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Financial Decision Making
across the Adult Life Span:
Dynamic Cognitive Capacities
and Real-World Competence

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There is perhaps no decision-making domain that has greater real-world significance than decisions involving personal finance. Most of us, over the course of our lives, will be called upon to make thousands of decisions of an economic or financial nature. Moreover, in light of recent increases in the variety of financial products and services that have become available on the market, during the course of the next few decades we should expect to see an increase in the range and complexity of personal financial decisions individuals are expected to make (Weierich et al., 2011), and perhaps, in the requirements that enable one to make those decisions. Yet despite the ubiquitous nature of financial decision making, this remains a domain in which individuals receive little in the way of formal training. We can readily bring to mind some people we consider to be particularly skilled and adept at managing their finances, and we can just as readily think of others who seem prone to making shortsighted financial decisions. This chapter focuses on two broad, related questions of theoretical and applied significance. The first is, what are the cognitive and intellectual capacities that underlie competence when it comes to real-world personal financial decision making (e.g., balancing a checkbook, saving and investing,

purchasing a house), and how do those competencies change over the life span? The second is, to what extent can individuals at different ages be trained to make better personal financial decisions?

A variety of cognitive resources go into decline with advancing age, but the attenuation of these basic abilities is to some extent offset by the development of one's general knowledge about the world, and specifically, age-related increases in knowledge of and experience with personal financial matters. In light of the large body of literature that shows fluid intellectual abilities undergo significant declines around the third decade of life (Baltes, 1987; Horn, 1988; Salthouse & Davis, 2006), it is interesting to consider why, as a society, we tend to seek out older individuals to manage many of our most important and sensitive decisions. In the public finance arena, the average age of appointment among chairs of the Federal Reserve Bank is 55 years, yet they are subject to mandatory retirement upon reaching the age of 65 (Federal Reserve Bank, 2014). In industry, chief financial officers tend to be in their 50s and 60s (Bower, 2007). Even the American president, who is responsible for shaping national budgetary priorities, is required by the United States Constitution to be *at least* 35 years of age. The competence of older decision makers also extends to the area of personal finance. Individuals over the age of 65, who make up only 13% of the American population, hold 34% of the nation's wealth (Laibson, 2011). From a theoretical perspective, it is interesting to understand how older adults maintain high-level cognitive competence in the face of declines in basic processing resources. Also key is understanding the unique circumstances under which competence may be compromised, which suggest boundary conditions under which respect for elders' abilities may be misplaced.

It is important to recognize at the outset of this chapter that there exist trade-offs between basic cognitive abilities, the pragmatics of intelligence, and domain-specific financial expertise (Li, Baldassi, Johnson, & Weber, 2013; Walsh & Hershey, 1993). That being the case, in the following section we seek to characterize the dynamic forces that underlie differing levels of financial competence at different points in the adult life span.

FLUID ABILITIES, CRYSTALLIZED ABILITIES, AND FINANCIAL KNOWLEDGE

The theory of fluid and crystallized intelligence (Horn & Cattell, 1966; Horn, 1988) posits the existence of two distinct types of intellectual abilities. Fluid reasoning abilities encompass the set of basic cognitive processing abilities necessary to assimilate and integrate critical information about a problem or decision. Crystallized abilities, in contrast, involve an understanding of culturally-based values and knowledge about the world. Additional details about this theory as they

apply to aging and decision making can be found in two other chapters in this volume. There exists a large and growing body of research to suggest that as we pass through adolescence into adulthood and old age, these dual intellectual capacities undergo change (Baltes, 1987; Li et al., 2004). Crystallized abilities (world knowledge) increase throughout young adulthood and middle-age, and then plateau, showing little or no growth into old age (Li et al., 2004). Financial knowledge can be thought of as one of many different subtypes of crystallized abilities. Fluid abilities, in contrast, show a pattern of increasing development throughout young adulthood, but then a slow pattern of decline beginning in middle-adulthood which continues throughout old age (Li et al., 2004).

Based on the assumption that both fluid and crystallized abilities jointly contribute to our ability to make complex financial decisions (Li et al., 2013), it is plausible that younger and older adults demonstrate differing degrees of financial competence at their respective points in the life span for different reasons. That is, when making everyday financial decisions, older adults facing declines in fluid abilities would be expected to rely more heavily on crystallized knowledge gained through personal experience. Younger adults, on the other hand, would be expected to rely more heavily on fluid reasoning abilities when confronted with a novel financial problem, given their (relative) lack of domain-specific knowledge. Consistent with this notion of trade-offs between fluid and crystallized abilities, Agarwal, Driscoll, Gabaix, and Laibson (2009) concluded that financial mistakes surrounding a variety of different credit behaviors is minimized around the age of 53, which is when crystallized knowledge has nearly peaked and fluid abilities have yet to substantially decline. One implication of this finding is that we could expect to see increases in within-person variability in the quality of individuals' financial decisions as we stray from the 50s (Laibson, 2011), with poorer performance (i.e., increased decision error) down the age range into the 40s and 30s (due to limited experiential knowledge), and up the age range into the 60s and 70s (due to declining fluid resources).

Another factor believed to influence financial decision making—domain-specific financial knowledge—has been found to be one of the more powerful determinants of financial decision-making performance. One's experiential knowledge of a financial task (i.e., expertise), in the form of habits, computational strategies, or decision-making scripts (Hershey, Jacobs-Lawson, & Walsh, 2003), is in most circumstances likely to outweigh the relative value of more general crystallized knowledge and fluid abilities.

Domain-specific knowledge increases in a cumulative fashion over the course of adulthood, as individuals encounter different types of financial tasks and have repeated experiences with many of the same types of

decisions. The slope of this knowledge-acquisition function is presumably steeper for some and flatter for others depending on the nature of their exposure to, interest in, and involvement with different types of personal financial decisions. Moreover, domain-specific knowledge slopes for some individuals may be linear, but that need not be the case. Life circumstances may lead some individuals to have broad exposure to financial issues (or formal educational training) early in life, resulting in a negatively accelerated growth function. Alternatively, the growth function for “slow starters” may demonstrate a pattern of exponential development that accelerates late in life. Individuals’ domain-specific knowledge may even show a downturn late in life, in cases in which individuals are reticent to embrace new financial technologies, unwilling to explore new decision domains, and losing competence at financial tasks they had previously mastered. In light of these decision dynamics, we now turn our attention to a discussion of the essential nature of various types of financial decisions.

THE NATURE OF FINANCIAL DECISION-MAKING TASKS

Financial decision making is in certain ways unique relative to other real-world decision domains. One reason for this is because certain tasks are linked to a particular age or life stage. Take, for instance, day-to-day money management tasks such as paying bills, budgeting, and balancing a checkbook. These are important tasks that individuals typically first experience early in adulthood, and they remain relevant over the remainder of one’s life. Other financial tasks are often linked to a later age or life stage. Examples include selecting the right investment vehicle to save for a child’s college education, selecting the most appropriate home mortgage, deciding how assets should be disbursed as part of the estate-planning process, and deciding whether one can afford to retire. Each of these tasks typically emerges in middle age or late life, and often, surrounding specific circumstances (e.g., turning 65 years of age). That being the case, one could expect that individual differences in exposure to different types of financial tasks over the course of adulthood would result in different levels of financial knowledge and expertise.

The diagram of a trapezoid shown in [Figure 1](#) identifies a sample of commonly experienced financial decision-making tasks. The tasks shown are not intended to be comprehensive, but rather, representative of a limited range of financial decisions one might face over one’s lifetime. As seen in the figure, one’s developmental trajectory (i.e., indexed by age) is graphically represented along the right side of the hierarchy. This dimension suggests that different financial tasks become relevant at different points in the adult life span, or at different life stages. A number of the

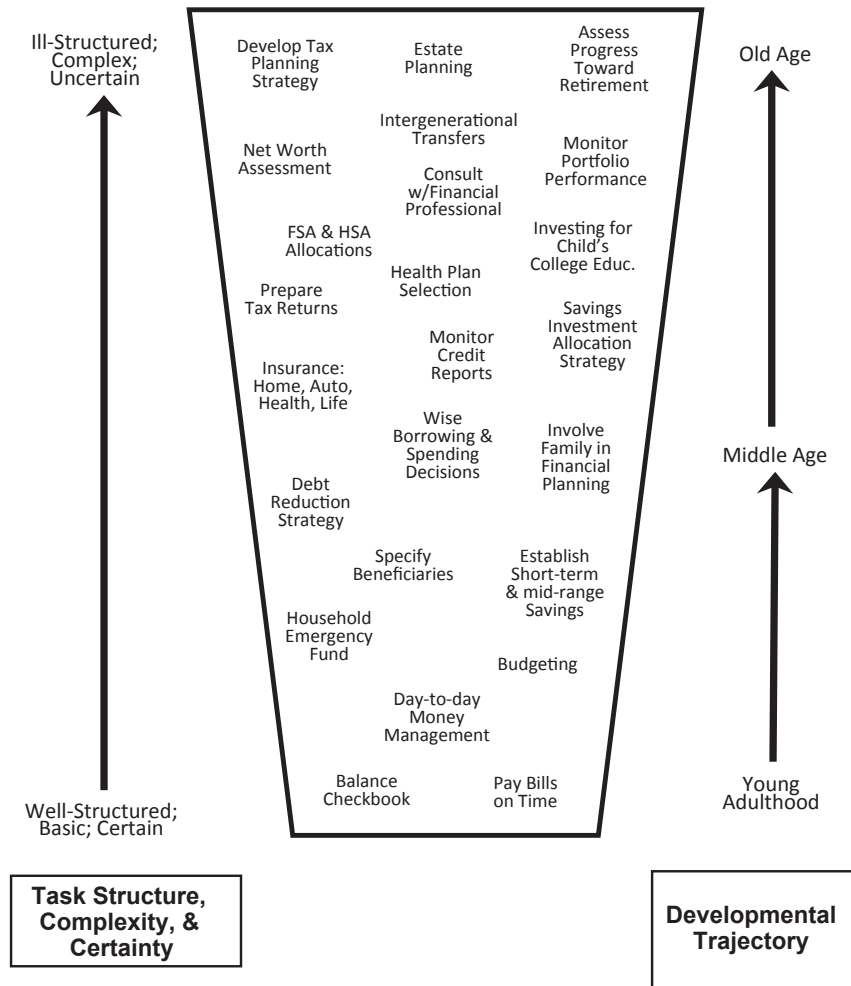


FIGURE 1 Developmentally-based hierarchical arrangement of household financial tasks. Tasks arranged from the bottom of the trapezoid to the top become increasingly ill-structured, complex, and uncertain, and their resolution requires an increasingly complex set of cognitive skills.

tasks adults in their 20s face are fairly basic in nature, and many of them accompany independence from one's parents (e.g., creating a budget, maintaining a checkbook, payment of bills). But as one grows into middle-age, the odds of starting a family, purchasing a house, and landing a job with health and retirement benefit options all become increasingly likely, and the financial decisions one faces at this stage of life become increasingly complex (i.e., tasks that involve more information to consider in formulating a decision strategy). The complexity and uncertainty of financial

decisions once again increases as one enters older adulthood, with many tasks at this stage of life requiring the development of a coherent and internally consistent strategic plan. The age-linked progression of tasks described above is not immutable; that is, a 20-year-old could purchase a house, develop a tax-planning strategy, or develop an estate plan for her elderly parents. But the notion that age is normatively associated with increases in task complexity (in terms of the cognitive processes involved) is well founded, and for most individuals advancing age is accompanied by an increase in the range of financial tasks in which one is likely to engage (Carpenter & Yoon, 2011). This is why the walls of the trapezoid flare out from bottom to top. It is also worth noting that normative developmental trajectories in relation to financial decisions may be moderated by factors such as socioeconomic status, ethnicity, social forces, and other cultural influences.

As seen on the left side of the diagram, it is possible to think of household financial tasks as varying in terms of their structure (i.e., whether they are well-structured or ill-structured; Laxman, 2010; Simon, 1973); complexity (Probst & Bassi, 2014); and degree of uncertainty (i.e., extent to which the dynamics of a particular decision allow the decision maker to know, with a degree of certainty, the quality of his or her decision) (Demange & Laroque, 2006). Certain tasks, such as balancing a checkbook, are well structured and lacking in complexity. Moreover, in the case of reconciling a checking account, there is little in the way of uncertainty and ambiguity. That said, however, even “basic” financial tasks—such as creating a household budget—may be marked by uncertainty, such as not knowing whether one has set aside sufficient short-term savings for the coming month. Other tasks, such as day-to-day money management, require moderately high levels of fluid abilities, but relatively little in the way of advanced analysis, synthesis of information, and strategic planning.

Tasks closer to the top of the hierarchy, in contrast, are inherently complex, ill-structured, and marked by a high degree of uncertainty. Take, for instance, assessing one’s progress toward saving for retirement, which is a task more likely to be engaged in by middle-aged and older adults. This task is complex, ill-structured, and marked by multiple uncertainties such as knowing how long one is likely to live, whether one will experience costly health problems in old age, and how potentially volatile financial markets will affect one’s retirement nest egg over time. When one considers the variability inherent in the essential nature of these different types of tasks, it becomes clear that the nature of the tasks (i.e., structure, complexity, and uncertainty) is likely to interact with age-related changes in various cognitive and intellectual abilities.

Relative to tasks near the bottom of the hierarchy, those near the top tend to be associated with a higher degree of risk, which generally stem from uncertain parameters (e.g., the chance that *all* of one’s children will attend college; whether the size of one’s estate will be appreciable upon passing).

As financial decisions become increasingly risky and complex (as in the case of entrepreneurial endeavors, estate planning, and certain tax planning scenarios), individuals become increasingly likely to seek out external assistance or professional help before they can be confident the strategy adopted will lead to success. However, outsourcing aspects of personal financial decisions to an adviser is something many individuals are hesitant to do (Gerrans & Hershey, 2013; Gutierrez, Hershey, & Gerrans, 2011), based on concerns about disclosing personal information or being negatively evaluated by the adviser for poor prior decisions. Nevertheless, the likelihood of engaging a financial professional increases as a function of age during adulthood, as “mature consumers” face new decision challenges that are linked to important life transitions such as changing employers, paying off a house, or transitioning into retirement (Milner & Rosenstreich, 2013).

Tacitly represented in the trapezoid are a range of cognitive skills required to carry out the various financial tasks. Basic tasks, such as those near the bottom of the trapezoid, involve little more than recognition of the fact that a decision needs to be made (i.e., problem identification), fundamental numeracy abilities, and a degree of computational competence. However, just because a decision is a basic one does not mean individuals will choose wisely, as evidenced by the appreciable percentage of individuals who overspend and struggle with day-to-day money management and the balancing of accounts.

Mid-level tasks are more complex, requiring relevant data to be sought out, analyzed, and synthesized. Tasks at this level also involve lower-level abilities such as numeracy and computational competence, but the hallmark of mid-level tasks is that the individual is called upon to compare and contrast different dimensions of the decision in a rational and analytic fashion. Relative to the most basic tasks, there is more room for error when one is engaged in mid-level tasks, as all relevant information may not be available to the decision maker, or the information needed may not be complete or aggregated inappropriately.

For most individuals, tasks near the top of the trapezoid are those that are relevant late in life, and they require extensive strategic planning. Furthermore, for high-level financial tasks there may be no one right decision, but rather, a range of alternative solutions that lead to different outcomes bearing differing utilities. After analysis of a high-level financial decision has been carried out and a strategic plan is adopted, the decision needs to be implemented. In assessing savings progress toward retirement, for example, one must first assess the balance between anticipated future resource streams, current investments, and anticipated postemployment expenditures, before determining whether one’s savings are on track. Conclusions reached during this process require the decision maker to either stay the course or adjust his or her investment strategy. Any indicated change in one’s investment strategy then needs to be implemented. Unlike tasks near the bottom of the trapezoid in which outcomes are rather

certain, for high-level tasks the quality of one's decision may not be known for years. In some instances the quality of the decision outcome may never be known, which is why in such cases individuals are wise to focus on the use of normative strategies (i.e., a course of action that maximizes the probability of a beneficial outcome) and the efficient processing of task information in the hopes that doing so will result in a positive outcome. The various cognitive skills required for tasks at different levels of the hierarchy correspond well to existing decision taxonomies (e.g., [Scherpereel, 2006](#)).

We would be remiss if we failed to mention that there exists a segment of the population who live on the margins of society, whose experience with finances fails to be captured by the tasks represented in the trapezoidal hierarchy. These American adults are effectively "financially disenfranchised" from mainstream financial institutions. Many live with physical, cognitive, or emotional disabilities; others are migratory workers and day laborers; and still others adopt this lifestyle as a matter of choice. These individuals may or may not be homeless; they would likely lack steady employment, a health insurance plan, or even a bank account. Members of these cohorts are often targeted by individuals and merchants for necessary financial transactions ([Gallmeyer & Roberts, 2009](#); [Johnson, 2010](#)). Living on a day-to-day or week-to-week basis, these individuals live their lives engaging in financial tasks that would conceptually be located *outside* the confines of the trapezoid. It is difficult to estimate the size of this segment of the population, but suffice it to say that it is substantial and their experience of everyday finance is qualitatively different than what most of the population experiences ([Houser, D'Andrea, & Daniels, 1992](#)).

REASONS WHY INDIVIDUALS MAKE POOR FINANCIAL DECISIONS

There exist a variety of reasons why individuals make sub-optimal decisions in the financial arena. Poor decisions may result from a lack of familiarity with the task and low levels of financial literacy, insufficient levels of basic cognitive abilities, decision biases that skew one's performance, and situational and contextual influences that hinder sound reasoning. Importantly, for various reasons these factors may exert different degrees of influence at different points in the adult life span. Each of these factors is examined separately, next.

Task Familiarity and Financial Literacy

One of the chief determinants of financial decision-making competence (i.e., the ability to make decisions successfully or efficiently) is arguably one's level of financial knowledge and financial literacy ([Croy, Gerrans, &](#)

Speelman, 2010; Lusardi & Mitchell, 2013). According to the United Nations Educational, Scientific, and Cultural Organization, financial literacy involves the ability to identify, interpret, understand, and use written materials to function effectively in the financial arena (UNESCO, 2004). Indeed, a growing body of literature from the fields of psychology, finance, and economics suggests that on the whole, American consumers lack familiarity with a wide range of real-world financial products, and this limited experience results in limited levels of domain-specific knowledge. Without an appropriate knowledge base, individuals are hampered in their ability to effectively evaluate different decision options and implement a rational financial plan. From stock market participation, to debt reduction, to retirement planning, to mortgage defaults, low levels of financial literacy and numeracy have been identified as the root cause of poor saving and investment decisions (Gerardi, Goette, & Meier, 2013), ultimately leading to significant out-of-pocket expenses and low levels of financial satisfaction (Xiao, Chen, & Chen, 2013).

Data from the U.S. National Financial Capability Study (Lusardi & Mitchell, 2011a) reveal that literacy levels are particularly low among less-educated individuals and women. Furthermore, African-Americans and Hispanics in that study scored lowest, on average, on a set of key financial literacy concepts. Paradoxically, all participants in the study viewed themselves as financially competent, which reveals a halo effect operating (Thorndike, 1920) when it comes to self-perceptions in the financial realm. Low levels of financial literacy are not just a problem in the United States, however. As Lusardi and Mitchell (2011b) point out, insufficient financial knowledge is a problem in numerous other countries around the world in which financial markets are well developed, such as Germany, the Netherlands, Sweden, Japan, and Italy. Future solutions to the problem of suboptimal financial decision making will necessarily involve interventions that seek to raise financial awareness.

Boyle et al. (2013) suggest that financial literacy is particularly a problem among adults over the age of 65, despite the fact that members of this age group would be assumed to have relatively high levels of financial knowledge. Thus, after decades of improvement in financial literacy, it appears that in later adulthood there is a downturn in the acquisition and use of financial knowledge. According to Boyle et al., literacy deficits among older individuals stem from low levels of formal education, insufficient word knowledge associated with new and different types of financial and investment products, and ultimately, declines in basic cognitive abilities such as episodic memory capacity and executive functioning. At the other end of the age spectrum, a cross-sectional study on the financial literacy among over 3000 Australian adults (ANZ, 2011) revealed that individuals under the age of 25 exhibited particularly low levels of financial literacy, presumably due to a limited involvement with various

financial products. Otherwise, the survey revealed age to be positively related to behavioral indicators of financial literacy (saving on a regular basis; maintaining a household budget) among those 25 years of age and older. [Lusardi, Mitchell, and Curto \(2010\)](#) also reported that young adults have troubling low levels of financial literacy, which they argued would make them less likely to participate in the stock market, choose mutual funds with lower fees, accumulate and manage wealth effectively, and plan for retirement.

Insufficient Basic Cognitive Abilities and Resources

In light of the fact that many financial decision-making tasks are associated with information-rich domains, it is no surprise that in studies of adult development and aging, basic cognitive resources, abilities, predispositions, and strategies have been implicated in the quality of individuals' decision-making efforts. Age-linked attentional and working memory constraints are likely to lead to diminished executive functioning when the information load and computational demands of a task are high ([McDowd & Hoffman, 2008](#); [Naveh-Benjamin, Cowan, Kilb, & Chen, 2007](#)). The capacity to plan effectively has also been singled out as a vulnerable ability, with one recent study showing that older adults (age 65–76) failed to plan ahead as effectively as adults under 65 years of age when engaged in a laboratory planning task ([Köstering, Stahl, Leonhart, Weiller, & Kaller, 2014](#)). Moreover, in the decision-making domain, [Tymulaa, Belmakerb, Rudermanb, Glimcherc, and Levy \(2013\)](#) found that older adults not only demonstrated a cognitive bias toward being more risk averse when making financial decisions, but they were also strikingly inconsistent in their choices compared to younger adults. This led the researchers to call into question the rationality of older adults in decision-making contexts. Consistent with this finding, researchers ([Besede, Deck, Sarangi, and Shor, 2012](#); [Walsh & Hershey, 1993](#)) have reported that relative to younger counterparts, older individuals are more likely to use suboptimal heuristics (approaches) and occasionally make random selections when solving financial problems, which lead to objectively worse choices with age. Some have speculated that age-related differences, such as those cited above, are due to changes that occur during late adulthood at the level of the neural substrate ([Kuhnen & Knutson, 2005](#); [Samanez-Larkin, Wagner, & Knutson, 2011](#)).

Decision Biases That Compromise Performance

There exists a growing body of literature that examines age-related differences in decision biases ([Strough, Karns, & Schlosnagle, 2011](#)). Biases do not simply cause individuals to err when faced with a reasoning or decision-making task; rather, they predispose individuals to make *systematic*

errors (Shleifer, 2000). Unfortunately, all too often those errors are of a self-serving nature, resulting more times than not in decision performance that leaves individuals in a deficit position. Why is it that individuals routinely purchase with great confidence “more house” than they can reasonably afford (Scatinga, 2009), or why do individuals typically misestimate their longevity when planning for retirement (Post & Hanewald, 2013), yet they feel their estimates are reasonable and robust? The answer is that we are all prone to different types of cognitive biases that limit our general financial competence.

Nofsinger (2001) identifies more than a dozen cognitive biases that predispose individuals to make poor personal economic decisions. From the topic of overconfidence to sunk-cost effects, he describes the reasons why individuals make the mistakes they do, and points out ways those financial mistakes can be avoided. Similarly, in a chapter on effective financial planning for retirement, Hershey, Jacobs-Lawson, and Austin (2012) identified some 40 different cognitive biases that stand to compromise one’s personal economic decisions. Examples of just three of these biases when it comes to investing include the familiarity bias, in which individuals buy the stock of companies they are familiar with; the overconfidence bias, in which investors believe the stocks they have chosen will perform above average in the future; and the status quo bias, in which due to inertia the investor fails to take action (i.e., maintain the status quo) when action is indicated. All three biases can work to the detriment of investors.

Another cognitive bias—resistance to sunk costs (which is often implicated in investment decisions)—has been related to late life changes in semantic memory (Del Missier et al., 2013). According to Del Missier et al., resistance to this bias is positively linked to age due to older adults’ increased awareness of sunk cost traps. Resistance to framing, which has been linked to late life changes in working memory, also improves with age when individual differences in working memory capacity are statistically controlled. Yet another bias, consistency in the application of decision rules (which is also related to working memory), however, demonstrates a negative relationship with advancing age (Del Missier et al., 2013). This latter finding is in agreement with the findings of Tymulaa et al. (2013) cited in the preceding section, which suggests older adults are often inconsistent when making choices. The impact of these latter two biases (resistance to framing and application of decision rules) would not be uncommon to find operating in situations in which individuals have to make insurance purchases or select a workplace health plan.

The insidious aspect of cognitive biases is that the distorted perceptions they create are often invisible to the decision maker, which makes them difficult to identify and circumvent, and therefore, resistant to intervention. Interestingly, individuals are quick to spot biases in reasoning except in cases when those biases are their own (Pronin, 2007). This suggests

an important role for objective third-party advisors (such as certified financial planners) who are equipped to identify situations in which our financial-reasoning processes might fail.

Situational and Contextual Influences

Financial decisions are always made in a situational context and sometimes, for better or worse, that context will determine one's decision. Take, for instance, the range of possible contexts and individual difference dimensions surrounding "one-off" life events such as choosing to retire, receiving an inheritance, receiving a large pension payout, or being forced to retire by one's employer. Each of these situations has been found to be related to the decision to seek professional financial advice among Australian adults 40–69 years of age (Milner & Rosenstreich, 2013), which suggests that the complexity inherent in the decision is in part driven by perceptions of the context in which that decision is embedded. Other studies have found that a contextual factor as innocuous as an asset's name can affect investor behavior (Rau, Patel, Osobov, Khorana, & Cooper, 2002). When person–context–task fit is high, older adults have been shown to use their experiential knowledge to overcome age-related declines in cognitive abilities. But when person–context–task fit is low (such as when a novel task is attempted), older adults face the need to adapt existing strategies to fit the demands of the situation (Yoon, Cole, & Lee, 2009).

Perhaps an even more surprising contextual finding is that investors are more willing to purchase risky assets on days in which there is good weather (Hirshleifer & Shumway, 2003). Kliger and Levy (2003) explain this seemingly odd finding in terms of a priming effect, in which cloudy weather conditions prime investors to be in a bad mood, thereby leading them to prefer low-risk options. Gilad and Kliger (2008) demonstrated that even investment professionals are not impervious to "cloudy weather" priming effects. These authors found that CPAs and investment advisors for commercial banks were *more* susceptible to weather condition-priming influences than a comparison group of undergraduate students, which led the investigators to conclude that the financial professionals' decisions were based largely on intuition. In a different priming investigation (Kliger & Gilad, 2012), asset valuations were examined as a function of whether details about the asset were printed on red or green paper. In this study, respondents estimated a value for the asset and assessed the probability of the asset's future gain or loss. Based on preexisting positive and negative associations with the colors green and red, respondents considered an asset description printed on green paper to be of greater value and more likely to result in investment gains than the very same description printed on red paper. Whether these seemingly ephemeral contextual cues from the priming literature covary with age has yet to be determined. However, Hess,

Waters, and Bolstad (2000) identified age differences in affective priming, with older adults being more susceptible to such effects. All financial decisions are made in a specific context or in the face of certain life events, and our susceptibility to biases stemming from those contexts and events likely has a very real impact on the nature of the decisions we make.

Consistent with the Life Course Perspective principle of linked lives (Elder, 1994; Mortimer & Shanahan, 2003), it is critical to recognize that *all* financial and economic decisions take place in a social context. Decisions regarding consumption, spending, credit use, debt management, savings, and fiscal responsibility are all influenced by the messages we receive from others, and our perceptions of what constitutes socially normative behavior. Evidence for this is found in studies that have shown parental financial values shape the financial values and investment orientations of their adult children (Hira, Sabri, & Loibl, 2013; Kopusko & Hershey, *in press*). Other research has demonstrated that the opinions of one's spouse, friends, and colleagues color our attitudes toward investing in new business ventures, saving for retirement, and general financial planning practices (Hershey, Henkens, & Van Dalen, 2010; Loibl & Hira, 2006; Werbel & Danes, 2010; Yang & DeVaney, 2012). Still other investigations reveal that credit-based spending decisions and patterns of charitable giving are shaped by individuals' perceptions of descriptive societal norms (Sotiropoulos & d'Astous, 2013). When well-informed social support is high, we are prone to make better financial decisions. But the opposite also holds true as well. When social support is low and normative social reference information is either incorrectly perceived or absent, then the quality of one's personal financial decisions is likely to suffer.

In much the same way that low levels of social support can affect us when making financial decisions, low levels of environmental support can also compromise the choices individuals make. Environmental support could be considered high in cases in which task-relevant information is readily available and presented in an easily interpretable fashion. However, in the world of personal finance, this is often not the case. For instance, it is not uncommon for credit offers to present information regarding exorbitant finance charges in small print, or to encounter debt-reduction services that charge nearly as much in fees as the debt they are likely to dismiss. Many have struggled with complicated mortgage financing offers that contain hidden fees, and others have encountered "too good to be true" used car offers. When confronted with risky product offerings, older adults need high levels of environmental support in order to function at an optimal level (Craig & Anderson, 1999), in part, because they sometimes lack the basic processing resources and literacy levels required to evaluate complex offers. That said, everyone—not just older adults—could benefit from tighter regulatory controls on financial offers in the marketplace.

INTERVENTIONS DESIGNED TO IMPROVE FINANCIAL DECISION MAKING

Interventions, in any area, harness research to design, deploy, and evaluate training programs and other support systems. The objective for interventions in financial decision making as we view it in this chapter is to improve awareness, literacy (Lusardi & Mitchell, 2013), domain-specific knowledge (Walsh & Hershey, 1993), and ultimately to ameliorate maladaptive decision strategies (Nofsinger, 2001; Su, 2013). However, given the dynamic nature of financial decision competence and the different trajectories associated with performance we have portrayed above, no single universal intervention platform is likely to remediate performance on all financial tasks. Our review located financial interventions informed by work in program evaluation (Morell, 2010) and implemented across disciplines that include neuroscience (Samanez-Larkin et al., 2011) and consumer psychology (Moschis, Mosteller, & Fatt, 2011; Yoon et al., 2009).

Although not a focus of this chapter, it is worthwhile to review the use of content and performance standards (for children or adults) to ensure individuals receive sufficient training to perform at or above a baseline level of competence. An example is the Equipped for the Future standards developed by the National Institute for Literacy. These approaches rely on specification of life tasks or similar concepts, ordered along a developmental continuum sufficiently common across individuals to support research and practice. Elder's (1994) concept of the life course is representative (cf. Mortimer & Shanahan, 2003). It is instructive to consider the forms of training, intervention, and socialization practices that would be appropriate for children and adolescents as they mature, acquire crystallized knowledge, then enter the workforce. Important roles are played by parents/caregivers, educators, employers, and community members.

A theme across research reviewed in this chapter is the potential of various nudges and supports. Youth development accounts (Shobe & Sturm, 2007), for example, help to initiate saving and a pattern of life-long financial responsibility. We found a similar strategy for low- and moderate-income families in the SaveUSA project, initiated in 2011 and supported by a private-public Social Innovation Fund partnership. The basis for this intervention encouraged interested tax filers in four cities ($N=1554$) to save part of their tax return up to \$1000 for a period of 1 year in order to receive a 50% match. The logic of this intervention is that even small savings can assist individuals or families in emergency situations to avoid risky, less effective choices (payday loans). An interim evaluation of this intervention, using randomized assignment, reported statistically significant results (Azurdia, Freedman, Hamilton, & Schultz, 2014). It is noteworthy that follow-ups are planned to study maintenance of effects. We noted attempts to intervene with elderly adults in the workforce through

educational seminars, tax counseling, financial independence training, and employer assistance (Council on Adult and Experiential Learning, 2012; Houser et al., 1992).

A neuroscience framework of financial risk-taking developed by [Kuhnen and Knutson \(2005\)](#) was used in a study that suggests features of future interventions. [Samanez-Larkin et al. \(2011\)](#) investigated, in two studies, financial risk-taking across multiple ages. A first study used functional neuroimaging with an investment task; a second manipulated expected value information, discrete and integrated, in two age groups over blocked trials of the investment task. Findings were suggestive but not conclusive about mesolimbic involvement in addition to declarative knowledge.

Another feature of intervention in financial decision making that may covary with age is nature of the delivery system. More active forms of intervention provided earlier in life are followed by passive interventions that continue through adulthood. We found interventions summarized in various reports that range from active (i.e., in school, direct intervention through teachers and aides using content standards) through passive (websites, financial calculators).

What conclusions can be drawn from intervention practice? Current approaches to intervention, whether active or passive, seem to be unintegrated. This suggests the need for coordination of services along the entire life span and prescription of a range of potential interventions from a portfolio. Implementation of a comprehensive skills training approach that ensures a minimal level of financial competence for all adults remains a goal rather than reality. Specific predictable deficits lead to suboptimal decisions (for example, trying to balance content suggests that work on assets may not be required for those in poverty, whereas managing liabilities such as debt is very important).

The work of [Lusardi \(2012\)](#) and others shows a mismatch between financial capabilities, assessed through small sets of questions in large-scale surveys, and confidence in financial capabilities, which tends to be high. The idea of “nudges” ([Thaler & Sunstein, 2008](#))—that is, choice architectures that alter individuals’ financial behaviors in a positive way—may be relevant, but their ultimate success will require a solid understanding of decision dynamics prior to their deployment within intervention strategies. The SMarT retirement savings program advanced by [Thaler and Benartzi \(2012\)](#) is an example of one such choice architecture. The program results in high levels of saving compliance by asking individuals to allocate to retirement savings moneys linked to future workplace pay increases. We mentioned above the SaveUSA project, which similarly incentivizes savings through matches to tax returns saved for one year.

It is worth mentioning one other topic—financial elder abuse—prior to concluding this section on intervention. Common forms of financial abuse include fraud, theft, illegal property transfers, and misuse of powers of

attorney (Rabiner, Brown, & O’Keefe, 2004), which are carried out by family members, predatory individuals (some named as guardians), and unscrupulous professionals (National Committee for the Prevention of Elder Abuse, 2008). Of course, any older individual is a potential target of financial elder abuse, but those who are experiencing some degree of cognitive decline are particularly vulnerable due, in part, to lapses in critical judgment, unwarranted levels of trust in others, or the tendency to acquiesce when providing informed consent in the face of insufficient information (Griffiths & Harmon, 2011).

We agree with Agarwal et al. (2009) that it will be difficult to stem the rising tide of abuse unless tighter regulatory controls are put in place through, among other things, “disclosures, nudges, financial driving licenses, advanced directives, fiduciaries, [and] asset safe harbors” (p. 1). Also needed are more effective clinical means of financial competency testing for older adults, using either structural interviews or behavioral indices of performance. Competency testing could potentially be beneficial for individuals not only at the late end of the age spectrum, but also early in adulthood as a way to ensure young adults have the basic skills necessary to make decisions of reasonable quality. Also of value would be improved methods for training social workers to detect cases of financial elder abuse (Davies et al., 2011) and forensic approaches that would help to prosecute those who seek to victimize elders (Navarro, Gassoumis, & Wilber, 2013).

SUMMARY AND CONCLUSION

This chapter makes a compelling case for the notion that human adults are less than perfect decision makers when it comes to matters of personal finance. The reasons for our errors, however, differ at different points in the adult life span. Suboptimal financial decisions are most likely to be exhibited by young adults and very old adults, but for different reasons. Young adults are likely to suffer from a lack of world knowledge and insufficient prior experience at making financial decisions. Older adults possess real-world financial decision-making expertise and knowledge, but they are at an age at which they are likely to be experiencing declines in basic cognitive abilities that stand to hinder executive functioning. Based on the three determinants of financial competence outlined in this chapter—fluid abilities, crystallized abilities, and domain-specific knowledge—it is concluded that those between the ages of 40 and 60 are the most likely to execute high-quality personal financial decisions, a conclusion consistent with the findings of Agarwal et al. (2009).

One unique contribution of this chapter to the extant literature on financial decision making is a hierarchical taxonomy of household financial tasks. This taxonomy ranges in intellectual complexity from simple and

mundane decisions at one end of the spectrum to complex and nuanced decisions at the other. Tasks within the taxonomy also differ as a function of their structure, degree of uncertainty, and the types of requisite cognitive skills required to reach closure. The tasks in the hierarchy also routinely occur in predictable situational contexts, sometimes predisposing the individual to certain biases and other times not. It is hoped this taxonomy will be useful to practitioners who seek to work effectively with clients needing different levels of professional support to accomplish their decision-making objectives.

We concluded the chapter by describing various types of developmentally-appropriate interventions that follow from the issues raised in the chapter. At this point in time, a comprehensive, forward-thinking wrap-around approach to life span intervention and financial services is needed. The goal of this approach is to anticipate and remediate weaknesses in decision performance prior to a point at which those weaknesses manifest themselves. Toward that end, early identification and risk factors should be carefully monitored on an ongoing basis.

Clearly, we have our work cut out for us. It has yet to be determined whether the tools and ideas we have at our disposal will prove sufficient to foment positive change. Ultimately, the metric of our success in the decades to come will be assessed through increases in individual levels of financial satisfaction and an overall improvement in societal quality of life.

Acknowledgment

This chapter was prepared while the first author was a guest researcher at the Netherlands Interdisciplinary Demographic Institute in The Hague. He is sincerely indebted to the Institute for their support of this work.

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