, why did older investors with more than $200,000 in retirement savings[5] lose more than 25 percent of these funds by year-end 2007 (VanDerhei, 2009)?

An obvious answer is that these investors did not know about the recommendation or lacked confidence to act if they did. Given the complexities involved in determining the optimal allocation of retirement investments, average employees should not be expected to formulate the "shift in equity" rule-of-thumb on their own. However, with the recent shift toward DC plans, and the resulting increase in personal responsibility for retirement planning, the issue of financial literacy has received more attention in recent years. Moreover, 401(k)s and stock assets are not the only areas in which consumers must navigate through increasingly complicated financial systems, often to their own detriment. Previous research has shown, for example, that individuals make "financial mistakes" when dealing with credit card fees and interest payments, car loans, mortgages, and home equity lines of credit, to name a few (Agarwal, Driscoll, Gabaix, & Laibson, 2006). Many institutions, both public and private, have stepped-up their efforts to

[5] Of the 21 million participants in the sample, these individuals held above-average account balances.

educate people of all ages on various aspects of their financial well-being.[6] While enhancing financial literacy is an important step toward ensuring individuals' financial security, improved knowledge may not guarantee sound financial decisions. Indeed, research in the area of expert decision making suggests that even when individuals possess vast amounts of knowledge in a particular domain, they are not immune to making erroneous judgments and decisions in that domain (Hutton & Klein, 1999; Shanteau, 1988; Shanteau & Stewart, 1992). As will become clear in the remaining sections of this paper, there are numerous impediments to sound decision making that can occur in the face of complete, accurate information.

[6] For example, Mymoney.gov, a website sponsored by the U.S. Financial Literacy and Education Commission (FLEC), provides the American public with information on saving and investing, retirement planning, and paying for education**.** The Jump$tart Coalition for Personal Financial Literacy (www.jumpstartcoalition.org) targets young Americans and strives to promote curriculum-based financial education for students in grades K-12. The Social Security Administration (SSA) has recently announced a multidisciplinary research and development initiative called the Financial Literacy Research Consortium (FLRC), whose focus is to educate the public on fundamental issues related to retirement savings and planning.

III. Behavioral Economics, JDM, and the Savings Decision

The Impact of Incomplete and Erroneous Information on Savings Behavior

In determining whether or how an individual can be expected to save for retirement, research in JDM and behavioral economics suggests that the amount, source and nature of the information individuals receive about saving are likely to influence savings decisions. Furthermore, while the recent push toward improved financial literacy for all Americans is a positive step toward better financial decision making, research suggests not only that greater knowledge does not necessarily result in better, more accurate decision making (Shanteau & Stewart, 1992), but also that individuals have a long way to go to achieve financial literacy. At present, many individuals do not understand even the most basic financial concepts (Olsen & Whitman, 2007). For example, using a module inserted into the 2004 HRS, Lusardi and Mitchell (2005) found that only about half of a nationally representative sample of respondents aged 50 and older were able to answer simple questions about compounding interest and inflation. Furthermore, Lusardi and Mitchell (2005) observed a relationship between financial education and financial planning such that respondents who were more knowledgeable about financial information were also more likely to have engaged in financial planning. As Olsen and Whitman (2007) note, a lack of financial knowledge can result in poor investment decisions.

Ambiguity Aversion and Competence. Lusardi and Mitchell's (2005) finding that greater financial knowledge and participation in financial planning were positively related underscores the connection between information, intentions, and behavior. Included in Lusardi and Mitchell's questionnaire were questions about participants' financial preparations for retirement: whether the participants had ever calculated how much they would need to save for retirement; whether they had ever developed a retirement savings plan; and what tools they had used to plan for

retirement (e.g., online calculators or worksheets). As mentioned above, Lusardi and Mitchell also included in their questionnaire a financial literacy measure, aimed at assessing respondents' awareness of fundamental financial concepts needed to implement economic action plans in support of financial well-being. Results from the financial literacy assessment suggested that many individuals do not have adequate knowledge to engage in sound financial planning. But, could this lack of knowledge prevent people from even *attempting* to plan for retirement?

Previous research on the topic of decision making under ignorance has demonstrated that the type and amount of information individuals receive can, in fact, paralyze the decision-making process. For example, research in this area has shown that people prefer options for which the risks are known to options for which the risks are unknown or unspecified, a finding labeled *ambiguity aversion* (see Camerer & Weber, 1992, for a review). One stream of research emerging from the ambiguity aversion literature investigates how competence or knowledge in a relevant domain affects individuals' preferences (i.e., the *competence hypothesis* of ambiguity aversion). For example, Heath and Tversky (1991) found that, contrary to the ambiguity aversion hypothesis, participants did not prefer an option with known risks to an option with ambiguous risks when the options occurred within a familiar domain. In one of their experiments, participants who were knowledgeable about football (or politics) preferred to take a bet based on their beliefs about the outcome of a football game (or a presidential election) than on a chance event with an equal probability. However, participants who knew little about football (or politics) preferred to bet on a chance event rather than on the outcome of the game (or election). Fox and Tversky (1995) and Fox and Weber (2002) suggest that this pattern of findings is based on *comparative ignorance*.

The comparative ignorance hypothesis posits that when individuals are confronted with a choice, they compare their level of knowledge in the relevant domain to their knowledge in other domains or to others' knowledge in the relevant domain. This comparison, in turn, produces feelings of competence or ignorance; when a feeling of ignorance results, people judge the situation as ambiguous and seek to avoid it. Specifically, Fox and Tversky (1995) argue that "people's confidence is undermined when they contrast their limited knowledge about an event with their superior knowledge about another event, or when they compare themselves with more knowledgeable individuals" (p. 587).

The competence and comparative ignorance hypotheses described above suggest that ambiguity aversion arises when individuals feel incompetent in a particular domain. Thus, a lack of confidence in dealing with economic issues may lead decision makers to avoid making financial decisions altogether. Lusardi and Mitchell's (2005; 2007) research regarding individuals' propensity to engage in financial planning supports this notion: in addition to their finding that financial *knowledge* impacted respondents' involvement in financial planning, Lusardi and Mitchell also found that individuals' *confidence* with retirement planning was related to their likelihood of participating in financial planning activities. Thus, while they did not directly test this relationship, Lusardi and Mitchell's (2005) findings support the predictions of the competence and comparative ignorance hypotheses. Specifically, the authors found that participants who responded that they did not know the answers to the financial literacy questions, as opposed to simply answering them incorrectly, were much less likely to have engaged in retirement planning than even those who gave incorrect answers. Consistent with the competence and comparative ignorance hypotheses, Lusardi and Mitchell's findings (2005; 2007) suggest

that when individuals do not feel confident in the relevant domain, in this case, financial planning, they may tend to avoid making decisions.

This finding, relating confidence to reported financial planning behavior, may be particularly relevant to the competence and comparative ignorance hypotheses, as these hypotheses are based on individuals' subjective feelings of incompetence or a lack of confidence. Lusardi and Mitchell (2007) explored the validity of subjective feelings of financial competence by asking respondents from the RAND American Life Panel (ALP) for self-assessments of their financial knowledge, along with other financial preparedness and literacy questions. The authors found that self-assessed financial literacy was positively related to objective financial literacy. [7] Thus, it appears that financial literacy, whether subjectively or objectively determined, is a key factor in financial planning.

The link between confidence and ambiguity aversion has important implications for the types of communications financial institutions use to reach their clients. If a feeling that one knows very little about a particular topic can lead an individual to avoid making decisions, then this might also suggest that there can be such a thing as too much information; providing too much information can create a lack of confidence, which, in turn, can lead individuals to avoid making decisions. Heath and Tversky (1991) argue that one's feeling of competence within a domain is determined by the relationship between what one knows and what one *could* know. That is, feelings of incompetence are exacerbated when relevant information that one does not possess or understand is made salient. One way to draw attention to an individual's lack of knowledge is to ask questions to which one does not know the answers. Online retirement calculators are a good example; users of this tool may be asked to input information about

[7] The reported overlap between self-assessed and objectively-measured financial literacy was between 50 percent and 66 percent. Lusardi and Mitchell (2007) interpret this as a "strong positive correlation" (p. 12) between the two measures of financial literacy.

inflation estimates and wage growth assumptions (e.g., Choose to Save, 2009). As demonstrated by Lusardi and Mitchell (2005; 2007), however, many people do not possess this type of knowledge. Therefore, an individual who attempts to plan for retirement may walk away from the episode feeling more confused than before. Indeed, Agnew and Szykman (2005) found that "financial aptitude" interacted with certain aspects of retirement plan design; for example, lower-knowledge individuals were more likely to remain with the default option than were individuals with higher knowledge. The realization that there is a great deal of information that one does not understand, or about which one is unaware, can paralyze the decision process, leading the decision maker to avoid making a decision at all. This poses a potential problem for policymakers; ensuring that all of the relevant information is available to those who want it and can use it, without driving away or confusing those who are less financially savvy, may be a difficult balance to strike.

Anecdotal Evidence. As an alternative to avoiding the savings decision altogether, ill-informed individuals may turn to others whom they feel are more knowledgeable in the area. The extremely long and complex IRS tax code, for example, causes people to flock to professional tax preparers each April. There is little doubt that attempting to file one's own taxes makes salient the wealth of information one could know but does not know, which may lead individuals to want to avoid the situation altogether. Although similar feelings of incompetence likely arise when people attempt to choose retirement accounts and asset allocations, people can continually defer making savings decisions, whereas taxes must be filed annually. Nevertheless, if and when one does make the decision to save for retirement, apprehension resulting from a lack of knowledge could arise. Measures put in place by some employers, such as automatic enrollment in individual retirement accounts (IRAs), allow individuals to begin investing without having to

confront their lack of knowledge in this area (Thaler & Benartzi, 2004). If, however, investors are motivated to allocate their funds more optimally than the default allocation, feelings of incompetence can surface upon attempting to learn about one's finances.

To remedy this issue, investors often turn to professional advisors for help. However, professional advice often comes at a high price, leaving many lower-income individuals to rely on other sources for their information. Using the 2004 Survey of Consumer Finances (SCF), Olsen and Whitman (2007) found that individuals who save and whose household income exceeds $70,000 are the most likely to make use of formal financial advice (i.e., from lawyers, bankers, financial planners, etc.), while those making less than $20,000 rely most heavily on informal advice, such as that from a friend or relative. Additionally, Van Rooij, Lusardi and Alessie (2007) demonstrated that individuals with low levels of financial literacy are more likely than the financially literate to rely on advice from friends and family when making financial decisions. Finally, Olsen and Whitman (2007) observed that between 45 and 50 percent of *all* reported savers in the SCF indicated using public sources, including television, radio, and the Internet, for investment advice.

With the prevalence of investment-related anecdotal evidence and individuals' ready utilization of it, it is important to address the potential effects of such information on the savings decision. Particularly in the current economic climate, individuals are often bombarded with abundant, but potentially superficial, financial information. The information disseminated on television, for example, on "The Suze Orman Show," is not necessarily intended to be a one-size-fits-all recommendation; advice intended for those nearing retirement age may be significantly different from recommendations intended for young workers in their first job. Nevertheless, Orman's "Can I Afford It?" show segment, in which the host gives tailored

financial advice to callers hoping to be given the "go ahead" to purchase specific items, is wildly popular (Dominus, 2009). A May, 2009 article in the *New York Times* (Dominus, 2009) reports that Suze Orman's viewership has increased over 22 percent since the same time the previous year, indicating that more people are interested in financial advice, and they are looking to public sources to find it.

The success of Orman's show, and, in particular, the popularity of the "Can I Afford It?" segment, is a testament to research showing that people are much more receptive to anecdotes and personal testimonials than they are to statistics (Fagerlin, Wang, & Ubel, 2005). While much of this research has been conducted in the field of medical decision making (Ubel, Jepson, & Baron, 2001), reliance on anecdotal information in decision making likely cuts across all domains. Medical-decision-making researchers often find that patients' treatment preferences are influenced by stories of people who have undergone similar treatments with successful or unsuccessful outcomes. Additionally, everyday examples of people's tendency to overweight anecdotal evidence and underweight statistical evidence are not hard to find. For example, a driver whose friend died in a car accident because his fastened seatbelt malfunctioned is less likely to wear his seatbelt than a driver who knows no such person—even though seatbelts save thousands of lives each year. One reason commonly cited for the power of anecdotal evidence is that people can more easily identify with a specific person than with an "average" person (Jenni & Loewenstein, 1997); people overwhelmingly believe themselves to be different from the average person in many ways (Alicke, Klotz, Breitenbecher, Yurak, & Vredenberg, 1995). Additionally, individuals may find anecdotal evidence to be more convincing than relevant statistics, since people often do not understand how to accurately interpret statistical information

(Lipkus, Samsa, & Rimer, 2001). Finally, anecdotes invoke strong emotions, which may alter individuals' perceptions of risk (Loewenstein, Weber, Hsee, & Welch, 2001).

All of the abovementioned explanations for the strength of anecdotal evidence in individuals' decisions apply well to the financial domain. For example, when deciding how to allocate funds in one's retirement portfolio, people may ask their friends how they allocated their own portfolios. Even though the average person tends to make more money investing in stocks than in bonds in the long run, an investor whose friend has lost a lot of money in stocks may decide to invest in less risky options, so as not to follow in his friend's unfortunate footsteps. Low levels of financial literacy may lead people who do not understand statistical information, like the difference in risk that accompanies investing in one group of stocks over another, to find their friends' and family's advice and stories more convincing than the relevant statistics. Most applicable in the current financial climate are stories and anecdotes from depressed investors who have lost significant portions of their retirement funds. Such stories can be expected to evoke strong feelings and emotions in individuals trying to determine what to do with their own money. The strong, negative feelings prompted by anecdotal evidence may lead potential investors to infer greater levels of investment risk than is warranted (Lerner & Keltner, 2000; Loewenstein et al., 2001; Raghunathan & Pham, 1999). Informal advice from friends, family members, and public media outlets can shape investors' financial decisions, leading them to make potentially suboptimal choices.

Heuristics and Biases Influence Savings Behavior

While informational concerns collectively are one piece of the retirement puzzle, they most certainly cannot account for all of the suboptimal decisions investors make in their quest for retirement security. Recall the EBRI report discussed earlier showing that about a quarter of

56- to 65-year-olds surveyed had more than 90 percent of their investments in equities, contrary to the "shift in equity" rule-of-thumb. If these individuals were better educated about the importance of reducing asset risk as they moved closer to retirement, would they have been better off? JDM research in the heuristics-and-biases tradition (Tversky & Kahneman, 1974) suggests that, for a variety of reasons, people tend to distort information in meaningful and systematic ways. Furthermore, individuals often rely on *heuristics*, or rules-of-thumb, when making decisions;[8] while heuristics lead individuals down the right path most of the time (Gigerenzer, 2008), their use also produces systematic and predictable judgment errors (Tversky & Kahneman, 1974). As a result, the use of heuristics and the biases that result can lead to decision errors even in the presence of accurate and complete information.[9]

Heuristic Reasoning and System 1 Processing. Even if individuals do not expressly seek out financial advice, it is likely that they will acquire economic information incidentally. Any news program, radio talk show, newspaper, or magazine is almost certain to mention topics related to personal finances, and many dinnertime conversations with friends or family are bound to include some reference to the economy. JDM research has demonstrated that the ease or difficulty with which information can be brought to mind, as well as the frequency with which a piece of information has been encountered, affects people's judgments. It is quite possible, then,

[8] Tversky and Kahneman (1973; 1974) first applied the concept of heuristics to the domain of judgment under uncertainty to describe the way individuals assess probabilities and estimate values. They demonstrated that decision makers attempt to reduce complex estimation problems into simpler terms through the use of various "rules-of-thumb." More recently, decision-making researchers have expanded the notion of heuristics to domains other than probability and value estimation (e.g., Gigerenzer & Todd, 1999). As such, the concept of the heuristic has come to broadly describe judgments made quickly and with limited knowledge, time, or cognitive capacity (Gigerenzer & Todd, 1999). There is much controversy in the JDM literature concerning exactly what constitutes a "heuristic" (e.g., Oppenheimer, 2003; Newell, 2005), but a discussion of this debate is beyond the scope of this paper.

[9] Even experts, who, by definition, possess a great deal of knowledge in their respective areas of expertise, fall prey to judgment errors when relying on heuristics (e.g., Northcraft & Neale, 1987; Tversky & Kahneman, 1971). In fact, errors in expert decision making are often attributed to experts' overreliance on judgmental heuristics when solving problems in their areas of expertise (Shanteau & Stewart, 1992; Slovic, Fischhoff, & Lichtenstein, 1985).

that even incidental contact with financial information can influence people's financial decisions. The *availability heuristic* (Tversky & Kahneman, 1973; 1974) is the tendency for people to use the ease with which instances of a particular event or situation come to mind as an indication of the likelihood of the event occurring. As such, the amount of news coverage a certain event receives can help to shape people's judgments regarding the likelihood of the same event or outcome happening to them. For example, early research showed people tend to wrongly estimate the incidence of homicide to be greater than that of suicide (Lichtenstein, Slovic, Fischhoff, Layman, & Combs, 1978), and such incorrect probability judgments have been tied directly to the number of words dedicated to relevant events in newspapers (Combs & Slovic, 1979). This finding suggests that investors who hear many news reports (or one particularly vivid one) about future retirees losing large proportions of their retirement savings may come to think that they are destined to meet the same fate. As a result, nervous investors may pull their money out of their retirement funds or shift their funds to less risky prospects. News programs rarely report on the scores of people whose savings were not as hard-hit, and this biased reporting can lead viewers to believe that the probability of a negative outcome is far greater than it actually is (Combs & Slovic, 1979). Similarly, the vividness of an entire news segment dedicated to "one man's quest for survival in retirement," for example, can help skew viewers' estimates of the likelihood that the same outcome will befall them if they do not move all of their investments to no-risk savings accounts. [10]

The *validity effect*, the finding that repeated statements are judged to be more valid (Hasher, Goldstein, & Toppino, 1977), may also be relevant to the impact that news reports and family discussions have on an individual's financial behavior. Newscasts tend to report on hot

[10] For more recent research exploring the impact of the availability heuristic on financial decisions, see Lee, O'Brien, and Sivaramakrishnan (2008), Kilger and Kudryavtsev (2010), and Semenov (2009).

topics like, "what to do with your 401(k)," and they tend to give the same solutions to the issues each time. This means that a viewer is likely to hear the same advice repeatedly. According to the validity effect, then, an individual might take as truth opinions expressed in a newscast that may or may not be true. Simply by virtue of repeating the same messages, news reports can influence the subsequent financial decisions an investor makes.

It may seem hard to believe that competent decision makers could be so easily influenced by the vividness of a story or the number of times they heard a newscast, but psychological research suggests that people are prone to heuristic "thinking" (Tversky & Kahneman, 1974). People tend to reason intuitively by "going with their gut," which results from what Stanovich and West (2000) call *System 1 processing*. System 1 processing is automatic, intuitive, quick and emotional, while System 2 processing is more effortful, slow and controlled. People typically rely on System 1 when they do not have the time or cognitive capacity to carefully process all of the available information (Stanovich & West, 2000). Since these conditions commonly exist in our fast-paced and complex world, many researchers argue that people operate in System 1 most of the time (Gilbert, 2002), though System 2 can override System 1 in certain circumstances (Kahneman, 2003).[11] More about System 1 and System 2 processing will be discussed later, but for now it is important to note that individuals' tendency to process information quickly and intuitively (i.e., System 1 processing) can lead decision makers to be influenced by extraneous factors and emotion-laden aspects of the decision in question.

[11] Recently researchers have begun to explore the relationship between heuristic-based, System 1processing and cognitive ability (see Stanovich & West, 2008, for a thorough review of the findings). Results are mixed as to whether cognitive ability attenuates judgmental biases resulting from the use of heuristics and System 1 processing, but there is evidence suggesting that often cognitive ability and "thinking biases" are uncorrelated. Stanovich and West (2008) present a framework for identifying when cognitive ability is and is not likely to attenuate System 1-induced judgmental biases.

Status Quo Bias. Specifically relating to the asset reallocation problem described earlier, research in behavioral economics and behavioral decision making suggests that, even with full knowledge of recommended allocation strategies, investors will likely fail to reallocate their funds throughout their lives. While such suboptimal behavior cannot be accounted for by traditional economic theory, a classic finding from the JDM literature can account easily for this behavior: individuals exhibit the *status quo bias*. Simply put, when the opportunity exists either to do something or to do nothing, people tend to do nothing (Samuelson & Zeckhauser, 1988). The average investor probably does not solve the asset allocation problem as an economist would, and as a result, the average individual may be invested in too many equities too close to retirement. As a result of JDM and behavioral-economics research, policymakers and financial planners are able to anticipate this issue and formulate plans to combat it. For example, many retirement plans now offer life-cycle funds, mutual funds in which asset allocation is determined by the time horizon associated with one's savings goal; these funds allow investors' asset allocations to shift over time with little to no effort on the part of the investor (Schooley & Worden, 1999). In essence, life-cycle funds allow investors to make more optimal allocations by simply doing nothing.[12]

In an early demonstration of the status quo bias, Samuelson and Zeckhauser (1988) found that more than half of TIAA-CREF participants in 1987 never made a single change over their lifetime from their initial chosen asset allocation of 50 percent stocks and 50 percent bonds. Relating to the earlier discussion of optimal shifts in asset allocation as retirement nears, these

[12] Of course, the benefit of life-cycle funds is contingent upon investors using them properly. However, a 2005 report by Vanguard, entitled "How America Saves 2005," showed that a significant percentage (71 percent) of Vanguard's life-cycle-fund participants did not utilize the funds as intended. Rather than using the funds as "one-stop shopping," most life-cycle-fund investors incorporated life-cycle funds into their overall portfolios as they would other funds. About half of Vanguard's life-cycle-fund investors held a life-cycle fund in combination with at least one other investment option. Another third of the life-cycle-fund investors held multiple life-cycle funds, rather than a single one. A recent EBRI report (EBRI, 2009b) showed a similar lack of understanding of target-date funds (TDFs) amongst 401(k) investors.

individuals likely had more stocks in their portfolio at retirement than the recommended level. But, asset allocation is not the only example of the impact of the status quo bias on financial well-being. Automatic-enrollment plans, such as Thaler and Benartzi's (2004) "Save More Tomorrow" (SMarT) plan, exploit individuals' tendency to stick with the status quo. In automatic-enrollment plans, employees enter into a savings plan by default and must take action to opt-out of the plan; few individuals exercise this right to opt-out. In addition to automatic enrollment, the SMarT program also includes automatic increases in contribution rates following pay increases, as the status quo bias suggests that investors will fail to actively increase their contributions over time. These aspects of the SMarT program, along with some other key components, led to substantial increases in the savings rates of employees in three major companies (Thaler & Benartzi, 2004). In another real-world example of the influence of automatic enrollment on subsequent participation in a 401(k) plan, Madrian and Shea (2001) found that 86 percent of employees in a large corporation in the United States participated in the company's 401(k) plan when enrollment was automatic, as compared to the 49 percent of employees who participated when they had to enroll actively.

In addition to observing the effects of the status quo bias on 401(k) participation, Madrian and Shea (2001) also found differences in 401(k) contributions between those who were automatically enrolled and those who had to expressly elect enrollment. Specifically, those who participated in the 401(k) plan as a result of automatic enrollment contributed about 3 percent to the plan, while those who participated in the 401(k) plan before automatic enrollment was introduced contributed over 7 percent of their pay to the plan. Why should there be a difference in contribution rates between those who were automatically enrolled and those who had to actively enroll in the 401(k) plan? Not surprisingly, 3 percent was the default contribution rate

under the automatic enrollment plan. The results from the naturalistic experiment reported by Madrian and Shea (2001) therefore highlight a different, but related, finding from research in behavioral decision making: defaults matter.

Default effects. Defaults have proven to have profound effects on individuals' behavior in a variety of contexts. For example, Johnson and Goldstein (2003) demonstrated the effects of defaults on participants' willingness to be organ donors and also reported on the donation rates of countries adopting opt-in versus opt-out organ-donation policies. In all cases, those having to opt-in to organ donation show dramatically lower donation rates than those automatically assumed to want to donate while reserving the right to opt-out. Researchers have observed similar default effects in the domain of automobile insurance. For example, Johnson, Hershey, Meszaros, and Kunreuther (1993) found that New Jersey and Pennsylvania motorists tended to stay with their respective states' insurance policy defaults regarding the right to sue. Johnson et al. observed that, as a result, 80 percent of New Jersey motorists did not have the right to sue, while 75 percent of Pennsylvania motorist did. The status quo bias ensures that the "do nothing" option is the one that prevails.

Returning to the example of retirement investment decisions, Choi, Laibson, Madrian, and Metrick (2004) reported that among three different companies, between 65 percent and 87 percent of employees participating in a 401(k) plan as a result of automatic enrollment tended to stick with the default contribution rate of 3 percent or less. The authors did find, however, that the effect of the default decreased over time. Nevertheless, employees contributing at low rates to employer-sponsored 401(k) plans often sacrifice substantial funds through employer-matching that they could have otherwise obtained (Thaler & Benartzi, 2004). From an economic perspective, differences in defaults should have no bearing on individuals' decisions regarding

whether to participate or how much to contribute to retirement saving plans; economically rational human beings should choose the option that maximizes their utility, regardless of the status quo and what option is presented as the default. As evidenced by the abovementioned research, however, default options and the status quo affect individuals' decisions in a variety of contexts.[13] Policymakers who anticipate these effects have the unique opportunity to construct decision environments and design options that produce welfare-improving outcomes for individuals who choose to simply do nothing.

The implications of the status quo bias and default effects for retirement savings behavior are apparent, and policymakers and financial institutions alike have already begun to "harness the power of inertia" (www.retirementsecurityproject.org) to encourage savings behavior among Americans. While selecting savings-promoting defaults and automatically enrolling employees into retirement savings accounts are reliable ways to increase savings behavior, approximately 78 million employees (about half of the U.S. workforce) have no access to employer-sponsored retirement plans (Iwry & John, 2009). For roughly half of the nation's employees, then, default effects and automatic enrollment are moot points. The Retirement Security Project (RSP) is attempting to change that by facilitating retirement savings for U.S. workers whose employers do not offer 401(k) plans (Iwry & John, 2009). The RSP proposes creating mandatory automatic IRAs, whereby employers with more than 10 employees would automatically deduct payroll funds and place them in an employee's retirement account. Although the enrollment in the IRA would be automatic, employees would have the opportunity to opt-out of the savings plan at any

[13] Research on the status quo bias and default effects has mainly observed these effects in inexperienced participants, that is, individuals who were not necessarily known to have had experience or expertise in the domain in question. It is possible that these effects would be less pronounced for experienced individuals or experts (Kempf & Ruenzi, 2006). Only a few papers have addressed the issue of the attenuation of default effects in more knowledgeable individuals; results are mixed as to whether or not experience in a particular domain does (e.g., Brown & Krishna, 2004; Lofgren, Martinsson, Hennlock, & Sterner, 2009) or does not (e.g., Johnson, Bellman, & Lohse, 2002) lessen the effects of defaults.

time. Additionally, the RSP-proposed automatic IRAs would specify a default investment fund, however the details of this aspect of the plan remain to be determined. The automatic IRAs the RSP proposes plainly make use of the research findings from behavioral decision making already discussed (i.e., status quo bias and default effects), but they also draw attention to another aspect of decision-making research, namely *self-control* and *procrastination*.

Intertemporal Choice and Saving

Self-Control and Procrastination. Only 8 to 10 percent of workers eligible for IRAs participate in such plans, while nearly 70 percent of workers whose employers sponsor retirement plans, such as 401(k)s, choose to participate (Iwry & John, 2009; Springstead & Wilson, 2000). The need to save for retirement is universal, so why should those with employer-sponsored savings plans save at such drastically higher rates than those who must save on their own? Transaction costs (i.e., the effort involved in having to make a deposit into an IRA) likely are one reason for the discrepancy in retirement savings plan enrollment, but they are not the whole story. Going to the bank is not so effortful that it would preclude millions of otherwise financially-savvy individuals from saving for retirement. Likewise, although employer-sponsored retirement plans often offer attractive matching-schemes, this difference between IRAs and 401(k)s cannot entirely account for the difference in savings rates; this notion is supported by the fact that the participation rate of employees offered employer-matched retirement plans is not closer to 100 percent (Thaler & Sunstein, 2008).[14] Instead, opening up an IRA on one's own may be akin to starting a weight-loss program. Not eating a tempting snack

[14] Some research on the effects of an employer match on 401(k) participation has shown that the presence of a match does increase employee participation in retirement plans (e.g., Investment Company Institute, 2006), while other research in the area seems to indicate only a modest effect of an employer match on increasing employees' savings behavior (Mitchell, Utkus, & Yang, 2005). Furthermore, previous research has also shown that many employees fail to take full advantage of matching opportunities (e.g., Thaler & Benartzi, 2008), thereby leaving matching contributions "on the table" (Choi, Laibson, & Madrian, 2005, p. 14).

now in the pursuit of weight loss in the future is similar to reducing one's current income (thereby forfeiting some tempting purchases) in the pursuit of a comfortable retirement. The chronic dieter's promise to "start my diet on Monday" is often repeated countless times until the dieter finally decides to get serious and put down the cookie. Similarly, the chronic spender may tell herself she will enroll in a retirement savings plan when she receives her next paycheck, but inevitably she fails to hand in the form or take the trip to the bank.[15]

Thaler and Shefrin (1981) describe this internal struggle as a conflict between a "farsighted *planner*" and a "myopic *doer*." The planner's main concern is utility over the lifetime, while the doer is only concerned with the present. In order to save adequately for retirement or successfully lose weight, the planner must manage the doer by altering the doer's incentives to act less myopically or by setting up rules that preclude the doer from engaging in short-sighted behavior (Thaler & Shefrin, 1981). This underscores one critical benefit of automatic payroll deductions; before an employee ever receives his or her paycheck, the money designated for retirement has already been deducted and placed into a retirement account. Self-control has been removed from the equation. Additionally, automatic enrollment into a retirement account removes procrastination from the equation as well.[16] Without payroll deductions, however, employees must make a decision each paycheck to spend the money now or to put it away in a retirement account (self-control), and they must set up the account in the first place (procrastination). The automatic IRA that the RSP proposes would allow individuals whose employers do not offer retirement plans a way to eschew the self-control and procrastination problems that most employees in employer-sponsored retirement programs do

[15] Of course, low participation in IRAs relative to 401(k)s may have a number of causes. For an overview of such determinants, see Springtead and Wilson (2000).

[16] Automatic IRAs may also been seen as *relying on* procrastination as well, in that individuals who intend to opt-out of the plan may procrastinate and remain enrolled, all the while accumulating retirement funds.

not encounter. Even without employer-matched contributions, employees enrolled in automatic IRAs can reap the benefits associated with retirement savings via payroll deduction.[17]

Hyperbolic Discounting. One reason why the self-control and procrastination issues described above are major impediments to saving for retirement is *hyperbolic discounting*. Again, people typically have intentions to forfeit small, immediate gains for larger rewards in the future, but they often fail to make the optimal choice at decision time (Kirby & Herrnstein, 1995). For example, in the middle of the week, a dieter can say with confidence that she will start her diet on Monday. This is because the warm chocolate chip cookie that will tempt her on Monday (a smaller, sooner reward) *and* the weight loss that would result from not eating the cookie (a larger, later reward) are both in the future. However, on Monday, when the choice to eat the cookie is in the present and only a slimmer physique is in the future, the dieter is likely to eat the cookie. Such a preference reversal occurs because, contrary to the economic axiom of *stationarity* (Fishburn & Rubenstein, 1982), individuals do not discount the future at a constant rate. Instead, people tend to discount the future in a hyperbolic fashion, such that the proportion between the preference for a larger, later reward and a smaller, sooner award changes with the passage of time. As the decision-point for the two options draws nearer to the present, suddenly the decision maker values the small, immediate reward to the larger reward that is still in the future. Kirby and Herrnstein (1995) demonstrated this effect by varying participants' opportunities to receive pairs of real monetary awards or goods at various times in the future. Without fail, participants in these experiments reversed their preferences for the smaller, earlier

[17] Critics of certain aspects of automatic IRAs have argued that a forced "rollover" should be part of auto-IRAs programs. This is because many individuals for whom automatic IRAs would now be established are low-wage earners, work in temporary jobs, or change jobs frequently (Munnell & Quinby, 2009; PRC, 2007). As such, the small amount of money accumulated in the individual IRA associated with each job would likely be cashed out (Munnell & Sunden, 2006), preventing the significant accumulation of funds (Munnell & Quinby, 2009), and thereby defeating the purpose of the automatic IRA.

rewards over the larger, later rewards as both options moved further into the future, consistent with hyperbolic discounting of time (see Frederick, Loewenstein, & O'Donoghue, 2002, for a thorough review of the literature). Interestingly, individuals tend to recognize this flaw in their own judgment and plan accordingly.

Precommitment strategies indicate recognition of one's likelihood to forsake long-term goals for instant gratification. As Laibson (1997) notes, people highly value self-control, though many feel they do not have enough of it. As a result, individuals employ precommitment strategies to aid them in accomplishing their future-oriented goals. For example, it is common practice to set one's alarm clock for an hour early with the intention of going for a morning jog. When staying in bed for an extra hour and a morning run are both in the future, the exercise is highly valued. Once the alarm sounds, however, staying in bed is much more attractive than the promise of good health. Some individuals, wholly aware of their dynamically inconsistent time preferences, even place the alarm clock across the room so that the tired, myopic self must get out of bed. Other examples of precommitment include Christmas clubs[18] and annual gym memberships. Saving for retirement involves a trade-off between more money in one's paycheck now and a more comfortable life in the future, much like weight-loss involves a trade-off between sleeping in and a morning jog. The nature of retirement savings, then, almost requires that individuals force themselves to save via precommitment devices. As described above, retirement savings in the form of payroll deductions is one such precommitment device. In fact, retirement accounts themselves serve as precommitment devices, inasmuch as they discourage impulsive behavior through penalties on early withdrawal. Laibson (1997) describes accounts

[18] Christmas clubs are once-popular, illiquid, zero-interest savings accounts into which individuals can deposit funds throughout the year so that they will be able to shop come holiday season.

such as these as having "golden eggs" properties (p. 445); that is, they provide large long-term advantages at the expense of immediate benefits.

Emotions. Evidence from the fields of JDM and behavioral economics citing the effects of emotions on decision making is far too abundant to discuss in its entirety here. Emotions can affect which variables enter into one's decisions, the decision outcomes themselves, and postdecision variables, such as satisfaction with and adherence to the decision one ultimately makes (Baron, 1992; Rick & Loewenstein, 2008). As such, a discussion of emotions, as they relate to financial decision making and savings behavior, could have been placed in several sections within this paper; to narrow the scope of this discussion, however, I will discuss emotions as they relate to intertemporal choice, and more specifically, self-control and hyperbolic discounting.[19]

Loewenstein (1996), for example, argues that "visceral factors" (i.e., drive states, cravings, moods, emotions and physical pain) can impact self-control. Loewenstein contends that visceral factors can produce effects similar to those engendered by hyperbolic discounting, albeit in a different way. As described above, hyperbolic discounting leads individuals to choose options that provide immediate gains over options that provide long-term benefits. Similarly, visceral factors can lead individuals to choose whatever option offers instant gratification, but only when the item in question is physically proximal to the decision maker (Loewenstein, 1996). Citing Mischel's (1974) earlier work on impulsivity in children, Loewenstein (1996) notes that when the children were made to choose between an immediate, smaller reward and a delayed, larger reward, the children found it more difficult to wait for the larger reward when either the immediate or the delayed reward was in the room with them. Loewenstein contends

[19] See Loewenstein and O'Donoghue (2005) for a detailed discussion of how emotions impact financial decisions in other ways, for example, their effects of emotions on risk perception and social preferences. See also Rick and Loewenstein (2008) for a description of how emotions can enter the decision process at various times.

that the presence of either reward (the smaller, immediate reward or the later, larger reward) increased the children's visceral response to the rewards, making the child want the reward immediately, even if it was smaller. Interestingly, simply showing the children a picture of the delayed reward did *not* make the children choose impulsively, since, Loewenstein (1996) argues, the picture did not increase the children's visceral response to the reward.

More recently, neuroimaging studies have also demonstrated the role of emotions in hyperbolic discounting. McClure, Laibson, Loewenstein, and Cohen (2004) found increased activity in areas of the brain related to emotion when participants were confronted with the opportunity to receive an immediate reward, but not when they were faced with intertemporal choices that lacked an immediate option. Furthermore, when participants *did* choose larger, later rewards over smaller, immediate ones, regions of the brain associated with higher cognitive functions were more active than those associated with emotional responses. Through the innovative use of functional magnetic resonance imaging (fMRI), McClure et al. were able to demonstrate that behavior consistent with a hyperbolic treatment of time may be driven by emotional responses to immediate rewards.

As discussed throughout this paper, saving for retirement often entails making financial decisions that deliver benefits in the future at the expense of immediate gratification. Gauging whether it is worth sacrificing pleasure in the present for the receipt of future benefits requires decision makers to make predictions about their future happiness; for example, how will I feel if I have no money to do the things I want to do in retirement? Intertemporal choice, then, necessitates the evaluation of current emotions as well as emotions that will only be experienced in the future, when the consequences of one's earlier choices and decisions are realized. Researchers in JDM and behavioral economics have noted the difference between these

"expected" and "immediate" emotions (Loewenstein & Lerner, 2003; Loewenstein, et al., 2001) and have described both their unique and combined effects on the decision process (Rick & Loewenstein, 2008). Immediate emotions, such as those brought about by the visceral factors described above, may lead individuals to make decisions that are not in the best interest of their future selves; for example, the smell of freshly baked cookies may lead a dieter to forsake her long-term weight-loss goal. At the same time, expected emotions, which can arise when thinking about future outcomes, may help a dieter resist temptation; thinking about how badly she will feel *after* eating the cookie or how excited she will feel if she loses five pounds may help the dieter abstain from indulging.[20]

One particularly important finding from the JDM literature relevant to the discussion of expected emotions is that often people do not make accurate *affective forecasts* (see Wilson & Gilbert, 2003, for a review of the literature), that is, they do not correctly predict their future emotions. Specifically, individuals tend to imagine that the emotions they will feel as a result of a particular event will be more positive or negative than they actually will be (Wilson & Gilbert, 2003). Additionally, people believe that their predicted emotions, whether positive or negative, will last longer than they will in reality (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998). A related finding, termed *projection bias* (Loewenstein, O'Donoghue, & Rabin, 2003), demonstrates that while individuals recognize that their "tastes" will change over time, they fail to appreciate the magnitudes of such changes (Conlin, O'Donoghue, & Vogelsang, 2007).[21] As such, projection bias may lead individuals to make choices that are more extreme than they

[20] Of course, immediate emotions need not result in negative behaviors, nor must expected emotions result in positive ones. For example, feeling full while grocery shopping may lead a dieter to purchase fewer unhealthy items for the upcoming week, and considering how one will feel if she misses a one-day sale may make a shopper spend money unnecessarily.

[21] Indeed, Conlin et al. (2007) estimate that people mispredict their future tastes by approximately one-third to one-half of the difference between future and current tastes.

would otherwise prefer; for example, an individual choosing a vacation destination in the middle of a snowstorm may elect to visit an extremely warm location, only to find himself sweltering while actually on the trip (Loewenstein et al., 2003). The popular saying "his eyes are bigger than his stomach" likely describes behavior borne from the projection bias. Mispredictions of future emotions and tastes are problematic for decisions involving intertemporal choice, or choices over time, because they can lead to choices and decisions that are disadvantageous to one's future self.

Decision Context Affects Savings Behavior

The way a particular decision is presented or the way individuals think about a particular decision can affect what choice the decision maker ultimately makes (Tversky & Kahneman, 1981; Thaler & Sunstein, 2008). Changing the way information is communicated or *framed* can lead to differing responses among decision makers (Tversky & Kahneman, 1981), and decision makers themselves can interpret information in various ways, also leading to differing choices (Stanovich & West, 2000). As described below, there are a number of findings in the JDM and behavioral-economics literatures demonstrating how various aspects of the decision context can significantly influence the savings decision.

Reference Dependence, Loss Aversion and Perceptions of Risk. In addition to the aforementioned self-control argument for the benefits of payroll deduction, the automatic transfer of funds from one's paycheck into a retirement account also allows individuals to bypass the effects of *loss aversion*. Individuals do not evaluate their wealth in an absolute sense, but rather in reference to the status quo (Kahneman & Tversky, 1979). The status quo, or what one has now, establishes a *reference point* from which changes in wealth are evaluated as *gains* or *losses*. Loss aversion refers to the empirical finding that changes from the reference point in the

domain of losses are weighed roughly twice as much as equivalent gains from the reference point (Tversky & Kahneman, 1991).

The application of reference dependence and loss aversion to retirement saving via payroll deduction are clear: if you don't have it, you can't lose it. If funds for retirement savings are not automatically deducted, the employee's reference point will not have already taken into account the savings amount. In order for the employee to contribute to a retirement account, he must take money away from the earnings that established the reference point, and he will experience a loss from the status quo. If, however, a subset of an employee's earnings are earmarked for retirement savings and are automatically transferred into a retirement account, he likely will not get a sense that he is ever "losing" spending money. That is, the net amount the employee earns each pay period already takes into account the money deducted for retirement savings, just as it does with federal and state taxes, health insurance, and so on. The final amount the employee sees on his paycheck now serves as the status quo or the reference point. If an employee can contribute to his retirement savings via payroll deduction, the reference point will reflect the lower net earnings per paycheck.

Loss aversion, therefore, poses a problem for employees who must save on their own, but may not be problematic for employees who have access to automatic payroll deductions. The same dollar amount for an employee who does not have her retirement savings deducted automatically and for one who does will lead to profoundly different experiences with regard to the savings decision. For the former, saving seems painful, while for the latter, saving is relatively easy, even though the final result is the same. Such is the significance of the reference point.

Reference points are responsible for whether an individual perceives a particular outcome as a gain or a loss from the status quo. Furthermore, as the automatic payroll deduction example suggests, encoding an outcome as a gain or a loss can have profound behavioral effects. The reference point's role in partitioning the range of possible outcomes into gains or losses also leads to its influence on an individual's risk preference, which, in turn, can also affect behavior. Countless studies in both traditional and behavioral economics (Rabin & Thaler, 2001) have demonstrated people's tendency toward *risk aversion*, which is the preference for a sure thing over a gamble with a higher expected value (Kahneman & Tversky, 1984). To economists, the explanation of risk aversion is one of expected utility maximization using a concave utility-of-wealth function (Rabin & Thaler, 2001). Behavioral economists, however, view risk aversion as more complex, for example, recognizing that people have different risk preferences for gains and losses (Kahneman & Tversky, 1984). Essentially, the reference point transforms the utility function from a simple concave function defined on total wealth to an S-shaped function defined on gains and losses; this S-shaped function (i.e., the *prospect theory value function*) is concave for gains and convex for losses (Kahneman & Tversky, 1979; 1984). Consistent with the traditional economic explanation of risk aversion, JDM and behavioral-economics research has found that individuals are risk averse where the function is concave: in the region of gains. However, in the loss region, where the S-shaped function is convex, individuals tend to display risk-seeking behavior (Kahneman & Tversky, 1984).

Taken together, reference points and differences in risk preference for gains and losses are important for the retirement savings decision because they can influence individuals' investment decisions. For example the *disposition effect*, which is the tendency for investors to sell winning stocks too soon and hold onto losing stocks too long (Odean, 1998; Shefrin &

Statman, 1985), can be explained by individuals' asymmetric risk aversion on either side of the reference point. In the case of stocks, it is reasonable to assume that an investor's reference point is the purchase price of the stock (Odean, 1998); if the stock falls below the purchase price, the investor will perceive it as a loss, and if the stock rises above the purchase price, the investor will code it as a gain. As such, investors will tend to exhibit risk-averse behavior if the stock has increased in value and risk-seeking behavior if the value of the stock has gone down. Behaviorally, this difference in risk perception leads investors to want to sell winning stocks too soon, thereby realizing the sure gain and avoiding a future loss, and to want to hold onto losing stocks too long, persisting with the risky prospect.

JDM and behavioral-economics researchers have documented many examples of the impact of reference points on risk preferences and behavior, including the "house money effect" (i.e., greater risk-seeking after a realized gain) and "break-even effects" (i.e., opportunities allowing individuals to break even are more appealing following a realized loss) in gambling (Thaler & Johnson, 1990). More recently, researchers in these fields have explored the effects of reference point adaptation (Arkes, Hirshleifer, Jiang, & Lim, 2008), which is a shift in the reference point in the direction of a previous gain or loss, as well as the effects that expectations can have on such reference point shifts (Koszegi & Rabin, 2006; Yogo, 2005). Using the abovementioned disposition effect as an example, it is clear how adapting the reference point to realized gains or losses can change the way investors evaluate their holdings. If, rather than considering the reference point to be the original purchase price of a stock, individuals instead identify a new reference point, namely the price of the stock following a gain or loss, investors have a different point from which to evaluate outcomes as gains or losses. If a stock originally purchased for $20 per share increases in value to $30, the investor may consider the new stock

price of $30 to be the reference point. As such, the $30 stock price no longer represents a *gain* from the reference point and is unlikely to induce the investor to choose the risk-averse option to sell the stock. Similarly, if the stock price falls in value to $10, and this new value is deemed to be the new reference point, the investor will no longer consider the $10 stock to be a *loss*, and he will not display the risk-seeking behavior of holding onto the stock (Arkes et al., 2008). The significance of the reference point cannot be overstated in its ability to transform individuals' perceptions and evaluations of choice problems and the subsequent judgments and decisions individuals make.

(Narrow) Choice Bracketing. Individuals who live "paycheck to paycheck" or otherwise feel like they have no disposable income may be unlikely to save for retirement. These individuals' reluctance to save may be the result of *narrow choice bracketing*. Choice bracketing refers to the way in which people combine individual choices when selecting a course of action. Choices are said to be bracketed *narrowly* if only one or two choices are considered in a choice set, while *broad* bracketing occurs when many choices are considered in a choice set (Read, Loewenstein, & Rabin, 1999). For example, if a consumer considers the cost of her specialty coffee drink one day at a time she is using a *narrow* frame (e.g., "My coffee costs $3.95"), but if she considers the impact that her coffee has on her yearly spending (e.g., "My coffee costs me $1,441.75 a year!"), she is using a *broad* frame. Choice bracketing can have major implications for the types of decisions people make, as evidenced by Gourville's (1998) work on the "pennies-a-day" (PAD) phenomenon. Simply, the PAD strategy urges consumers to consider a payment in a narrow frame rather than in a broad frame, reducing a large payment ($365) into a seemingly trivial expense ("just a dollar a day!"). Retailers and charities often use PAD tactics to induce consumers or charitable givers to spend their money, and previous research exploring the

PAD strategy has demonstrated the effectiveness of such manipulations in apartment rent valuation (Price, 1994), telephone plan pricing, and magazine subscription costs (Gourville, 1998).

Retailers seem to be profoundly aware of the success of the PAD strategy, as commercials and advertisements trying to sell furniture, utilities, and even cars using a PAD strategy abound. The same principles that make the PAD strategy a successful marketing tool can be employed to help individuals achieve their personal savings goals. Specifically, saving just "pennies-a-day" can add up to significant savings over time.[22] Following this notion, the Social Security Administration has begun to send out an insert entitled "What young workers should know about Social Security and saving" (SSA, 2009) along with the annual Social Security statement young workers receive in the mail. This information sheet graphically represents the "pennies-a-day" method to saving; a bar graph demonstrates the growth in savings associated with putting away $25 and $50 per week for 40 years, assuming a 5 percent annual rate of return. This graph serves as a tool to help young workers consider the aggregate effects of saving even a relatively small amount of money each week.

Another example of the effects that bracketing can have on individuals' financial decision making is *myopic loss aversion* (Benartzi & Thaler, 1995). Myopic loss aversion, which refers to investors' tendency to be more risk averse the more frequently they evaluate their stock portfolios, results from the particularly disadvantageous combination of narrow bracketing and loss aversion (Kahneman & Tversky, 1979). Over the long run, taking risks in the stock market

[22] One example of this notion is Wal-Mart's recent change of slogan from "Always Low Prices" to "Save Money. Live Better." Television commercials featuring this new slogan highlight the idea that saving small amounts of money on everyday purchases can add up to significant amounts of money over the course of a year. In a similar vein, Bank of America's "Keep the Change" promotion rounds up debit card transactions to the nearest dollar and transfers the difference into customers' savings accounts. Customers enrolled in the "Keep the Change" program can track the funds acquired through this system and see how the small amounts of change accumulate over time.

results in greater gains than less risky approaches, such as purchasing bonds (Benartzi & Thaler, 1995; Mehra & Prescott, 1985). When investors set up their portfolios to capitalize on long-term gains, they should only be concerned with what happens to their portfolios in the long run. When investors evaluate their portfolios too often, however, they are exposed to fluctuations in the stock market that are to be expected in the short run, but should not necessarily affect long-term returns. Loss aversion predicts that investors will be more sensitive to the small negative fluctuations than they will be to the small positive ones, resulting in more risk aversion and potentially suboptimal investment decisions (Benartzi & Thaler, 1995).

Framing effects. As mentioned earlier in the discussion of heuristics and biases, general reliance on System 1 processing often leads to judgment errors, such as those brought about by the availability heuristic; self-control failures can also result from automatically generated emotions that escape the control of System 2 (Shiv & Fedorikhin, 1999). Additionally, System 1 processing leaves decision makers susceptible to *framing effects* (Tversky & Kahneman, 1981), whereby manipulating surface features of a decision problem can lead individuals to make different judgments regarding otherwise-equivalent options. Framing effects highlight how "lightly" (Kahneman, 2003) System 2 actually monitors System 1's outputs, and they also underscore the fundamental role policymakers can have in affecting change in individuals. The default effect mentioned previously is a sound example of a framing effect; simply designating a particular option as the default leads to disproportionate acceptance of the default option. Analytical System 2 would likely concede that opting-in and opting-out of organ donation, for example, gives the decision maker exactly the same options (you can donate your organs or not), but intuitive System 1 encounters the default option and sticks with it.

Framing effects pose a challenge to the notion of man as economically rational, in that they violate a basic axiom of rationality (von Neumann & Morganstern, 1944): invariance (Tversky & Kahneman, 1986) or extentionality (Arrow, 1982). The principle of invariance affirms that "different representations of the same choice problem should yield the same results" (Tversky & Kahneman, 1986, p. S253). In other words, the way in which options are presented to the decision maker should have no bearing on his or her ultimate decision. Default effects demonstrate violations of invariance because, for example, individuals' preferences for organ donation are indeed affected by the presentation of options.

One classic example of the impact of framing on choice is the "Asian disease" problem (Tversky & Kahneman, 1981), which also highlights the systematic difference in individuals' risk preferences for gains and losses described earlier. In the Asian disease problem, participants are asked to choose which of two risky programs should be adopted to treat an imminent outbreak of a deadly Asian disease. The options are either presented in terms of the number of people who will be saved as a result of the adopted treatment or in terms of the number of people who will die if the treatment plan is adopted. Results show that participants choose the riskier treatment option when the outcomes are presented in terms of losses (i.e., the number of people who will die) and the less-risky option when the outcomes are presented in terms of gains (i.e., the number of people who will be saved). As explained earlier, individuals' risk preferences, and subsequent judgments and decisions, tend to differ depending on whether they are considering gains or losses from a reference point. The Asian disease problem is an ideal example of how framing can shift individuals' assessments of a scenario, leading them to pursue disparate courses of action.

Using a paradigm analogous to the Asian disease problem, Olsen (1997) surveyed professional investment managers and found that these Chartered Financial Analysts (CFAs) responded differently depending on whether a particular investment decision was framed as either a gain or a loss. Specifically, the scenario described a situation in which a client's $60,000 investment was in jeopardy due to a downturn in the stock market. The CFAs were then asked to choose between two risky strategies in which a certain amount of the client's investment would be saved (gain frame) or lost (loss frame). As in the Asian disease problem, these experienced investment managers chose the less-risky option when the options were presented in a gain frame and the riskier option when they were presented in a loss frame. Even though the client's final outcome would be identical in both scenarios, the CFAs chose differently as a result of framing.

Epley, Mak, and Idson (2006) demonstrated how framing can affect consumers' propensity to spend different forms of income. The authors showed that although a "bonus" and a "rebate" of identical value objectively increase an individual's wealth to the same degree, framing income in these different ways resulted in subjectively dissimilar wealth states for participants. Consistent with Epley et al.'s argument that individuals perceive a "bonus" as a gain from the status quo and a "rebate" as a return to a previous state of wealth, participants were more likely to spend funds described as a bonus and save funds described as a rebate. The authors were even able to demonstrate the impact of framing on individuals' memories of their spending or savings behavior (Experiment 1). Participants who were asked to recall their behavior after receiving a government-issued check as part President Bush's "Economic Growth and Tax Relief Reconciliation Act" of 2001 reported spending more of the money if the check was described as a bonus than if it was described as a rebate. This framing effect (calling the extra money "rebates" rather than "bonuses") resulted in Americans saving, rather than spending,

a tax rebate that was intended to stimulate the economy. Indeed, participants' recalled savings behavior after the rebate (Epley et al., 2006) was similar to individuals' intended savings behavior before the rebate checks were issued (Shapiro & Slemrod, 2003a). Epley et al.'s research is yet another example of how JDM research can be used to inform policy and the advice financial planners give to their clients; parties in the position to affect change must be mindful of how they frame messages, as framing can affect individuals' behavior and provide unintended impediments to well-meaning interventions (Epley & Gneezy, 2007).

Choice architecture. The abovementioned examples of framing effects underscore the impact the decision context can have on the judgments and decisions individuals ultimately make. Simply changing the wording of the options (e.g., "lives saved" versus "lives lost" and "bonuses" versus "rebates") can have real implications for decision making. As such, policymakers, as well as financial planners, must recognize their crucial role in designing and engineering decision environments; as *choice architects* (Thaler & Sunstein, 2008), policymakers and financial planners can nudge decision makers in one direction or another by tweaking certain aspects of the choice context. Complicating matters, every aspect of the choice environment, from which candidate's name appears first on a voting ballot (Miller & Krosnick, 1998) to the location of restrooms in an office building (Thaler & Sunstein, 2008), has the potential to impact behavior. Thus, when contemplating the "specs" of any choice environment, the choice architect must confront a certain inevitability of choice architecture: there is no "neutral" design (Thaler & Sunstein, 2008). One of the candidates' names *must* appear first on a ballot, and a building's restrooms *must* be located somewhere, and research on the importance of choice architecture suggests that such decisions are not inconsequential.

For example, Miller and Krosnick (1998) demonstrated that candidates up for election in various counties in Ohio enjoyed an advantage over their opponents if their name was listed first on the ballot. In order to test for name-order effects, the authors created "order variables," which took into account the order in which candidates' names appeared on the ballots in different precincts in three of Ohio's counties. The results were striking: just under half of the 118 races showed significant name-order effects. Furthermore, approximately 90 percent of the races in which name-order effects were observed showed a clear primacy effect: when a candidate was listed first on the ballot, he received more votes than when he was listed last. Ideally, the order in which candidates are listed on a ballot would have no bearing on who is ultimately elected; this detail is unrelated to a candidate's job qualifications.[23] As Miller and Krosncik's (1998) study demonstrated, however, this seemingly arbitrary aspect of the voting process had a significant, and somewhat troubling, effect on voter behavior. As such, the authors suggest that all states adopt the practice of rotating candidates' names on ballots, as is required in Ohio, Idaho, and Montana. Miller and Krosnick's (1998) study is a prime example of the effects that presumably insignificant details can have on behavior. As Thaler and Sunstein (2008) note, when it comes to choice architecture, "everything matters" (p. 3).

Indeed, Benartzi and Thaler (2007) discovered that even the number of lines on an investment sign-up form had an effect on investment choices. The researchers asked subscribers to the Morningstar.com website to indicate on a provided form how they would choose to distribute their retirement funds amongst eight potential options. On the form presented to one group of participants, there were four lines visible, but the participants were able to click on a

[23] It is important to note that the authors did find some factors that moderated the name-order effect. Specifically, counties whose members possessed less formal education showed greater effects of name order, as did counties whose races received less media attention and which had high rates of roll-off (which indicates that voters knew less about the candidates). This particular set of moderators suggests that increasing the amount of information voters have may attenuate the name-order effect.

link that allowed them to increase the number of lines to eight. For the second group of participants, all eight lines were visible the entire time. This ostensibly inconsequential difference in the format of the retirement fund allocation form resulted in a four-fold difference in the percentage of participants choosing more than four funds: 10 percent of those presented with the form containing fewer visible lines chose more than four funds, while 40 percent of those with eight lines visible chose more than four funds. Similar to the name-order effect in voting described above, ideally the number of lines listed on an investment form would have no bearing on the funds in which individuals ultimately choose to invest; the best investment strategy is unrelated to the number of lines listed on a sign-up form. Nevertheless, while the effort involved in expanding the four-line form to an eight-line form was negligible (i.e., simply clicking on a link), the difference between the forms actually affected individuals' proposed investment strategies.

It is not difficult to think of examples in which the clever use of choice architecture by retailers can induce consumers to spend more money. For example, displaying a product at the end of an aisle, using a yellow price sign, or placing an item in a separate bin will likely signal to a shopper that an item is on sale, even if it is not. Choice architects in the retail industry have countless opportunities to structure choice environments to their advantage, increasing sales. Lobbyists, politicians, and anyone else, for that matter, have access to countless tools to design decision environments with their own best interests in mind (Economist, 2006). At the same time, policymakers can use choice architecture to usher in positive changes, such as increasing savings rates among Americans. For example, Thaler and Benartzi's (2004) SMarT program and the automatic IRAs proposed by the RSP both employ choice architecture to promote retirement savings. Choice architects are in a unique position to "nudge" individuals down a particular path,

and while this task is often met with controversy (Economist, 2006; Thaler & Sunstein, 2003, 2008), responsible architects can encourage individuals to take positive steps toward accomplishing their goals.

IV. Future Directions in the Study of Retirement Savings

When considering how and why individuals decide to save for retirement, there are a number of issues that policymakers and financial planners must disentangle to understand individuals' financial behavior. Some of these matters deal with the amount and type of information decision makers receive, and these concerns often can be met with interventions aimed at improving financial literacy or by presenting relevant information in a more user-friendly manner. Traditional economic theory suggests that if decision makers are armed with all of the appropriate information and tools, they should make optimal decisions. The research outlined in this paper, however, suggests that informational issues may comprise only a subset of the impediments individuals can face on their paths to future financial well-being. The concepts and examples presented herein demonstrate that people make an array of unsatisfactory choices and decisions, ranging from self-control failures to suboptimal asset allocation, that cannot be readily explained by economic models. Behavioral economists and decision-making researchers have studied decision makers' imperfect judgments and have presented coherent theories to explain many of them. Below I describe several novel interventions aimed at combating suboptimal financial behaviors.

Incentivize Saving. While starting a diet is undoubtedly a difficult undertaking (as evidenced by the rising obesity rate in America), soon-to-be dieters' growing waistlines can help motivate them to begin a weight-loss program; although the results of dieting are delayed, the incentives of weight loss are ever-present. Unfortunately, saving for retirement lacks the same conspicuous benefits as weight loss. A 65-year-old photo of oneself cannot be taped onto one's credit card like a once-thin picture of oneself can be taped onto the refrigerator. For many people, the benefits of saving for retirement are so remote and so intangible, that a little extra

money in one's paycheck now is far more attractive than making oneself comfortable in the very distant future. Nevertheless, the consequences of repeated self-control failures on the savings front can be substantial; placing just $25 per week (roughly equivalent to a specialty coffee per day) in a retirement savings account with a 5 percent annual rate of return can result in a savings of more than $160,000 over 40 years (SSA, 2009).

As mentioned earlier, SSA has attempted to make tangible the benefits of saving for retirement by demonstrating to younger workers the abovementioned accumulation of funds over time from making even small contributions to a retirement account. The "young workers" insert contains, among other things, a graphical representation of the accumulated funds that can be realized by saving $25 or $50 per week. While including this graph on the fact sheet can urge young workers to think about saving in a way that they may not have done on their own, it still does not provide an immediate incentive to engage in behavior whose benefits are only realized in the distant future. Potential savers are lacking the incentive to save that dieters receive each time the number on the scale goes down or their dress size gets smaller.

Incentivizing saving in the present may help individuals adequately prepare for the future. One possible strategy could be for employers to offer their employees "points" for saving, much like they offer employees "points" or bonuses for making sales or acquiring new clients. Employers who match their employees' retirement contributions could take a portion of that match and instead put it toward tangible goods, such as big-screen televisions or new washing machines.[24] For every X amount of dollars an individual contributes to her retirement account,

[24] Of course, taking a portion of the employer match to fund the purchase of tangible goods would necessarily reduce the amount the employer contributes to employees' savings. However, the idea is that this difference in the employer match will be more than compensated for by the increased incidence and amount of employee saving. That is, while the employer match would be lower with a "points" system than without it, the intervention is intended to encourage more employees to contribute a larger percentage of their paychecks to retirement savings.

she could receive "points" redeemable for bonus prizes. Such a strategy would encourage employees to reach long-term savings goals (i.e., large retirement funds) by allowing them to reach smaller goals in the short-term (e.g., a new TV). Alternatively, employers could set up a lottery system, whereby employees who actively contribute X-percent of their paycheck each month would be entered into a lottery with a cash prize. Banks around the world have used lotteries to encourage customers to save through lottery-linked deposit accounts (LLDAs), and these banks have been successful in increasing their number of customers (Guillen & Tschoegl, 2002). In an employer-based version of a lottery, only those employees contributing to their retirement accounts during the given period would be entered into the lottery. This latter plan would have the added benefit of capitalizing on individuals' desire to minimize regret (Zeelenberg, 1999), as those who have not contributed to their retirement account have no chance of winning even though their coworkers do. To make regret even more salient, every employee's name could be entered into the lottery, but only employees contributing to their retirement accounts could actually win. In this arrangement, employees would know if they *would have* won had they contributed that month. This is similar to the common practice on game shows or slot machines in which the prizes associated with the choices the players *did not* choose are revealed (see also Zeelenberg & Pieters, 2004).

Reframe the Problem. Narrow framing, or bracketing, has been suggested as a tool to facilitate adherence to self-control goals that might otherwise be overwhelming. Read et al. (1999) introduce the notion of "motivated bracketing" (p. 189) as a way for dieters and recovering alcoholics, for example, to reframe their goals in a way that emphasizes daily successes (e.g., "one day at a time") rather than month-long, year-long, or life-long undertakings. In a similar vein, the authors also suggest bracketing budgets more narrowly, so as to reduce

one's ability to make up for overspending later in the week or month. A weekly food budget of $70 is easier for a spendthrift to manipulate than is a daily food budget of $10. In this sense, narrow bracketing could lead to more advantageous savings behavior.

Shifting from a broad frame to a narrow frame may also help investors save by allowing them to recognize that saving large sums of money for retirement may not be as daunting as it seems. This notion may be particularly important for individuals who use online calculators to determine how much money they will need to save to replace a given percentage of preretirement earnings. When future retirees obtain projections of how much money they will need for retirement, the number typically is very large—many individuals are undoubtedly shocked at the hefty sum of money they will need for retirement. An individual might feel that such a huge amount of money is surely unattainable, leading him to assume that any attempts to save would be futile. However, if one were to shift from a broad frame to a narrow one, in which small, incremental savings goals are emphasized, the task of saving for retirement may seem within reach, and therefore, more worthwhile. Indeed, Read et al. (1999) suggest that narrow bracketing can increase motivation by making one's goals seem more manageable, and therefore more possible.

Change Reference Points. As mentioned earlier, one implication of the effects of loss aversion is that employees will feel the impact of self-imposed saving to a greater extent than they would automatic payroll deductions due to differences in employees' reference points. In the absence of automatic payroll deductions for retirement savings, employees may alleviate some of the pain that accompanies saving for the future by changing their reference points themselves. Reference points are all about expectations; altering one's expectations can, in turn, alter one's reference point. Individuals can mentally subtract the amount that would otherwise be

deducted automatically, and this new, adjusted amount can serve as the employee's new reference point. This mental accounting (Thaler, 1999) "trick" would allow individuals to establish a reference point that already takes into account the amount earmarked for retirement savings. If an individual does not consider this money to be part of his net earnings, then the pain associated with removing the to-be-saved amount from one's account could be assuaged, at least somewhat. While this method is admittedly more susceptible to lapses in self-control than are automatic payroll deductions, it may serve the employee well to figure into his paycheck a certain amount to be set aside for retirement.

While the mental accounting trick described above exploits reference dependence to encourage savings, reference points can also be impediments to saving. Salaries are, in essence, reference points for yearly income. Reference dependence, then, may pose a problem for employees trying to imagine themselves in the inferior current financial state that would accompany saving for retirement. This may be especially true for those who do not feel they have any extra money to save. Once again, however, individuals may mentally simulate changes in reference points to encourage saving. Imagine an employee who earns $55,000 and finds it too difficult to save for retirement because of current financial needs. This individual may ask herself, "would I have turned down my job if I was offered $52,500 instead?" More than likely, her answer would be "no." The difference in weekly earnings between a job with a $55,000 salary and a $52,500 salary amounts to only $50, which can accumulate to roughly $325,000 of savings over 40 years, assuming a 5 percent rate of return (SSA, 2009). Once an individual recognizes that she would have survived had she been given a different reference point initially (i.e., a different starting salary), she may recognize that she could adapt to a smaller income each week. While individuals would be unlikely to mentally shift their reference points in the

suggested manner on their own (but, see how individuals use goals as reference points, Heath, Larrick, & Wu, 1999), adjusting reference points by adjusting expectations has the potential for policymakers and financial planners to alter the way decision makers evaluate certain problems.

The interventions described above are aimed at encouraging savings across the lifespan so that individuals will be more financially secure in retirement. Incentivizing savings in the short-term, reframing the decision context, and shifting reference points are all ways that can help individuals save more and spend less. These approaches to promote retirement savings are but a few of the possible interventions that researchers, policymakers and financial planners could offer to aid individuals in their pursuit of future financial well-being.

V. Conclusion

The purpose of this literature review was to familiarize readers with aspects of the savings decision not accounted for by traditional economic theory. Researchers in the areas of JDM and behavioral economics have explored individuals' seeming irrational savings behavior and have developed coherent theories to explain some of these behaviors. A departure from the notion of man as economically rational can help policymakers and financial planners to better understand why people make the decisions they do. As a result, policymakers and financial planners can craft careful interventions aimed at helping individuals make more optimal decisions. Additionally, in the absence of corporate or governmental intervention, decision makers themselves can take steps to remedy their own suboptimal behavior (e.g., through precommitment devices). I have identified examples of interventions already in place (the SMarT plan), and I have also presented possible avenues where interventions may be implemented in the future. The behavioral economics and JDM concepts summarized herein can serve as powerful tools to encourage savings behavior and lead Americans toward more comfortable retirements.

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