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# Development Of A Financial Decision-Making Self-Efficacy Measure For Older Adults

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**DEVELOPMENT OF A FINANCIAL DECISION-MAKING SELF-EFFICACY  
MEASURE FOR OLDER ADULTS**

by

**EVAN GROSS**

**THESIS**

Submitted to the Graduate School

of Wayne State University,

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Advisor

Date

## **DEDICATION**

*To Liz and Anne for all their love and support.*

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## TABLE OF CONTENTS

Dedication _____	ii
Acknowledgements _____	iii
Chapter 1 Introduction _____	1
<i>Elder Financial Exploitation</i> _____	2
<i>Financial Vulnerability Factors</i> _____	6
<i>Financial Capacity</i> _____	10
<i>Self-Efficacy</i> _____	25
<i>Financial Decision-Making Self-Efficacy and Related Concepts</i> _____	29
Specific Aims _____	49
Chapter 2 Methods _____	52
Chapter 3 Results _____	57
Chapter 4 Discussion _____	64
Appendix _____	81
References _____	99
Abstract _____	111
Autobiographical Statement _____	113

## **Chapter 1: INTRODUCTION**

The proportion of older adults as a percentage of the total United States population is increasing and is expected to continue growing as the Baby Boomer generation reaches retirement age (Ortman, Velkoff, & Hogan, 2014). The fastest growing group is those over age 85. Now more than perhaps ever before, the financial decisions of older adults have a major impact on the economy, in addition to direct effects on the lives of individuals and their families. Still, there is much basic information that remains unknown about the processes that older adults use to make important financial decisions. Thus far, researchers have focused primarily on the risks of elder financial exploitation and the role of declining cognition, such as memory impairment and decreased mathematics skills. However, the relationship between actual financial decision-making ability and these factors is not well understood.

Considerable research evidence suggests the importance of examining motivation as a key factor for decision-making competence in later adulthood (Strough, de Bruin, & Peters, 2015). Self-efficacy, or confidence in one's ability to complete a task successfully, is an important aspect of motivation. An individual's perceived ability to bring about a desired outcome affects future task initiation, engagement, persistence, self-appraisal and coping. The construct has proven useful in healthcare settings with older adults (Grembowski et al., 1993; Steffen, McKibbin, Zeiss, Gallagher-Thopson, & Bandura, 2002; Tinetti, Richman, & Powell, 1990), but self-efficacy has not been studied in the context of financial decision-making among older adults. Self-efficacy might be particularly important in this critical decision-making context because the risks and rewards of a financial decision are rarely entirely known or fixed and may be based on subjective preferences. Clearly, some financial choices are very risky, but an informed choice to make a risky decision is valid and occasionally quite lucrative. On the other

hand, risky choices may also indicate poor decision-making or financial exploitation. Ratings of financial decision-making self-efficacy might help distinguish between older adults who make informed decisions, whether risky or conservative, and those who have difficulty making financial decisions and are at risk of financial exploitation. My research seeks to validate the construct of financial decision-making self-efficacy among older adults by designing a brief, self-report scale.

The proposal is organized as follows. First, I will provide a background in elder financial exploitation and factors influencing financial vulnerability, followed by a review of financial capacity assessments, and then an overview of the self-efficacy construct and a critical examination of the financial self-efficacy literature.

### **Elder Financial Exploitation**

Generally, the concept of elder abuse encompasses psychological, physical and sexual abuse, self-neglect and caregiver neglect, and financial exploitation of a person at least 60 years old (Dong, 2014). Since the 1950s, it has developed from a rather narrow focus on protecting vulnerable older adults to a global, multi-dimensional concept viewed differently depending upon the discipline – public health, social services, family violence, crime, gender, civil rights, and human rights (Jackson, 2016).

However, there are important differences between the subtypes of elder abuse (*e.g.*, risk factors, frequency, severity, consequences, and characteristics of perpetrators) with implications for theory and practice. Broadly defined, elder financial exploitation includes theft, fraud, and financial manipulation committed against an adult aged 60 or older. Jackson and Hafemeister (2011) conducted separate, semi-structured interviews with 71 Adult Protective Service caseworkers and elderly victims of maltreatment to investigate differences between pure

financial exploitation, physical abuse, neglect by other, and hybrid financial exploitation, in which financial exploitation occurred with physical abuse or neglect by other. The authors found differences between all four types of abuse. They emphasize that pure financial exploitation was associated with younger age, living alone, the absence of communication difficulties or dementia, while hybrid financial exploitation was associated with cohabitation with the abuser, poor health, and inability to drive. Importantly, they note that the interpersonal dynamics between victims and perpetrators also differ between types of abuse. These results serve to highlight the unique challenges to researchers and professionals presented by elder financial exploitation.

It has even been difficult to establish prevalence rates of elder financial exploitation because of under-reporting, which is most likely due to a failure to recognize abuse and stigma about reporting (Stiegel, 2012). For example, A vignette survey study of perceptions of elder financial exploitation (N = 488, mean age = 76.6) found that older adults were less likely to perceive a situations as exploitation when the perpetrator was a child of the victim than when the perpetrator was a paid caregiver or more distant relative (Knight et al., 2016). However, several attempts have been made to estimate the prevalence of elder financial exploitation.

The National Elder Mistreatment study (N =5,777) used a random-digit telephone survey method to estimate prevalence rates (Acierno et al., 2010). The researchers found a 5.2% rate of elder financial abuse by a family member in the last year, which was the highest prevalence rate of any of the subtypes. However, these results may underestimate the actual prevalence because the study used a narrow definition of elder financial exploitation and only included cognitively intact adults.



Another random-digit telephone survey of English and Spanish speaking older adults in New York (N = 4,156) reported a 2.7% one-year prevalence of elder financial exploitation and a lifetime prevalence (since age 60) of 4.7% (Peterson et al., 2014). The authors reported that family members were the perpetrator in 57.9% of cases. However, this study also excluded people with dementia, which might lead to a reduced prevalence estimate.

Minority populations may experience even higher rates of elder financial exploitation. Beach, Schulz, Castle, and Rosen (2010) conducted a financial exploitation survey of older adults in Pennsylvania (N = 903). They found that African-Americans reported a 12.9% six-month prevalence and 23% prevalence since age 60 compared to 2.4% and 8.4% for the rest of the sample. These relatively higher prevalence rates might reflect the wording of the survey questions, which might be more accurately characterized as risks for financial exploitation than occurrences.

Despite some methodological shortcomings, the financial exploitation of older adults is disturbingly common, and the consequences to the economy and human life are staggering. Estimates of the financial cost of elder financial exploitation are also difficult to validate due to under-reporting and may be tainted by researcher bias. There is a large range of cost estimates due to different conceptions of elder financial exploitation and methods of estimating under-reporting.

At the upper bound, one group of researchers estimated the annual economic cost of financial elder exploitation at \$36 billion (Orlov & True Link Financial, 2015). The researchers used a demographically representative web-based survey of caregivers of older adults (N = 467) to extrapolate financial costs. This estimate is much larger than previous estimates, but the survey used an inclusive definition of elder financial exploitation that included scams, criminal

fraud, and caregiver abuse. However, True Link Financial may not be an impartial institution because it provides financial services to older adults to avoid financial exploitation.

At the other end of the range, cost estimates are still quite large. Based on the number of unique news articles about cases of financial elder abuse over a three month period in 2010, Teaster, Roberto, Migliaccio, Timmermann, and Blancato (2012) estimated the annual financial cost to be \$2.9 billion. This is an increase of 12% from a prior estimate of \$2.6 billion in 2008 (MetLife Mature Market Institute, 2011). However, these studies excluded instances of consumer financial fraud committed by people unknown to the victim. Furthermore, Teaster et al. (2012) note that 36% of the articles did not report the amount of the financial loss, which they corrected for by mean replacement.

On the other hand, the human costs are even more challenging to value. However, it is reasonable to expect serious consequences, and there is some indirect evidence of severe consequences. A review of substantiated cases of elder abuse (N = 1,670) used Cox proportional hazard models adjusting for age, gender, ethnicity, activities of daily living, and health problems to investigate differences between the risks of all-cause mortality over the 5 years after abuse by type of abuse. The researchers found that 28% of victims in cases of financial exploitation died within 5 years of the abuse, which was greater than rates for physical abuse, emotional abuse, and polyvictimization (Burnett et al., 2016). Interestingly, the mortality risk for caregiver neglect was not significantly different than financial exploitation. While it is not possible to determine from this study whether financial exploitation increases the risk of mortality or whether older adults who are at increased risk of death are also more likely to be exploited, there is reason to think that the psychological and financial consequences of exploitation might actually reduce longevity by decreasing the social, psychological and financial resources necessary for health

maintenance. For example, Orlov (2015) estimated that 954,000 seniors skip meals as a result of financial exploitation.

### **Financial Vulnerability Factors**

As demonstrated by the methods used to estimate the prevalence and costs of elder financial exploitation, differing definitions of the construct may have a large effect. One key conceptual difference hinges on whether older adults are inherently vulnerable, for reasons due to age alone, to all types of financial exploitation or whether elder financial exploitation by a perpetrator known to the victim should be distinguished from instances of consumer fraud or theft committed against the elderly. While there may be some differences between types of financial exploitation based on the relationship between the victim and perpetrator, there is no research that highlights practical implications of these differences as of yet.

To the contrary, a developing body of research from a variety of disciplines supports the notion that older adults are an inherently vulnerable population, regardless of the perpetrator, because of biopsychosocial factors that negatively affect the financial decision-making process of older adults. In response, Lachs and Han (2015) proposed a new clinical syndrome, age-associated financial vulnerability (AAFV). They suggest that older adults are at risk for making bad financial decisions due to cognitive, emotional, medical, psychosocial, environmental, and societal factors.

Realistically, cognitive deficits are the primary cause for concern about financial decisional ability of older adults. Wood et al. (2014) compared the neuropsychological performance of confirmed victims of financial elder exploitation with that of a community-dwelling sample of older adults. They found several group differences, which were consistent with their hypotheses. The victims had overall lower scores on the Mini-Mental Status Exam

abilities, indicating lower cognitive functioning. They also performed worse on the Money Managing subtest from the Independent Living Scales and on both parts of the Trails Making Test, which is commonly interpreted as slower processing speed (Part A) and executive function (Part B). However, the sample of victims may not be representative of the overall population of older adults who experience financial exploitation because the cases were substantiated and the victim received a neuropsychological evaluation, which may have been called for due to clear evidence of cognitive impairment and the results of which may have been used to substantiate the claim. Further, considering the base rate of financial exploitation among older adults, it is conceivable that members of the comparison group had also experienced exploitation. Nonetheless, the study is important because it provides initial evidence that impaired cognitive abilities and financial skills are risk factors for exploitation.

Yet, to validate the AAFV model, it is necessary to investigate the effects of cognitive impairment across the stages of disease progression. Pertl, Benke, Zamarian, and Delazer (2015) found that patients diagnosed with mild cognitive impairment (MCI) made riskier decisions than healthy controls on a complex decision-making task but not on a simple decision-making task. This finding suggests that cognitive decline affects decision-making progressively starting with higher-order reasoning. Similarly, Han, Boyle, James, Yu, and Bennett (2015b) found that MCI is associated with poorer decision-making, and processing speed scores accounted for more variance in decision-making than other cognitive scores. Domain-specific knowledge may also be impaired in early stages of dementia. MCI has also been associated with decreased financial knowledge (Han, Boyle, James, Yu, & Bennett, 2015). One aspect of financial knowledge that might be affected is awareness of scams. People with MCI scored worse on a 5-item, 7-point Likert-type scale measuring susceptibility to scams, after controlling for age, sex, and education

(Han, Boyle, James, Yu, & Bennett, 2015a). In the overall sample community sample, worse cognitive performance was associated with greater susceptibility.

However, there is evidence that even cognitively healthy older adults demonstrate worse decision-making skills associated with cognitive changes that are not clinically significant. Pertl et al. (2015) report that numeracy skills and executive function affected decision-making performance for healthy older adults as well as people with MCI diagnoses. Similarly, the rate of cognitive decline over approximately 5.5 years among cognitively healthy older adults was associated with poor decision-making (P. A. Boyle, Yu, Wilson, et al., 2012). Even more concerning, poor decision-making was associated with an increased risk of mortality among cognitively healthy older adults (P. A. Boyle, Wilson, Yu, Buchman, & Bennett, 2013).

Han and colleagues investigated the neural correlates of susceptibility to scams among community-dwelling cognitively healthy older adults (N = 327). They found an inverse relationship between overall grey matter volume and a self-reported measure of susceptibility to scams after adjusting for age, education, sex, and cognitive function. The authors suggest a differential role for frontal lobe regions, which were not significant after controlling for cognition, and right middle temporal lobe structures, which remained significant. These results are consistent with research conducted with people with ventromedial prefrontal cortex (vmPFC) lesions who demonstrate increased credulity for misleading advertising (Asp et al., 2012). The researchers suggest that age-associated vmPFC volume loss among older adults might produce similar results.

Importantly, AAFV does not depend upon the presence of cognitive impairment, whether subtle or severe. Lachs and Han (2015) emphasize that multiple factors contribute to poor financial decision-making and vulnerability to exploitation among older adults. For example,

physical impairments, such as hearing and vision loss or motor impairments, may make it more difficult to participate fully in financial decisions and require dependence on caregivers, which creates opportunity for exploitation. Physical ailments and chronic health conditions, such as fatigue or pain, could affect financial decision-making in a similar way.

The effects of psychological factors, such as personality and depression, also influence decision-making but may be less noticeable than physical and cognitive health problems. Han et al. (2015b) reported that cognition did not account for much variance in decision-making in a sample of community-based older adults ( $N = 730$ , mean age = 81.7). The authors suggest that other factors such as domain-specific knowledge and personality traits are important. One personality trait important for financial decision-making is risk aversion, measured as a preference for certainty over a gamble. P. A. Boyle, Yu, Buchman, and Bennett (2012) reported that greater risk aversion was associated with poorer decision-making skills among a sample of community-dwelling older adults.

Regarding mood factors, Beach et al. (2010) found that African-American older adults, who endorsed 8 out of 10 depressive symptoms on the CES-D, were at greater risk of financial exploitation. A longitudinal analysis of data from the Health and Retirement Study demonstrated that depressive symptoms were associated with self-reported fraud (Lichtenberg, Sugarman, Paulson, Ficker, & Rahman-Filipiak, 2015). The same study also showed an effect of social support. However, people low in social needs fulfillment and high on depressive symptoms were even more likely to report fraud. The authors suggest that depressed and lonely older adults are more likely to become the victim of scams or financial manipulation by a con artist. Isolation, loneliness and other social factors probably also contribute to poor financial decision-making and vulnerability to financial exploitation.

Unfortunately, much of the research supporting the AAFV model is based on self-report and laboratory studies. It is unclear to what extent AAFV impacts the ability of older adults to make real-life decisions because contextual factors may play an important role that has yet to be considered. This is an important point because financially capable older adults are allowed to make poor financial decisions, but it is the legal system's duty to protect people with impaired financial decision-making. In this way, financial exploitation is directly linked to the determination of financial capacity (Stiegel, 2012), but the reverse is not necessarily so because lack of financial capacity is after all only a risk factor for exploitation.

In order to establish whether an older adult was financially exploited or determine capacity for different types of future financial decisions, professionals require specialized assessment tools to determine financial capacity. Importantly, financial capacity instruments would be expected to improve legal outcomes because the presence of neuropsychological data appears to increase the likelihood of prosecution in financial abuse cases (Wood et al., 2014),

AAFV provides a theoretical basis for an inclusive definition of elder financial exploitation and serves to highlight the many factors that might contribute to impaired financial decision-making, but it does not offer a theory of the decision-making process. Therefore, it cannot be applied directly to the development of financial capacity assessment tools.

### **Financial Capacity**

Financial capacity is a medical-legal determination of one's ability to manage finances in accord with personal values and self-interest (Marson, 2013). It is considered a higher-order, cognitively mediated instrumental activity of daily living that takes place across multiple settings and over various temporal intervals (Marson, 2013). Although laws vary by state and type of financial decision, in general, the examiner must evaluate the following aspects relating to

financial decisions: 1) communication of personal choice, 2) financial understanding, 3) appreciation of potential consequences, and 4) clear reasoning in decision-making (Assessment of Older Adults with Diminished Capacity: A Handbook for Psychologists, 2008). These four aspects of financial capacity have emerged from the literature on the legal determination of capacity to consent to medical treatment (Appelbaum & Grisso, 1988). The communication of personal choice relates to the person's ability to express a given choice with enough consistency for it to be enacted. Financial understanding relates to the person's ability to comprehend the important technical details of a given decisional situation. Appreciation of potential consequences relates to the person's ability to understand the personal risks and rewards of possible decision outcomes and to value those options comparatively. Clear reasoning in decision-making is related to the process by which a person arrives at an ultimate decision, not to the quality of the final choice *per se*, such that the reasons for making a decision reflect the values that the person attributes to the different options in a rational manner. Various psychological and neurological conditions or individual differences might impact different aspects of financial capacity. However, for older adults, financial capacity is especially important in the context of age-related and pathological cognitive decline.

Pinsker, Pachana, Wilson, Tilse, and Byrne (2010) reviewed several conceptual models and tools to assess financial capacity, and the authors noted that these approaches differ in key aspects in their approach to financial capacity. They reported that clinicians typically use clinical interviews, performance-based measures of financial ability, and neuropsychological test results to make a capacity determination based on declarative knowledge, procedural knowledge and ability, and financial judgment. Marson (2001) proposed a multidimensional framework of financial capacity that consists of a global rating based upon measures of distinct domains of



financial ability with associated simple and complex functional tasks within each domain. Following a psychometric approach to financial capacity, this model was used to develop the Financial Capacity Instrument (FCI), a performance-based assessment of financial abilities. Marson's primary interest would seem to be to understand how financial capacity is affected by neurocognitive impairment, especially how his findings may elucidate the nature of dementia and the diagnosis of dementia. Therefore, Marson chose to include financial abilities that he believed to be most affected by Alzheimer's disease (AD) for inclusion in the FCI. The FCI consists of nineteen tasks, which fall in one of eight domains: 1) Basic Money Skills, 2) Financial Conceptual Knowledge, 3) Cash Transactions, 4) Checkbook Management, 5) Bank Statement Management, 6) Financial Judgment, 7) Bill Payment, and 8) Knowledge of Personal Assets.

The FCI and subsequent revisions have been validated in a number of studies. Marson's initial study of a 6-domain version of the FCI compared the performance of cognitively healthy older adults ( $n = 23$ ) and people with Alzheimer's disease ( $n = 20$  mild;  $n = 30$  moderate) (Marson et al., 2000). He found that the scale domains demonstrated good internal reliability (Cronbach's  $\alpha$   $r$  .85 to .92), good test-retest reliability of domains ( $r = .88$  to .92;  $n = 17$ ), and high inter-rater agreement (86.4% to 99.7% exact agreement;  $n = 11$ ). As expected based on disease progression, control subjects performed better than mild AD subjects, who in turn performed better than moderate AD subjects in all domains except for basic money skills, on which mild and moderate AD subjects were equivalent. While people with moderate AD were impaired on most or all tasks across domains, there was a good deal of performance variability in the mild AD group, which suggests that other factors may affect the maintenance of financial capacity in different domains despite cognitive decline.

A very similar pattern of decreased financial abilities with greater impairment was obtained when comparing FCI performance between healthy controls ( $n = 21$ ), people with amnesic mild cognitive impairments (aMCI) ( $n = 21$ ), and people with mild AD ( $n = 22$ ) (Griffith et al., 2003). This result is somewhat surprising because MCI diagnostic criteria exclude functional impairments in IADLs, suggesting that measures of financial abilities may be highly sensitive to cognitive decline in a way that undermines traditional MCI definitions. In a one-year longitudinal study, the performance of controls ( $n = 76$ ), people with a stable diagnosis of aMCI ( $n = 62$ ), and people who converted from aMCI to mild AD ( $n = 25$ ) also showed a similar pattern of decreasing financial ability across various domains with disease progression (Triebel et al., 2009). Notably, aMCI converters declined more in their ability to perform a check-writing task but not in their understanding of the concept. Unsurprisingly, financial ability also decreased rapidly over one year for people with mild Alzheimer's disease ( $n = 55$ ), with worse performance on complex tasks than on simple ones (Martin et al., 2008). Importantly, people with mild AD declined in their ability to detect fraud. Although designed for use with AD patients, the FCI has also been shown to be sensitive to increasing levels of impaired financial abilities in Parkinson's disease patients with MCI ( $n = 18$ ) and dementia ( $n = 17$ ) (Martin et al., 2013).

Unfortunately, many of these studies have relied on small sample sizes, probably in part because the FCI takes an hour or more to administer. To counter these issues, the Financial Capacity Instrument-Short Form (FCI-SF) was developed and consists of 5 domains that take approximately 15 minutes to administer (Gerstenecker et al., 2015). Test items for the FCI-SF were chosen for sensitivity to AD progression, and the scale successfully discriminated between controls, people with MCI, and people with AD. The FCI-SF was age- and education-normed with a large sample ( $n = 1,344$ ) of cognitively healthy older adults (mean age = 80.5) as part of

the Mayo Clinic Study of Aging. The FCI-SF had good internal reliability (Cronbach's  $\alpha = .90$ ), high inter-rater agreement (96%) and good concurrent reliability with the original FCI ( $r = .91$ ).

The neuropsychological correlates of the FCI have been relatively stable across different samples and studies. Okonkwo, Wadley, Griffith, Ball, and Marson (2006) found that MCI patients were impaired in comparison with healthy older adults on financial conceptual knowledge, bank statements, and bill payment tasks. Performance on the financial conceptual knowledge and bank statements were correlated with measures of attention, while the bill payment task was correlated with executive function measures. Whereas in a sample of cognitively healthy and AD patients, arithmetic ability was most strongly associated with financial capacity, followed by measures of executive function and verbal memory (Sherod et al., 2009).

Another domain-specific assessment tool is the Financial Competence Assessment Inventory (FCAI), a 38-item, structured interview tool that includes performance-based financial tasks that closely resemble common real-world activities (Kershaw & Webber, 2008). The FCAI has six subscales: everyday financial abilities, financial judgment, estate management, cognitive functioning related to financial tasks, debt management, and support resources. Scores can also be calculated for subscales related to the four aspects of financial capacity: choice, understanding, appreciation, and reasoning. The authors validated the FCAI with a mixed sample, ( $n = 178$ ) including cognitively healthy adults and people with acquired brain injury, schizophrenia, dementia, and intellectual disability. The FCAI total score had excellent internal consistency (Cronbach's  $\alpha = .96$ ), inter-rater agreement (Cohen's  $\kappa = .86$ ), and test-retest reliability ( $r = .93$ ). The FCAI demonstrated good construct validity with large correlations between the FCAI and the Money Management subscale from the Independent Living Scales ( $r$

= .89) and the Financial Decision-Making subscale from the Hopemont Capacity Assessment Interview ( $r = .85$ ). The FCAI was able to discriminate between cognitively healthy adults and the patient populations. Consistent with research on the FCI, People with dementia scored significantly lower than people without cognitive impairment on all subscales of the FCAI.

The initial validation of the FCAI did not focus on older adults exclusively. However, in an Australian study of financial capacity with a group of cognitively healthy older adults ( $n = 76$ , mean age = 69.7) and people with dementia ( $n = 25$ , mean age = 69.5), the FCAI demonstrated good internal consistency (Cronbach's  $\alpha = .87$ ). Logistic regressions of FCAI scores predicting group were significant for the cognitive functioning related to financial tasks and social supports subscales. This result suggests that not all the FCAI subscales are as sensitive to dementia as they are to the effects of aging.

Implicit in the theoretical justification for financial capacity assessment using performance-based measures is the notion that people with impaired financial abilities, whether due to cognitive impairment or not, are a financial risk to themselves or others and have an increased likelihood of becoming the victim of financial exploitation. However, performance-based measures do not consider the actual lived experiences of older adults and instead rely on simulation tasks and hypothetical judgments. While severe cognitive impairment would naturally be expected to degrade financial decision-making to unacceptable levels, it is not clear that financial capacity is linearly related to cognitive status. Cognitive impairments may certainly impact financial abilities differentially over the course of disease progression, but the relationship to real-life decision-making is unknown. Furthermore, it is probably true that the contrived nature of a financial performance-based measure does not engender the same level of motivation that real-life experiences produce. These types of instruments also exclude social

factors that may support financial abilities in practice, which may result in the underestimation of actual financial capacity.

At the other end of the assessment spectrum is an approach to financial decision-making rooted in the detection of financial exploitation. This pragmatic approach relies almost exclusively on contextual factors for identifying at-risk individuals. This focus is concerned with the protection of vulnerable older adults instead of the neurocognitive basis of poor financial decision-making.

Conrad et al. (2011) created a conceptual model and map of financial exploitation in order to develop a self-report measure. The authors created a pool of possible statements from a literature review, which were then sorted into categories and rated by a panel of 16 national and local experts. Importantly, these statements covered socio-cultural factors, including characteristics related to perpetrators of financial exploitation. Using concept-mapping software, statements were clustered into 6 categories along a spectrum of severity from highest to lowest: theft and scams, financial victimization, financial entitlement, coercion, signs of possible financial exploitation, and money management difficulties. It is interesting to observe that money management difficulties is the starting point in Conrad's financial exploitation model yet the end result of financial performance-based measures. This discrepancy highlights the key theoretical difference between these approaches – a focus on individual financial abilities or the context of financial decision-making.

Based on his financial exploitation model, Conrad, Iris, Ridings, Langley, and Wilber (2010) developed the Older Adult Financial Exploitation Measure (OAFEM). The researchers administered the OAFEM to a sample of cases of elder mistreatment ( $n = 227$ ) confirmed by Adult Protective Services (APS), including but not limited to financial exploitation. Cognitively

impaired subjects were excluded based on APS staff member judgment or a score on the MMSE less than 17. Rasch item analysis was conducted to produce a unidimensional, 30-item scale with good internal consistency (Cronbach's  $\alpha = .93$ ). The results produced an empirical hierarchy of severity that was roughly consistent with the theoretical model developed by experts but simpler, consisting of 3 levels: major thefts, lesser thefts, and expectations and entitlement. Money management difficulties are notably absent from the final scale. Contrary to expert opinions expressed during the concept-mapping study, this finding suggests that *only* contextual factors are necessary to establish financial exploitation. However, characteristics of the sample may have influenced this result. Adults involved in confirmed cases of elder mistreatment may differ substantially from those whose cases cannot be confirmed and instances of unreported abuse. Furthermore, based on Marson's research, people with cognitive impairments would be expected to have greater money management difficulties, but these cases were excluded from the OAFEM development study.

In their review of the financial capacity literature, Pinsker et al. (2010) emphasized that social and cultural influences on financial decision-making are of the utmost importance when seeking to understand real-world financial decision-making abilities. Yet, these factors are not often formally assessed. The OAFEM does address contextual factors but fails to consider the actual experiences and abilities of the older adult, which makes it difficult to use for a determination of financial capacity. Conrad's approach to financial-decision making may be thought of as a victimization model, consisting of a checklist of signs and symptoms of financial exploitation. This approach is sensitive to the presence of financial exploitation rather than the quality of the individual's financial decision-making and does not consider the individual's personal agency in their own life.

On the other hand, the FCI does not measure important contextual factors. Therefore, it lacks a degree of ecological validity even though it can discriminate between AD diagnostic groups. The content of the FCAI overlaps to a great extent with the FCI but also includes a measure of support resources, which captures an aspect of the decision-making context. However, the support resources subscale had poor test-retest reliability and a limited score range (Kershaw & Webber, 2008). The FCI and the FCAI are grounded in a clinical diagnostic approach to financial capacity, placing heavy emphasis on the detection of impairment and the role of cognitive decline. Yet, FCI research conducted with MCI patients would seem to contradict accepted diagnostic criteria of MCI, which excludes functional impairments. Perhaps these results point to a fundamental problem in the criteria. However, it is also possible that the FCI is sensitive to impairments in financial abilities that do not necessarily result in functional impairments because the process of financial decision-making is not fully captured by Marson's conceptual model.

It should be self-evident that neither every instance of financial exploitation is the result of impaired decision-making nor is every cognitively intact or functionally independent older adult capable of good financial decision-making. Marson's model essentially excludes the possibility of impaired financial decision-making among financially able and independent adults. Poor financial abilities are treated *ipso facto* as evidence of impairment, which is an implicit theoretical position that can only be inferred from the conclusions drawn from FCI research with MCI patients. Yet, it is precisely the liminal case that is the most difficult and important to assess, and in these cases, contextual factors are likely critical. While Gerstenecker et al. (2015) have attempted to respond to this shortcoming by creating age- and education-corrected norms for the FCI-SF, it is still unclear to what extent these norms relate to actual financial decision-

making ability. Obtaining an average financial ability score according to population-based norms may not be clinically meaningful, especially for the oldest-old adults.

The benefits of assessment of AD patients with performance-based financial measures are also unclear. Although such research is important for establishing the validity of a performance-based financial measure and may contribute to the understanding correlates of disease progression, the clinical utility among the AD population is essentially nil, just as it would be among delirious or psychotic patients. More so, the diagnostic approach to financial capacity does not reflect the latest research or best practices for dementia caregiving, which emphasizes personhood and autonomy.

The person-centered approach to dementia respects the individual's preferences, especially in decision-making related to their care, which includes financial management (Fazio, 2013). Not only is a person-centered approach more in line with professional ethics, it also reflects an updated conception of AD as a severe cognitive impairment *not* a loss of self-identity. There is evidence that people with dementia maintain a sense of self and can express valid choices even at later stages of disease progression (Fazio, 2013). Unfortunately, family caregivers may value their relative's personal autonomy less than the patient does, leading to premature restrictions of autonomy (Whitlach, 2013). In the realm of financial decision-making, a person-centered approach would place greater emphasis on an individual's personal values and ability to articulate these values regardless of cognitive status. A primary focus on deficits might contribute to disenfranchisement of older adults.

The maintenance of financial decision-making abilities despite cognitive aging has not been well explored, but there is evidence of preserved financial abilities despite cognitive aging. The Columbia University Center for Decision Science's Virtual Lab conducted a longitudinal,



web-based study ( $n = 417$ , mean age = 49) of the relationship between cognition, financial literacy, and participant's actual credit scores (Li et al., 2015). The authors found that age was associated with better financial literacy but worse fluid intelligence, often conceived of as general reasoning ability, after controlling for age, sex, education, and self-reported income. Interestingly, the interaction of financial literacy and fluid intelligence accounted for the positive affect of age on credit scores as well as performance on an experimental credit card payment task. Although credit scores and laboratory financial tasks are not perfect measures of current financial decision-making ability, these findings demonstrate that cognitive decline, conceptualized as age-related change in reasoning ability, is not the sole determinant of financial performance.

A longitudinal analysis of data from the Health and Retirement Study (HRS) may extend this finding to older adults with memory disorder diagnoses. Hsu and Willis (2013) examined the relationship between cognition and financial responsibilities within couples ( $n = 7,730$  households) with one partner who received a memory disorder diagnosis. The authors conducted a survival analysis using change in cognitive scores to predict a change in the financial respondent and found that worse cognitive performance and self-reported difficulty with managing money typically preceded a diagnosis of memory disorder, as would be predicted based upon research with the FCI. However, after diagnosis, the ostensibly impaired spouse often continued to be the financial respondent, indicating primary responsibility for household financial management. The factor most associated with switching financial respondents after a memory disorder diagnosis was whether the impaired person managed a retirement portfolio individually rather than a fixed pension.

While the authors emphasize the riskiness of continued financial management by the impaired spouse, it is equally plausible to conclude that many, if not all, of the financially responsible partners with memory diagnoses maintained objectively better or equivalent financial abilities than their spouses, due to experience or contextual factors. After all, many of the recently diagnosed financial respondents had previously acknowledged difficulty with managing money yet had not ceded primary financial responsibilities; so, it is unclear why receiving a formal diagnosis would *necessarily* result in a shift in responsibilities except due to the spouse's belief that they were better equipped to manage finances. Consistent with this interpretation, every additional year of education of the non-respondent spouse increased the chance of changing financial management sooner by 16%. Better-educated spouses were more likely to take on financial responsibilities probably because they accurately judged their own ability to manage finances as superior to their impaired partner's ability. Despite lacking clear evidence of the actual financial decision-making capacity of either spouse, the failure to switch is interpreted as a risky behavior rather than a rational choice.

In fact, it may be more reasonable to assume that cognitively healthy spouses will tend to err on the side of exerting increased control over financial decisions when in doubt about their partner's abilities, especially following a professional diagnosis of memory impairment. In a small qualitative study of couples with one person who was diagnosed with dementia (n = 21), the author found that the 5 out of 6 impaired spouses were unfairly marginalized in the decision-making process when establishing a lasting power of attorney, the British version of a durable power of attorney (G. Boyle, 2013). This finding is sadly unsurprising and highlights the importance of respecting the autonomy of people with dementia, as proposed by proponents of person-centered care.

In recognition of the need for a standardized, direct assessment measure of financial decision-making that avoids the pitfalls of previously reviewed methods, Lichtenberg, Stoltman, Ficker, Iris, and Mast (2015) proposed a person-centered approach to financial capacity assessment. Their theoretical approach is based upon principles of respect for personal values and autonomy, and consideration of life context (Lichtenberg, 2016). From these first principles emerge a view of financial decision-making that places greater emphasis on the individual's personal values, life experiences and the authenticity of a specific financial decision than models that rely only upon cognitive and financial abilities or risks of financial exploitation.

The development of the Lichtenberg Financial Decision-Making Rating Scale (LFDRS) began with a concept-mapping procedure similar to the process used in the development of the Conrad et al. (2011) financial exploitation concept map. A group national financial capacity experts (N = 6) and a group of local professionals who work with older adults (N = 14) evaluated and refined the conceptual model separately. The final model consisted of contextual and individual factor. The contextual factors are financial situational awareness (FSA), psychological vulnerability (PV), undue influence (I), and financial exploitation (FE). These contextual factors influence the intellectual factors, financial decisional abilities. The intellectual factors are measured for a specific financial decision that was recently made or is being considered and map on to the criteria proposed by Appelbaum and Grisso (1988) with one addition: choice, rationale, understanding, appreciation, and values, which measures whether the person's decision is consistent with previous values. In general, the intellectual factors are expected to be the primary determinants of financial capacity unless contextual factors are particularly influential.

The expert panels that developed this new conceptual framework also participated in a brainstorming procedure to generate potential items for a scale based on the model. The resulting

LFDRS is a 61-item, clinician-administered interview with multiple-choice response options, and up to 17 additional follow-up items depending on the interviewee's responses. Each item can also be scored for awareness and accuracy by the examiner. A final determination of overall financial decisional abilities for the specific financial decision in question is made based on clinical judgment, using a 3-point scale (0 = lacks decisional abilities, 1 = marginal decisional abilities, 2 = full decisional abilities).

In a pilot study of adults age 60 years or older ( $N = 5$ ), the initial scale was administered to participants who had been referred by an elder-law attorney because they had recently made or were deciding to make a major financial decision. In order to establish inter-rater reliability, 5 raters from each of the expert groups independently used videotapes of the interviews to score the LFDRS. The average level of agreement was 94%. Three out of the five cases had perfect agreement and there were no discrepancies greater than one point on the clinical judgment scale.

The preliminary evidence of the validity of the LFDRS is quite promising (Lichtenberg, Ficker, & Rahman-Filipiak, 2016). In a community-based sample of African-American older adults ( $N = 69$ , mean age = 70), 18% of participants reported at least 1 case of financial exploitation in the past 18 months, and 11% of participants were scored as having concerns about their decisional ability. Remarkably, 63% of those rated as having concerns reported financial exploitation compared with 13% of the rest of the sample. Even though the LFDRS does not include performance-based measures of financial abilities, it does appear to capture important cognitive aspects of financial decision-making. The overall decisional abilities rating and a risk score for the current decision were significantly related to a measure of global cognitive function (MMSE) and the Money Management subtest of the Independent Living Scales (ILS).

One of the unique aspects of the LFDRS is the inclusion of items related to psychological vulnerability, which are asked in terms of financial decision-making. These items appear to shed new light on financial decision-making quality. When asked about confidence in making important financial decisions, 77% of participants who did not report recent financial exploitation endorsed feeling confident, while 77% of participants who reported financial exploitation endorsed feeling unsure or not confident, which is a significant difference ( $\chi^2 = 13.5, p < .05$ ). When asked whether they worry about or regret past financial decisions, 29% of participants who did not report exploitation endorsed worrying compared with 70% of those who reported exploitation ( $\chi^2 = 7.7, p < .05$ ). Overall, people who reported recent financial exploitation were less confident making financial decisions, less satisfied with their finances, more worried about money, and less likely to have a personal confidante. Although it is not possible to draw causal inferences from these results, previous research has demonstrated that psychological vulnerabilities predict future reports of financial exploitation (Lichtenberg, Sugarman, et al., 2015). One possible pathway for this effect is financial decision-making self-efficacy, whereby people with low levels of self-efficacy are less inclined to exert effort when making important financial decisions and are therefore more likely to be victimized than people with higher levels of self-efficacy.

While researchers have gained considerable understanding of the financial decision-making impairments of older adults in the context of financial exploitation and cognitive impairment, less attention has been paid to the psychological factors associated with preserved financial decision-making, with the exception of the financial decisional abilities model proposed by Lichtenberg, Stoltman, et al. (2015). There is a need to understand these positive aspects of financial decision-making among older adults that may balance the consequences of AAFV.

In particular, the influence of financial decision-making self-efficacy has yet to be studied. However, it might offer a significant advance to the model of financial decisional abilities. The LFDRS is comprehensive but time-consuming, and it requires an experienced clinician to administer and make the ultimate financial capacity rating determination. A measure of financial decision-making self-efficacy might capture the most critical aspects of psychological vulnerabilities in a more efficient and easily interpreted manner. The construct could also serve as a potential target of intervention for those at risk of financial exploitation or those with mild impairments in financial decision-making.

### **Self-Efficacy**

The construct of self-efficacy is a key component of Social Cognitive Theory, developed by Albert Bandura, and it has become one of the most influential concepts in social psychology. Self-efficacy is defined as a person's belief in his or her own capability to act so as to bring about a desired outcome (Bandura, 2006). This judgment is based on confidence in the relevant task ability and, in part, on judgments of abilities for the requisite skills. Importantly, self-efficacy is domain-specific and continues to change over the lifespan, particularly in response to life events (Gecas, 1989). Diverse abilities, experiences, and preferences naturally result in a unique profile of self-efficacy beliefs for each individual across many skill domains. For example, a talented athlete would not be expected to be equally skilled at all sports, despite having excellent motor skills.

Self-efficacy for a task develops over time, mainly through four mechanisms (Bandura, 1982): 1) direct experience, 2) vicarious experience, 3) social influence, and 4) physiological awareness. Engaging in a task is the most direct method of fostering self-efficacy and can have transformative results, as is seen in exposure therapy for phobias. However, it is possible to have

self-efficacy for a novel task based upon judging personal self-efficacy by observing the task performance of others. Similarly, the real, imagined or implied expectations and opinions of other people about one's own task ability also contribute to self-efficacy for that task. Another source of information for building self-efficacy is awareness of one's own physiological responses, such as stress or pleasure, and how those states interpreted in relation to the relevant task, which provide feedback about the individual's physical reactions and preparedness to engage in a task.

Self-efficacy has proven to be a useful concept because it encompasses a multitude of implicit confidence judgments about a task, some of which may even be contradictory. In turn, self-efficacy judgments influence emotional and cognitive perceptions of a task and in doing so affect task performance (Gist & Mitchell, 1992). However, if the target behavior of self-efficacy is defined too broadly, the usefulness of self-efficacy in predicting behavioral outcomes may be diminished. Interestingly, self-efficacy has also been used as a successful target for behavior change interventions (Bandura, 1977).

Researchers have studied the self-efficacy of older adults in a variety of ways, but efforts have often focused on health because self-efficacy has proven to be a useful predictor of outcomes in this population. For example, Tinetti et al. (1990) developed a falls self-efficacy scale to examine fear of falling among older adults. Falls self-efficacy was associated with objective skill (walking speed), past experiences (difficulty getting up after a fall), and mood (trait anxiety and depressive symptoms). Grembowski et al. (1993) report results from a large trial of preventive behavioral health services (N = 2,524) among older adults enrolled in Medicare. They found that health behavior self-efficacy beliefs were higher for participants with

fewer health risks and associated with positive health outcomes, such as lower depression levels, better self-rated health, and better quality of life.

Older adults with higher levels of self-efficacy may also be more likely to engage in positive coping behavior. Comijs, Deeg, Dik, Twisk, and Jonker (2002) analyzed a Dutch, longitudinal study (N = 2,032) of memory complaints, self-efficacy and depression among cognitively healthy adults between 55 and 85 years of age. Contrary to their hypotheses, they found that the relationship between depression and memory complaints was stronger among people with high levels of general self-efficacy. However, since depression is known to affect cognition, this stronger relationship may reflect increased willingness to seek help for a health problem among older adults with greater self-efficacy.

The importance of some types of self-efficacy for health behaviors may vary across the lifespan. The pattern of self-efficacy results from the study by Grembowski et al. (1993) did not differ between participants 65 to 74 years old and those 75 or older. For example, Schwarzer and Renner (2000) found that greater self-efficacy for health behaviors was associated with better nutrition, but among older participants (mean age = 50), self-efficacy related to the initiation of behavior change was relatively more important than beliefs related to maintenance of behavior change were for younger adults.

The focus on self-efficacy and health among older adults is perhaps understandable considering that personal health is a crucial determinant of the wellbeing of older adults. Yet, self-efficacy beliefs are also important in relation to social roles of older adults, such as caregiving. Steffen et al. (2002) developed a measure of caregiving self-efficacy for caregivers of cognitively impaired older adults, who are often spouses and older adults themselves. The



sub-scales correlated as hypothesized with negative emotions, expressed emotion (covert critical speech), and perceived social support.

However, one of the most useful characteristics of self-efficacy is that it is applicable to a wide variety of domains. It may be equally as important for other aspects of optimal functioning for older adults, such as finances, as it is for health. McAvay, Seeman, and Rodin (1996) found that the availability of financial and social support resources positively influenced self-efficacy beliefs of older adults in eight domains of living, including health. These results suggest the possibility that efficacy for positive financial decision-making, resulting in greater financial resources, might be an important determinant of wealth, quality of life and other important aspects of the lives of older adults. For example, many aspects of healthcare have important financial components, such as choosing health insurance or weighing the costs and benefits of possible treatment options.

Yet, Strough et al. (2015) report that self-efficacy has received relatively little attention in the area of decision-making and aging. They discuss the potential importance of self-efficacy as a target for interventions to enhance the decision-making of older adults, drawing upon the health intervention literature. However, they note that domain-specific measures of decision-making have not been developed and are probably necessary because the accuracy of self-efficacy measurement improves with domain specificity. Findings from the general decision-making self-efficacy literature may not generalize well to specific decision-making domains, thereby limiting the ability of researchers to measure intervention effects accurately.

Based on the above review of financial exploitation and financial decision-making capacity assessment for older adults, financial decision-making is one domain that would greatly benefit from the development of a measure of financial decision-making self-efficacy (FDMSE)

for learning decision-making and future intervention work. FDMSE may be highly relevant to the wellbeing of older adults and risk for financial elder abuse, especially in the context of progressive age-related or pathological neuro-cognitive decline. In these cases, higher levels of FDMSE might be a protective factor, contributing to the maintenance of financial decision-making ability even after cognition is noticeably impaired in other ways. However, the effects of FDMSE on financial decisions of older adults are still unknown. A valid and reliable measure of FDMSE is needed for use with older adults. Such a measure would help researchers understand real-world decision-making and could offer a point of intervention for increasing financial decisional capacity.

### **Financial Decision-Making Self-Efficacy and Related Concepts**

As of yet, there have been no studies specifically investigating FDMSE. However, there is a nascent literature developing around the related concept of financial self-efficacy (FSE). The distinction between general FSE and FDMSE is that FSE covers a broad array of behaviors, from saving for retirement to managing day-to-day expenses. It is expected that the increased specificity of FDMSE will result in a more useful measure. I will review the FSE literature and critique the research that has been done with the goal of identifying gaps that my research seeks to fill.

FSE has been of interest to researchers who seek to understand or to help populations that are at-risk for poor financial outcomes. High school and college students have been targeted for financial education programs, and FSE is one possible outcome of those interventions. In one of the earliest studies of FSE, Danes and Haberman (2007) conducted a program evaluation of a free high school financial planning program. Teachers requested the curriculum, and students (N = 5,329) completed a survey with retrospective and prospective ratings of FSE in addition to

measures of financial knowledge, behavior, and coping. They used 5-point Likert-type questions to capture FSE: 1) attitudes towards money management and 2) confidence in making financial decision. The researchers found the intervention successfully increased FSE and that FSE was significantly related to increased financial knowledge, behavior, and coping (discussing finances with parents).

Cross-sectional online surveys have also been used to research FSE in student populations. Heckman and Grable (2011) used the confidence question from Danes and Haberman (2007) in an online survey of college students (N = 80). They found that results of a financial knowledge quiz predicted FSE. Personal income also predicted financial knowledge and FSE. The Ohio Student Financial Wellness Survey (N = 4,713; Colleges = 19) measured FSE as the perceived ability to manage money well. Researchers found that FSE was significantly associated with positive coping (seeking professional financial help) when controlling for demographics, financial knowledge, student loans, and financial stress (Lim, Heckman, Letkiewicz, & Monalto, 2014). Students with lower levels of FSE were less likely to seek help when experiencing greater financial stress than were students with higher levels of FSE overall. Due to the inclusive research designs, students in these studies may lack financial knowledge, experience, and interest, which are important antecedents of FSE. Therefore, FSE may be more relevant to students with an interest in finance.

Engelberg (2007) used data from an admissions survey for applicants to the Stockholm School of Economics to learn about FSE, which was conceptualized as one's perceived ability to cope with future adverse financial events (*e.g.*, unemployment or decreased assets). The survey included a 23-item scale of perceptions of economic risks and asked respondents (N = 120) to rate their ability to "take precaution" against each event. The researchers found that higher FSE

was associated with higher levels of beliefs about control of one's personal finances. An analysis of a subset of complete surveys ( $N = 84$ ) found that higher emotional intelligence and more positive attitudes about saving money predicted higher levels of FSE.

High school and college students, even applicants to an economics school, are unlikely to have had many opportunities to make important financial decisions and build FSE. Yet, even among the relatively inexperienced, FSE has been shown to increase with financial knowledge and relate to positive financial attitudes as well as healthy coping behaviors. However, the operationalization of FSE varies between studies and is somewhat tailored towards the financial experiences of a student population, such as a focus on savings behaviors and perceived future risks rather than important financial decisions or responses to actual life events. Among people with more financial experience and knowledge, such as older adults, different aspects of FSE could be more important.

Research with low-income households and debtors has also included measures of FSE. Lown, Kim, Gutter, and Hunt (2014) conducted an online survey ( $N = 826$ ) of middle and low-income ( $< \$80,000$ ) subjects, aged 24-66 years. They modified items from the 17-item General Self-Efficacy Scale (Sherer et al., 1982) to relate to finances, which demonstrated excellent internal consistency (Cronbach's  $\alpha = .91$ ). The authors found a positive relationship of both FSE and age group on self-reported savings behavior, using a 3X3 chi-square analysis of age groups and FSE levels. A logistic regression showed that low levels of FSE, younger age (18-34) and lower income were all significantly associated with not saving.

Data from the Canadian Financial Capability Survey (CFCS), a nationally representative telephone interview, has also been used to examine the relationship between income and FSE. The CFCS included a 5-item, 4-point Likert-type FSE scale of self-rated ability of financial skills

(*e.g.*, keeping track of money). Rothwell, Khan, and Cherney (2015) restricted their analysis of the CFCS to subjects who were or could be eligible for welfare ( $N = 6,518$ ,  $\leq 65$  years old, mean Age = 38.9) and created a subset of low-income participants ( $N = 1,408$ ). The FSE scale had adequate internal consistency (Cronbach's  $\alpha = .75$ ). The researchers found that the low-income group had lower levels of FSE and worse performance on a 14-item, multiple-choice measure of financial knowledge. The low-income group was also significantly younger, less well educated, less likely to be employed full-time, and more likely to be single with or without children. In the low-income group only, the researchers tested whether FSE mediated the relationship between financial knowledge and self-reported financial behaviors and perceptions, controlling for demographics (age, education, gender, employment status, and immigration status), family characteristics, province, and generosity of provincial welfare benefits. FSE fully mediated the effect of financial knowledge on saving for retirement and partially mediated the relationship with saving for children's education and the perceived ability to cover an unexpected \$500 expense.

Research comparing people with a history of credit problems to control subjects has also shown that debtors report lower levels of general self-efficacy (Tokunaga, 1993). Similarly, Mewse, Lea, and Wrapson (2010) used 3-items to represent FSE for a UK survey of debtors who received a warning of court action ( $N = 264$ ) and controls ( $N = 193$ ). However, their scale had poor internal consistency (Cronbach's  $\alpha = .48$ ). Logistic regressions controlling for demographics indicated that greater FSE was associated with a lower likelihood of being in the serious debtors group. Notably, serious debtors who engaged with creditors reported greater levels of FSE than serious debtors who avoided their creditors. This suggests that FSE corresponds to healthy coping behaviors (engaging with creditors) even for people experiencing

significant financial stress. Whether higher FSE ratings are a determinant or an outcome of engagement with creditors, this finding fits with the research on the development of SE.

Program evaluation of policies intended to encourage saving among low-income households is another interesting area of FSE research. Individual development account (IDA) programs are government-sponsored savings programs, which educate and provide matching funds to low-income individuals who are saving for approved expenses (*e.g.*, buying a home, starting a business, or saving for college). Delgadillo (2015) conducted an online survey to compare IDA participants in a rural area of Utah ( $N = 46$ ) with a matched control sample ( $N = 79$ ). FSE was measured with two items on a 5-point Likert-type scale. The items related to achieving and setting financial goals and had good internal consistency (Cronbach's  $\alpha = .83$ ). The IDA participants had higher levels of FSE than the control group. Overall, participants who rated their financial skills more highly also had higher FSE. Within the IDA group, FSE was significantly positively correlated with ratings of financial skills and self-reported financial practices. Given that the IDA participants chose to enter the program and only certain participants completed the post-program survey, it is hardly surprising that they rated their financial goal setting and achievement more highly than the control.

Lapp (2010) analyzed baseline and longitudinal survey data from an IDA program run by EARN, Inc., a California-based microsavings charity. FSE was measured with 3 items related to financial planning, saving, and satisfaction over the previous 12 months. The scale had good internal consistency (Cronbach's  $\alpha = .79$ ). The latent variable model at baseline ( $N = 485$ ) showed a negative direct effect of FSE on rating of financial problems as well as an indirect effect of FSE through savings behavior and debt levels. Higher levels of FSE predicted increased saving, which was negatively correlated with financial problems; lower levels of FSE predicted

greater debt, which was positively correlated with financial problems. In a small, one-year longitudinal follow-up of participants (N = 54), Lapp found similar results. FSE significantly increased from baseline, increased financial knowledge predicted increased FSE, which in turn predicted decreased financial problems.

Overall, FSE levels are lower among low-income individuals. FSE relates positively to desirable outcomes (*e.g.*, savings behavior, financial knowledge, and engagement with creditors) and negatively to financial problems (*e.g.*, debt and legal consequences). While earning less money may contribute to lower FSE, low-income earners can increase FSE through financial interventions and education. These findings are consistent with theories of self-efficacy because low-income earners are more likely to experience worse financial stressors, have fewer experiences of financial mastery, and lack resources to make important financial decisions. These studies also provide some limited evidence that older age is associated with higher levels of FSE. However, the generalizability of these findings to adults over the age of 65 is unknown.

Furthermore, the content of FSE items rarely assessed financial decision-making, which is important for long-term financial planning and probably impacts the generalizability of the findings. Instead, many of the FSE items appeared tailored to short-term concerns more likely to be relevant to a low-income population. For example, the poor internal consistency of the FSE measure used by Mewse et al. (2010) could reflect unintentional bias in the wording of the items. The items they used were about problems with money, which likely introduced a systematic response bias between the control group and serious debtor group, thereby reducing the internal consistency. For people with greater financial resources and more financial experience or for older adults, FDMSE might be more strongly related to positive financial outcomes than the concepts covered by general measures of FSE.

Gender is often hypothesized to be an important moderator of FSE. In general, women tend to report lower levels of self-efficacy (Gecas, 1989) and make overly conservative financial choices, resulting in lower earnings and return on investments. Researchers have examined the effects of FSE on women in several ways. The moderating effect of gender on FSE has been the subject of several studies with inconclusive results. Danes and Haberman (2007) found that male high school students had significantly higher mean levels of FSE than females before and after a financial education intervention, but females reported larger increases in financial knowledge, FSE, financial behaviors, and discussing money with family members. However, these results may reflect social norms and life experience in financial matters.

Dietz, Carrozza, and Ritchey (2003) modified three items from the Global Mastery Scale to relate to financial planning as a measure of FSE. They analyzed data from a telephone survey study in Ohio (N = 506) of gender differences in retirement savings strategies of people currently employed (full or part-time). The authors reported adequate internal consistency of the items with a reliability coefficient of .69 (assumed to be Cronbach's  $\alpha$ ). Notably, all the items had a negative valence (*e.g.*, I often feel helpless in dealing with the money problems of life). They did not find a relationship between FSE and gender in their sample of adults (mean age = 38.9). Surprisingly, they also did not find the hypothesized relationship between FSE and retirement savings plan use. For the relationship between FSE and retirement plan use, other factors may be more important moderators than gender. For example, the sample age ranged from 18-95 years, but the relationship between FSE and retirement plan choices of a worker would be expected to vary greatly within that range. Importantly, the quality of the investment choices made under a given retirement plan option was not considered but would be expected to be associated more strongly with FDMSE than FSE.



Psychological traits and preferences may also be important when examining gender differences and FSE. Montford and Goldsmith (2015) report the results of an online study of investment risk-taking preferences and FSE with a sample of university students ( $N = 182$ , mean age = 21). Students were asked how they would invest a hypothetical \$75,000 inheritance, and the percentage of money invested in stocks was used as a measure of investment risk-taking. The authors used a 5-item, 5-point Likert-type scale with very good internal consistency (Cronbach's  $\alpha = .88$ ) that asked about confidence in personal investing decisions. The authors found that males invested a greater portion of the hypothetical inheritance in stocks, but the relationship between gender and risk-taking preference was fully mediated by FSE, such that greater FSE was associated with greater investment in stocks. These results again implicate an effect of gender on FSE. Yet, somewhat surprisingly, age correlated with greater risk-taking preference but not with FSE. If investing a windfall inheritance in stocks is the financially wise decision, as the authors suggest and the results support, then age should be correlated with both FSE and risk-taking preference or with neither. Since age was correlated with risk-taking but not FSE, it is possible that another factor (*e.g.*, financial knowledge or current personal finances) or limitations of the sample impacted the results.

Other researchers have chosen to collect data exclusively from female participants instead of comparing men and women. Farrell, Fry, and Risse (2015) conducted an online survey of Australian women ( $N = 1,542$ ) and included the Financial Self-Efficacy Scale (FSES), a 6-item, 4-point Likert-type scale (Lown, 2011). The FSES demonstrated good internal consistency (Cronbach's  $\alpha = .81$ ) in the sample, which had a wide range of ages (18 to 60+), incomes and educational backgrounds. Controlling for financial literacy, risk preference, and demographics, the authors found that FSE was positively associated with the use of more types and greater

numbers of financial products (*e.g.*, investments, mortgages, and savings accounts) but negatively associated with credit card debt and loans. For an online survey of female entrepreneurs ( $N = 51$ ), recruited from an entrepreneurship program, Amatucci and Crawley (2011) adapted three items from the entrepreneurship self-efficacy literature to measure FSE. The authors reported good internal consistency of the items (Cronbach's  $\alpha = .81$ ), which all related to financial management. The results of an ANOVA based on age groups showed that older age was associated with greater FSE. Age was also associated with more business experience, which suggests the possibility that business experience mediates the relationship between age and FSE as might be predicted by theories about how self-efficacy develops.

While female entrepreneurs may have relatively lower levels of FSE than their male counterparts, in general, one would expect rather high levels of FSE compared to most women, based on their chosen profession. However, FSE may be an equally important construct for women who are expected to have below average levels. Weaver, Sanders, Campbell, and Schnabel (2009) hypothesized that FSE would be important for female victims of intimate partner violence because extreme financial control is a form of abuse and finances are critically important for leaving an abusive relationship. The authors included a FSE subscale when they developed the Domestic Violence-Related Financial Issues (DV-FI) scale as part of a financial education intervention. At baseline, they surveyed a sample of victims of intimate partner violence ( $N = 113$ ), who were seeking emergency social services. Most of the women were between the ages of 18-35 and were predominantly African-American. Exploratory factor analysis resulted in a 20-item scale, and the first factor consisted of the 5 FSE items, which related to confidence in meeting financial goals. They reported that the FSE subscale had very good internal consistency (Cronbach's  $\alpha = .86$ ). They interpret the FSE subscale as a subjective

measure of economic dependency and showed that it is significantly correlated with the Family Resource Scale, which they interpret as an objective measure of economic dependency. The FSE subscale was not correlated with measures of abuse and psychological maltreatment. The authors also reported the test-retest reliability ( $r = .62$ ) for the FSE subscale when testing the control group ( $N = 35$ ) two weeks later. Given that the control group participants were also seeking emergency services at baseline, an improvement in their FSE over 2 weeks is not surprising; therefore, the test-retest reliability seems relatively strong.

Postmus, Plummer, McMahon, and Zurlo (2012) included the FSE subscale of the DV-FI in a study of survivors of intimate partner violence ( $n = 120$ , mean age = 39) who attended at least one session of the Allstate Foundation's *Moving Ahead Through Financial Management* program. They found that the FSE subscale had acceptable internal consistency (Cronbach's  $\alpha = .75$ ) and was positively correlated with a subjective measure of financial literacy ( $r = 0.32$ ,  $p < .01$ ).

Whether women have lower levels of FSE remains unclear. There is evidence that FSE gender differences exist among high school and college students, but these results were not replicated in a sample with a wider age range. Age may be an important aspect of the development of FSE as financial knowledge and experience accrues over time. Yet, for many researchers, the question of gender differences is irrelevant because there exists little doubt that women experience less optimal financial outcomes than men on average. Results of FSE research with women are broadly consistent with the results of previously reviewed research among students and low-income earners but are similarly lacking in important ways. Women with higher levels of FSE use a greater number and variety of financial instruments but rely on credit cards and loans less than women with lower levels. Women also appear to benefit from

financial interventions even more than men. Among female victims of intimate partner violence, a newly developed measure of FSE showed promising signs of convergent and discriminant validity as well as adequate test-retest reliability.

As with previously discussed studies, measures of FSE may not capture the totality of the construct adequately because researchers choose to use wording that is aimed at their target population. In the case of Dietz et al. (2003), the negative valence of the items might even have unintentionally reflected a sexist stereotype about the financial capability of women. If some women reacted to perceived stereotype threat, the internal consistency of the items would have been decreased. Indeed, they report a lower reliability statistic than similar studies.

Regardless of the potential for implicit bias, financial decision-making is often absent altogether or is conflated with other concepts, such as goal setting or financial management. The correlation between FSE and FDMSE is still unknown. Research has yet to determine whether women with higher levels of FSE actually make better real-world financial decisions than those with lower levels of FSE. While women with higher levels of FSE reported more typically positive financial behaviors than other women, these behaviors could be overly conservative and reflect low levels of FDMSE.

On the other hand, there is both direct and indirect evidence of the importance of age and experience for women's perceptions of FSE. Age and gender could have an interaction effect on FSE for a number of possible reasons (*e.g.*, cohort effects, lifespan developmental trajectories, or changing social norms). Furthermore, the appropriateness of particular financial strategies and decisions naturally changes over the course of the lifespan, which makes comparisons between students, working adults and retirees difficult. Unfortunately, researchers interested in gender

effects have not focused on FSE among older adults despite the existence of many factors that could impact FSE gender differences over the lifespan.

The impact of FSE on consumer financial decision-making is another important area of research. It is particularly relevant to middle-aged and older adults and has major implications for policymakers and financial service providers. Adults in this age range typically have greater financial resources than younger adults and are often faced with important financial decisions that have long-term consequence, such as those related to retirement, investing, and insurance.

Lown (2011) developed the Financial Self-Efficacy Scale (FSES) in order to understand the role FSE plays in saving for retirement. She conducted an online survey of employees at a large state university ( $N = 726$ ) to create a 6-item, 4-point Likert-type scale with items adapted from the General Self-Efficacy Scale. The item content related to confidence in general personal finance skills and retirement planning and management. The sample was highly educated (42.9% had advanced degrees), 94% Caucasian, and had a mean age of 47.2 years. The FSES demonstrated acceptable internal consistency (Cronbach's  $\alpha = .76$ ) and a modest correlation with 4 items from the adapted scale ( $r = .37$ ), suggesting the constructs are independent but related. FSES scores varied by a measure of retirement personality types as hypothesized. Participants classified as Planners reported significantly higher levels of FSE than all other types, followed next by Savers. Strugglers, Impulsives, and Deniers all had below average levels of FSE. Higher FSE was also associated with more education, older age, and greater risk tolerance. These results demonstrate that higher levels of FSE are associated with better retirement savings strategies and suggest that FSE may even distinguish between people who use positive strategies but take more active (Planners) or passive (Savers) approaches. The sample characteristics may limit the generalizability of these findings, and the content of the

items may also be because of the focus on retirement savings. Notably, Lown did not control for income, which might account for substantial portions of the relationships between FSE and education or age. Furthermore, this study does not include retirees, who actually must manage their income in retirement, and it does not focus on the financial decision-making process.

Another study of university employees ( $N = 189$ , mean age = 45) used a single 5-point Likert-type item to measure FSE, as conceived as confidence in investing (Forbes & Kara, 2010). While again limited by the sample characteristics, the researchers used an objective financial knowledge quiz instead of a subjective rating of retirement attitudes and behaviors. The results showed that the significant relationship between financial knowledge and FSE was fully mediated by confidence ratings made for each quiz response. While there may be overlap between FSE and the financial quiz confidence ratings due to shared methods variance, this finding shows that FSE ratings reflect not just the accuracy of financial knowledge but the certainty people have about their financial knowledge. When making important financial decisions that are inherently uncertain, such as investing, the degree of trust a person has in their own financial knowledge may play an important role in determining FDMSE and the quality of the eventual decision.

Dulebohn and Murray (2007) surveyed employees ( $N = 795$ ) from six campuses of an American state university. They studied the relationship between FSE and asset allocations of retirement savings plans. The sample was highly educated (85% advanced degrees) and had a mean age of 49.4 years. The researchers used four 5-point Likert-type items to measure FSE, resulting in a scale with very good internal consistency (Cronbach's  $\alpha = .84$ ). Their results showed a positive relationship between FSE and the riskiness of asset allocation in a defined contribution retirement savings plan, but this relationship was mediated by attitudes about

opportunity perception. People with higher levels of FSE made less conservative asset allocations based on their greater perception of opportunity. This shows that the riskiness of financial decisions, such as asset allocation, may have a more complex relationship to FSE than might be expected. Higher FSE correlates more with the perception of financial control than financial conservative behavior, although many conservative financial behaviors (savings) are positively associated with FSE probably because they also indicate a sense of control over financial outcomes. People with greater FSE may make more or less risky decisions according to their perception of the opportunity afforded by doing so. Considering that the participants were all enrolled in an employer-sponsored defined contribution plan, which is a very positive retirement savings behavior, these results may not generalize to the financial decisions made by people who do not benefit from similar employer-based retirement benefits.

FSE has also been shown to relate to positive coping strategies to deal with financial stress. Letkiewicz, Domian, Robinson, and Uborceva (2014) analyzed data from a large, longitudinal study of Canadian households likely to seek help from a professional financial planner. They measured FSE with a 7-item, 9-point Likert-type scale, which had acceptable internal consistency (Cronbach's  $\alpha = .62$ ). Controlling for age, income, education, assets and debts, and employment, they found that people who sought help from a financial planner reported overall higher levels of FSE and lower levels of financial stress. Interestingly, there was a significant interaction between FSE and financial stress. People with low FSE were less likely to seek help regardless of their level of financial stress, but people with high FSE and higher financial stress were more likely to seek help. This important finding suggests that FSE is not necessarily the result of experiencing overall less financial stress (*i.e.*, having greater financial wealth and stability). Rather, FSE could play a role in reducing the number or severity of

financial stressors through the promotion of positive coping behaviors, such as seeking professional financial advice. Undoubtedly, seeking appropriate advice when faced with an important financial decision is especially important for older adults because of changes in cognition, social networks, financial laws and regulations, and macroeconomic circumstances. It seems likely that FDMSE would be even more strongly related to seeking financial advice, since professional advice is more likely relevant to specific decisions than daily financial management.

Although several studies discussed above have touched upon age, none has examined FSE among older adults directly. Therefore, I have included several studies that examine closely related constructs. Xiao, Chen, and Sun (2015) compared financial capability between age groups using data from the 2012 United States National Financial Capability Study (N = 24,395). The survey included a single item that asked respondents to rate how good they are at dealing with day-to-day financial matters on a 7-point Likert-type scale. The item content is sufficiently similar to items used to measure FSE that it seems informative to include in this review. Multiple regression analysis demonstrated that financial capability was positively associated with age, when controlling for other demographics. This finding serves to highlight the effect of experience. It seems reasonable that the accumulation of lifetime experience is the most important difference between younger and older adults that could account for greater financial capability related to day-to-day financial matters. Still, it remains to be seen how age might affect FDMSE because important financial decisions are made less frequent than day-to-day financial behaviors, which may become relatively habitual over time. Older adults likely benefit from experience to some extent, but the effect could be diminished by other age-related changes.

Earl, Gerrans, Asher, and Woodside (2015) examined Retirement Self-Efficacy (RSE) among a special population of wealthy older adults. RSE has a strong financial component, due



to the nature of living on a fixed income or investment income, but it also captures somewhat broader aspects of retirement, such as health and wellbeing. The researchers were interested in RSE among people who utilize an Australian retirement fund designed for high net worth individuals, known as a self-managed superannuation fund (SMSF). The benefit of a SMSF is a large potential tax savings. However, there is a risk of greater losses, and participation in a SMSF requires a high degree of responsibility for the management of the fund. The researchers conducted an online survey ( $N = 81$ ) using the Retirement Self-Efficacy Scale, a 27-item, 5-point Likert-type scale that was slightly modified for use with an Australian sample. The Retirement Self-Efficacy Scale had excellent internal consistency (Cronbach's  $\alpha = .94$ ). The survey also included questions related to finances, symptoms of dementia, and the Wonderlic Personnel Quicktest, an 8-minute online cognitive test. RSE was correlated with better cognitive performance, higher levels of financial literacy, and larger SMSF assets.

It may be true that some non-financial aspects of the construct of RSE might account for these correlations. However, it seems likely that there is overlap between RSE and FSE, especially in light of the correlation between RSE and financial literacy, a key theoretical component of FSE. More interestingly, these results beg the question of whether cognition would show a similarly strong positive relationship to FDMSE. While better cognitive ability typically results in better financial decision outcomes, people experiencing age-related or pathological declines in cognition might still report high levels of FDMSE despite worse decisions. On the other hand, RSE is more sensitive to overall quality of life in retirement and thus less likely to demonstrate such a discrepancy with cognitive ability.

In another study of a closely related construct, Kan, Barnes, Hanoch, and Federman (2015) examined the relationship between self-efficacy for health insurance decision-making

among older adults. They recruited an ethnically diverse sample of adults over 64 years of age from senior centers and residential centers in New York City. They found that insurance decision-making self-efficacy was positively associated with education, knowledge of Medicaid, and self-reported health. Interestingly, participants without a spouse and those without a confidante reported higher levels of insurance decision-making self-efficacy. This suggests that older adults may choose to rely on an available spouse or confidante, and therefore fail to obtain the experiences necessary to produce a greater sense of self-efficacy. Since choosing an insurance plan is a particular type of financial decision, aspects of these results might apply to FDMSE among older adults more generally. However, recent changes to health insurance options may make this type of decision more complicated or confusing than other important financial decisions. Furthermore, the potential negative consequences that could result from a bad health insurance choice might intensify the emotionality of the decision process more than other important financial decisions.

In summary, the concept of FSE has gained interest recently among researchers from diverse fields, such as consumer psychologists, economists, investment professionals, financial educators, advocates for low-income families, advocates for victims of intimate partner violence, and lifespan psychologists interested in decision-making. Many of these researchers have a common interest in protecting a population that they perceive as financially vulnerable in some way. Consequently, the demographics of participants have varied widely on age, education, socioeconomic status, and nationality. Researchers have also used a variety of methods to explore FSE, including interventions (education and savings programs), population-based panel surveys, and Internet surveys. Various outcome measures have also been reported in the literature. Methodological diversity strengthens the support for FSE as a robust psychological

construct. However, FSE is often included as a secondary aim of a study and may receive short shrift. As a result, FSE is usually measured by modifying items from a general self-efficacy scale or with the inclusion of a few novel items tailored to the population of interest. To date, Lown's FSES is the only psychometrically sound and validated measure of FSE. Yet, the FSES is somewhat limited by the same theoretical and methodological issues as other studies of FSE.

While the range of research approaches to FSE is an asset in some ways, it has also resulted in a poorly defined conceptualization of the construct. Researchers have variously included items about short and long-term saving behaviors, budgeting, unanticipated financial setbacks, unemployment, debt, investing, and other more specific topics geared toward the aims of particular studies. Yet, even the narrowest definitions of FSE may lack the specificity needed for a self-efficacy scale to predict outcomes accurately. The most salient aspect of FSE appears to be financial decision-making rather than general day-to-day financial abilities. However, very few FSE studies have addressed financial decision-making, and none has made it the focus of measuring FSE. A scale that specifically measures FDMSE would be expected to relate more strongly to important, long-term financial outcomes than FSE would relate to the same outcomes.

Even as many FSE studies define the range of financial activities of interest broadly, most studies betray a rather narrow conception of self-efficacy measurement. For the most part, FSE researchers have failed to establish a hierarchy of items according to task difficulty. It is important for self-efficacy scales to measure a range of tasks that are hypothesized to require greater degrees of self-efficacy to complete successfully. Self-efficacy scales also commonly include items that relate to positive coping skills and emotions. Several FSE studies have

included items related to worrying, but none assess anxiety or depression related to financial activities.

Another shortcoming of the extant FSE literature is that item content may subtly bias results in favor of more highly educated and wealthier individuals. It is true that more education and greater wealth are theoretically related to FSE, in that knowledge supports the development of FSE and greater wealth requires more experiences of financial management. However, some researchers include FSE items that pertain to particular financial instruments or behaviors (*e.g.*, credit cards, investing) that might not apply equally to individuals with different socioeconomic statuses. Alternatively, a measure of FDMSE would only need to address the process of financial decision-making. Without reference to specific financial instruments or behaviors, a FDMSE scale might be more applicable to a wider range of respondent than FSE scales.

Although many FSE researchers appear to share a desire to learn about populations that are considered at-risk for negative financial outcomes, there exists a dearth of FSE research with older adults. This lack of research interest is surprising. Older adults are faced with many important financial decisions precisely at a stage of life when they may be more vulnerable to making bad decisions or to being exploited; poor financial decisions can have dire consequences for older adults.

As reviewed above, Lachs and Han (2015) have gone so far as to propose a diagnosis of age-related financial vulnerability (AAFV). Their model raises the possibility that the incidence of financial exploitation might be another important outcome to test the validity of FSE measures. While financial exploitation is a relatively low base rate phenomenon, more common factors that contribute to AAFV might also be important for understanding the relationship between age and FSE or FDMSE. Cognitive functioning is the most obvious candidate for a

moderator variable. Yet, the relationship between cognition and FSE remains unknown. Some researchers have found that older adults are overconfident in making decisions (Bruine de Bruin, Parker, & Fischhoff, 2012), which might reflect a failure to adjust confidence ratings to match declining cognitive abilities. However, these findings might not generalize to real-world decision-making because older adults may behave differently when making important personal financial decisions than in response to hypothetical situations for research purposes, such as showing greater reliance on personal experience. Older adults may also view positive and negative outcomes of real-world decisions differently than younger adults do, such as a preference for minimizing or maximizing different aspects of the financial outcome.

From a comprehensive review of the FSE literature, it can be seen that FSE is a very promising construct with important applications in a variety of research fields. A better understanding of FSE may serve to enhance the financial wellbeing of populations at-risk for negative financial outcomes, (*e.g.*, serving as a target for intervention). However, the construct could be improved upon in important ways. In order to address the critical gaps that I have identified in the FSE literature, I propose the following research project.

## SPECIFIC AIMS

1. Develop a financial decision-making self-efficacy scale (FDMSES) for use with adults aged 60 and older that demonstrates content validity and meets accepted psychometric standards for scale development.

1.1. Hypothesis: The FDMSES will demonstrate acceptable psychometric properties in a sample of older adults.

Method: The theorized scale will be subjected to an iterative process of confirmatory factor analysis, in order to establish a theoretically justified set of items with factor loadings greater than .30. The internal consistency of the final scale will be measured using Cronbach's  $\alpha$  and will be considered adequate if  $\alpha$  is greater than .70.

Outcome: This will establish the reliability of FDMSE among older adults.

2. Establish the convergent validity of the FDMSES. In consideration of the novelty of the construct, statistically significant validity coefficients greater than or equal to  $r = .20$  will be considered to be adequate evidence of convergent validity when congruent with hypotheses. Non-significant coefficients and significant coefficients of absolute magnitude less than or equal to  $r = .10$  will be considered to be adequate evidence of discriminant validity.

2.1. Hypothesis: FDMSES scores will significantly correlate with measures of financial knowledge and skills.

Method: FDMSES scores will be correlated with total scores from the Money Management subtest of the Independent Living Scales (ILS).

Outcome: This will establish that the FDMSES is related to traditional tests of financial competence.

2.2. Hypothesis: FDMSES scores will significantly correlate with measures of global cognitive function, processing speed, executive function, and semantic fluency.

Method: FDMSES scores will be correlated with interference scores for the Stroop Color Word Test, total scores from the Mini-Mental State Exam (MMSE), completion times for Parts A and B of the Trail Making Test (TMT), total scores for the Controlled Oral Word Association Test (COWAT), total scores for Category Naming – Animals, and delayed recall scores for the Rey Auditory Verbal Learning Test (RAVLT).

Outcomes: This will establish that the FDMSE is related to traditional tests of cognitive function.

2.3. Hypothesis: Neuropsychological variables will account for unique variance in FDMSES after controlling for the effects of age and education.

Method: Age and education will be entered in the first step of a hierarchical regression predicting FDMSES scores. Separate models will be tested by adding each neuropsychological variable that is significantly correlated with FDMSES in step two.

Outcome: This will demonstrate that the relationship between FDMSES and neuropsychological performance is not fully accounted for by age and education.

3. Evaluate group differences in FDMSES in vulnerable populations.

3.1. Hypothesis: People with impaired financial decisional abilities will have lower scores on the FDMSE.

Method: Financial decisional ability rating will be recorded from the LFDRS and coded dichotomously (No Concern or Some Concerns/Major Concerns). An

independent samples *t*-test of mean differences in FDMSES scores will be conducted to compare mean levels.

Outcome: This will establish that people who have impaired financial decisional ability for a current or recent important financial decision have lower levels of FDMSE.

3.2. Hypothesis: People with a history of elder financial exploitation will have lower scores on the FDMSE.

Method: History of elder financial exploitation will be recorded from the LFDRS. An independent samples *t*-test of mean differences in FDMSES scores will be conducted to compare mean levels.

Outcome: This will establish that people who have previously experienced elder financial exploitation have lower levels of FDMSE.

3.3. Hypothesis: People with a large number of low scores on neuropsychological tests will have lower scores on the FDMSE.

Method: Participants will be grouped according to how many of their neuropsychological test scores fall below 1 standard deviation from the sample mean. A one-way ANOVA of neuropsychological performance group on FDMSES will be conducted with Tukey's Honest Significant Difference test used for follow-up comparisons.

Outcome: This will establish that people with multiple low scores on a brief neuropsychological test battery have lower FDMSES.



## **Chapter 2: METHODS**

### **Participants**

The proposed research project is a secondary data analysis of a dataset collected for the Financial Decision Rating Scale Development Study conducted by Dr. Peter A. Lichtenberg and funded by the National Institute of Justice and the Retirement Research Foundation. The Wayne State University Institutional Review Board (IRB) approved the project, and all participants provided informed consent. The author contributed to recruitment and data collection for the study.

A community sample of two hundred older adults was recruited through local senior centers, senior organizations, public libraries, word of mouth, and the Healthier Black Elders Center Participant Research Pool at the Institute of Gerontology at Wayne State University. All participants met the following inclusion criteria: 1) at least 60 years old, 2) English speaking, and 3) currently or recently had a major financial transaction (e.g., change in investments, large purchase, or change in beneficiaries) that was being considering, had been considered, or had been completed. The researchers screened potential participants by phone or in person to establish eligibility. The study protocol consisted of a survey about financial decision-making and a brief neuropsychological test battery. Participants also provided their age and highest level of education. Participants were compensated \$40.00 for completing the study, which took approximately 1.5 hours.

### **Instruments**

**General cognitive ability.** The Mini Mental State Examination (MMSE) (Folstein, Folstein, & McHugh, 1975) was used to assess general cognitive ability. The MMSE is a brief cognitive screening measure that assesses orientation, memory, attention, language, the ability to

follow commands, writing, and visuo-spatial skills. The MMSE is commonly used to screen for cognitive impairment.

**Orientation.** Participants completed the Benton Temporal Orientation Test (BTOT) (Benton, Vanallen, & Fogel, 1964). The BTOT measures the participant's awareness of the current date and time.

**Verbal Fluency.** Participants completed two verbal fluency tasks. During a category fluency task, participants were asked to name as many different types of animals as they could in 1 minute. Participants also completed the Controlled Oral Word Association Test (COWAT) (Benton, 1969), which measures phonemic fluency. Participants were asked to say as many words as they could in 1 minute that begin with a given letter of the alphabet for a total of 3 trials.

**Verbal Naming.** A 15-item version of the Boston Naming Test (BNT) (Fillenbaum, Huber, & Taussig, 1997) was used to assess confrontation naming ability. Participants were presented with a line drawing of a common object and given 20 seconds to name the object.

**Reading.** The Word Reading subtest from the Wide Range Achievement Test – Fourth Edition (WRAT-IV) (Wilkinson & Robertson, 2006) was used to assess reading ability. Participants were asked to read words out loud of increasing difficulty until 10 consecutive items were pronounced incorrectly or all 55 items were read.

**Memory.** The Rey Auditory Verbal Learning Test (RAVLT) (Rey, 1958) was used to assess the ability to learn and recall a list of words after a delay. The participant was asked to repeat words from a 15-item list read aloud by the examiner 5 times. Then, the process was repeated a single time with a new list of words, after which the participant was asked to recall the

first list again. Following a delay of approximately 20 minutes, the participant was asked to recall words from the first list.

**Executive Function.** Participants completed two measures of executive function. The Trail Making Test (Reitan, 1992) was used to assess simple and complex visual scanning. The simple version of the task required participants to draw a line between circles according to a sequence. The complex version of the task required participants to alternate between two sequences while drawing lines to connect circles.

The Stroop Color Word Test (Stroop) (Golden, 1978) was used to assess inhibition. Participants were required to read words out loud and to name colors, under neutral and incongruent conditions.

**Financial Knowledge and Skills.** The Money Management subtest from the Independent Living Scale (ILS) (Loeb, 1996) was used to assess financial knowledge (*e.g.*, insurance products, contracts) and skills (*e.g.*, arithmetic, writing a check, counting money). The ILS is a test of functional abilities of important daily activities.

**Financial Decision-Making.** The Lichtenberg Financial Decision-Making Rating Scale (LFDRS) (Lichtenberg, Stoltman, et al., 2015) is a clinician administered was used to assess financial decision-making ability, psychological vulnerability to financial exploitation, and incidence of financial fraud or exploitation. The scale is comprised of 5 subscales: 1) Financial Situational Awareness, 2) Psychological Vulnerability, 3) Current Financial Decision/Transaction, 4) Past Financial Choice, Rationale, and Appreciation, and 5) Undue Influence & Financial Exploitation.

## **Data Analysis**

The data for these analyses come from the LFDRS development study. All statistical analyses will be conducted in IBM SPSS Statistics for Windows, Version 23.

### **Aim 1: FDMSES Development**

**Item Selection.** Candidate items were selected from the LFDRS, which was developed by a national panel of experts on elder financial exploitation. The selection criteria was based on judgements of item relevance to theories of self-efficacy and financial decision-making. Table 3 presents the six candidate items from the LFDRS that were selected for initial inclusion in the FDMSES.

**Reliability.** The selected items will be subjected to an iterative process of confirmatory factor analysis, in order to produce a psychometrically sound unidimensional scale. Initial items will be included in the final scale if they have factor loadings of .30 or greater. The internal consistency of the final scale will be measured using Cronbach's  $\alpha$  and will be considered adequate if  $\alpha$  is greater than .70. FDMSES total scores will be calculated by summing the Likert value of each item.

### **Aim 2: Convergent Validity**

**Validity.** To establish the convergent validity of the novel scale, FDMSES total scores will be correlated with total scores from the Money Management subtest of the ILS. The neuropsychological correlates of the FDMSES will be examined by correlating FDMSES total scores with the following measures: MMSE total scores, Category Naming total score, COWAT total score, Boston Naming Test total score, total time in seconds from the TMT (Parts A and B), Stroop subtests, scores on the RAVLT. A hierarchical regression model predicting FDMSES score will be tested for each variable that is significantly correlated with the FDMSES. Age and

education will be entered in the first step of each model, and the variable of interest will be entered in the second step.

### **Aim 3: Group Differences**

Independent samples *t*-tests of mean differences in FDMSES scores will be conducted to compare mean levels between people with intact and impaired financial decisional abilities for a current or recent decision and between people with and without a history of elder financial exploitation. Cohen's *d* will be calculated as a measure of effect size.

In order to examine the relationship between performance on neuropsychological tests and the FDMSES, participants will be categorized according to the number of test scores falling below 1 SD from the sample mean. The following variables will be transformed to *z*-scores: Category Fluency, COWAT, BNT, TMT A and B, Stroop (Word, Color, Color-Word), and RAVLT (Learning over trials, Immediate Recall, and Delayed Recall). A categorical variable will be computed based on the number of low scores. In order to reduce the probability of low scores occurring by chance based on the number of scores, three performance levels will be selected: Average (0 or 1 scores < 1 SD), Low-Average (2 or 3 scores < 1 SD), and Borderline (4 or more scores < 1 SD). Missing scores for any of the selected variables will not be counted towards the participant's low score total.

## **Chapter 3: RESULTS**

### **Sample Description**

Descriptive statistics of the sample demographics are presented in Table 1. The mean age of the sample ( $n = 200$ ) was 71.5 years with a standard deviation of 7.4 years and a range of 60 to 93 years. The sample was 74% women. There was a nearly even split between African American (52%) and non-Hispanic European American participants. Participants had an average of 15.3 years of education with a standard deviation of 2.6 years and a range of 9 to 24 years.

The majority of the sample was judged to have intact decisional abilities for the specific financial decision or transaction being discussed during administration of the LFDRS, but 5% of the sample was rated as “Some Concerns” and 3% of the sample was rated as “Major Concerns” about their financial decisional abilities. Eighteen percent of the sample reported an incident of elder financial exploitation as determined by the research team.

### **Neuropsychological Test Results**

Descriptive statistics of performance on neuropsychological tests are reported in Table 2. Several participants were unable or unwilling to complete portions of individual tests for various reasons (*e.g.*, color blindness, fatigue, and frustration), resulting in missing data for some neuropsychological variables. In all such instances, the rate of missing data was below 5%. On the Trail Making Test Part B, four participants received scores of 301 seconds because they did not complete the test within the 300 second time limit or asked to discontinue.

### **Scale Items**

All participants endorsed one of the three primary response options for each of the six items selected for inclusion in the FDMSES, and the full range of response options was endorsed on all items. Complete response frequencies are reported for each item in Table 3. The majority

of participants are confident making big financial decisions (Item 6, 70.5%). Most participants do not worry about recent financial decisions (Item 7A&B, 71.5%). However, few participants are quite comfortable taking financial risks (Item 17, 18.5%). Large percentages of participants are either sometimes anxious or often anxious about their finances (Item 21, 38.5%) and feel downhearted or blue about their financial decisions either some of the time or most of the time (Item 24, 42.5%). However, the vast majority of respondents reported that they are not at all worried that someone will take away their financial freedom (Item 29, 86.5%).

Descriptive statistics of the scale items are reported in Table 4. The item means range from 1.77 to 2.84. Using a  $z$ -score cut-off of 3.29, all of the items are significantly negatively skewed except for Item 17, which is slightly positively skewed but not significant. Notably, Item 29 is much more skewed than the other items. Using a  $z$ -score cut-off of 3.29, only Item 29 is significantly kurtotic.

The Pearson product-moment correlations between the scale items are reported in Table 5. Fear about financial freedom (Item 29) was not significantly correlated with any items. Comfort taking financial risks (Item 17) was weakly correlated ( $r = .17, p < .05$ ) with feeling blue about financial decisions (Item 24), but it was not significantly correlated with any other items. The remaining correlations between financial decision-making confidence (Item 6), recent financial worry (Item 7A&B), financial anxiety (Item 21), and feeling blue about financial decisions (Item 24) were all significant at the  $p < .01$  level and ranged from  $r = .25$  to  $r = .53$ .

### **Aim 1: FDMSES Development**

The results of three exploratory factor analyses (EFA) using maximum likelihood extraction are reported in Table 6. Analysis of the six items selected for inclusion in the FDMSES resulted in a two factor solution based on the Kaiser criterion (eigenvalues  $> 1$ ).

However, the solution was rejected because the communality estimate after extraction for Item 24 was .999. The item with the lowest communality (Item 29 = .017) was dropped from the pool of items, and the analysis was re-run. The second analysis produced a one factor solution that explained 34.0% of the variance. The factor loading of Item 17 was .11, which is below the threshold of .30 used to select meaningful factor loadings, and the communality was .012. Therefore, this item was dropped from the pool of items, and the analysis was re-run again.

The third EFA produced an adequate one factor solution. The solution failed Bartlett's Test of Sphericity, approximate  $\chi^2(6) = 168.62, p < .001$ , which indicates that the data are not normally distributed as was expected due to the significant skew of items. The one factor solution explained 42.21% of the variance. A review of the scree plot supported a one-factor solution because it showed a clear bend between the first and second factors, with the second factor below an eigenvalue of 1. The goodness-of-fit test of the solution was not significant,  $\chi^2(2) = 4.58, p = .10$ , which indicates that the model adequately fits the data. There were two residuals of the reproduced correlation matrix and the original correlation matrix that exceeded absolute values greater than 0.05 (Item 6 – Item 7A&B = .061; Item 6 – Item 24 = -.07). Item 21 had the highest factor loading and communality (.87; .75), followed by Item 24 (.60; .36), and Item 7A&B and Item 6 had equivalent factor loadings and communalities (.54; .29).

For comparison, a confirmatory factor analysis (CFA) of the six items selected for inclusion in the FDMSES was conducted using maximum likelihood extraction. Results of these analyses are presented in Table 7. The first CFA solution explained 28.6% of the variance. However, it was rejected because two of the extracted communalities were very small (Item 17 = .013, Item 29 = .015). Item 17 was dropped from the pool of items, and the analysis was re-run. The re-analysis produced a solution that explained 34.1% of the variance. However, the extracted



communality of Item 29 was .015, and its factor loading was .12, which is below the threshold of .30 used to select meaningful factors. Therefore, this item was dropped from the pool of items, and the analysis was re-run again. The results of the third CFA analysis were identical to the third EFA analysis.

The final four items selected through EFA and CFA were assessed for reliability. The FDMSES demonstrated acceptable psychometric properties, which supports our primary hypothesis. An internal consistency analysis of the items resulted in a Cronbach's  $\alpha$  of .73, which is adequate for research purposes. The item-total statistics are presented in Table 8. Corrected item-total correlations ranged from  $r = .46$  to  $.65$ . Squared multiple correlations of each item predicted by all other scale items ranged from  $R^2 = .24$  to  $.44$ . The overall Cronbach's  $\alpha$  of the scale would decrease if any of the items were deleted, which provides further evidence that the four-item scale is acceptable. Descriptive statistics of the four-item total scale score are reported in Table 4. The mean of the total score is 10.3 (SD = 1.87). Using a  $z$ -score cut-off of 3.29, the total score is significantly negatively skewed but not significantly kurtotic.

### **Aim 2: Convergent Validity**

Correlations between the FDMSES total score, demographics, and psychological tests are presented in Table 9. Entries above the diagonal are adjusted for the false discovery rate due to multiple tests (Benjamini & Hochberg, 1995). Only correlations that were significant after adjusting for the false discovery rate will be discussed. The FDMSES was significantly correlated at the  $p < .01$  level with years of education ( $r = .19$ ), WRAT-IV Word Reading subtest ( $r = .20$ ), Trail Making Test Part B ( $r = -.21$ ), and the Stroop Color-Word subtest ( $r = .20$ ). The FDMSES was not correlated with any other demographic or psychological test variables. Our first hypothesis that the FDMSES would be correlated with a measure of financial skills and

abilities was not supported. The second hypothesis was partly supported. The FDMSES was not correlated with measures of global cognitive function, processing speed, or semantic fluency, but it was correlated with two measures of executive function (Trail Making Test Part B and Stroop Color-Word).

A series of hierarchical regressions were conducted with FDMSES total score as the dependent variable. Age and education were entered in the first step and neuropsychological variables that were significantly correlated with FDMSES total score were entered in the second step of separate regressions. Analyses were conducted using Trail Making Test Part B and the Color-Word subtest from the Stroop.

Our third hypothesis that neuropsychological variables would account for unique variance in FDMSES after controlling for age and education was supported. Results of the hierarchical regressions are reported in Table 10. The overall model including performance on the TMT B was significant ( $F = 7.46, p < .001$ ) and accounted for 10% of the variance. The addition of TMT B in step two accounted for unique variance ( $\Delta F = 9.46, p < .01, \Delta R^2 = .04$ ). The overall model including performance on the Stroop Color-Word subtest was significant ( $F = 5.91, p < .01$ ) and accounted for 9% of the variance. The addition of the Stroop Color-Word variable in step two accounted for unique variance ( $\Delta F = 6.91, p < .01, \Delta R^2 = .03$ ).

### **Aim 3: Group Differences**

Independent samples t-tests were conducted to test for mean differences in FDMSES total scores between groups based on financial decisional ability and history of elder financial exploitation. The results of these tests are reported in Table 11. Financial decisional ability scores were recoded into a dichotomous variable (0 = No Concerns, 1 = Some Concerns or Major Concerns). Levene's test for equality of variances was not significant ( $F = .370, n.s.$ ),

indicating that it is reasonable to assume that groups based on financial decisional ability have equal variances. The equal variance t-test was significant,  $t(198) = 2.95, p < .01$ . Participants with financial decisional abilities that were rated as having either some concerns or major concerns had lower FDMSES total scores (Mean = 9.00) than those with no concerns (Mean = 10.41). The effect size of the difference was medium (Cohen's  $d = 0.74$ ).

Levene's test for equality of variances was significant ( $F = 4.70, p < .05$ ), indicating that it is not reasonable to assume that groups based on a history of elder financial exploitation have equal variances. The unequal variance  $t$ -test was significant,  $t(45.4) = 4.32, p < .001$ . Participants who reported an episode of elder financial exploitation had lower FDMSES total scores (Mean = 8.97) than those who did not report elder financial exploitation (Mean = 10.56). The effect size of the difference was large (Cohen's  $d = 0.85$ ).

Post-hoc analyses were conducted to examine differences in FDMSES within subsets of at-risk individuals, people with impaired financial decisional ability (FDA) and people with a history of financial exploitation. Among participants with impaired FDA, there was a significant difference in mean FDMSES based on the additional risk factor of financial exploitation. People with impaired FDA and a history of financial exploitation (Mean = 8.00) had significantly lower mean levels of FDMSES than those with impaired FDA but no history of exploitation (Mean = 10.67),  $t(14) = 3.45, p < .01$ . Among participants with a history of financial exploitation, there was a trend towards a significant difference in mean FDMSES based on the additional risk factor of FDA. Participants with a history of financial exploitation and impaired FDA (Mean = 8.00) had a lower mean level of FDMSES than those with a history of financial exploitation and intact FDA (Mean = 9.35),  $t(34) = 1.77, p = .08$ .

Next, participants were grouped by number of neuropsychological test scores below 1 SD from the sample mean. Descriptive statistics of the FDMSES, demographics, financial decisional ability, and financial exploitation for the Average (0 or 1 scores < 1 SD), Low-Average (2-3 scores < 1 SD) and Borderline (4 or more scores < 1 SD) are reported in Table 12. The Average and Low-Average groups have similar mean scores on the FDMSES, but the Borderline group is lower. Neuropsychological test performance by group is presented in Table 13. For all variables, the percentage of group members with a low score increased from Average to Low-Average to Borderline, with the exception of the Trail Making Test Part A, which had a similarly small percentage of low scorers in the Average (2.3%) and the Low-Average (2.8%) groups. In the Borderline group, the tests with the largest percentages of low scores were delayed recall from the RAVLT (68.8%), the Stroop color-word subtest (65.6%), and the Trail Making Test Part B (62.5%).

A one-way analysis of variance of neuropsychological performance on FDMSES score was conducted, and the results are reported in Table 14. There was a statistically significant difference between groups,  $F(2,197) = 6.13, p = .003$ . The results of post-hoc analyses using Tukey's Honest Significant Difference Test are reported in Table 15. The Borderline group ( $M = 9.28, SD = 1.84$ ) had a significantly lower mean FDMSES score ( $p < .01$ ) than the Average ( $M = 10.45, SD = 1.83$ ) and Low-Average groups ( $M = 10.67, SD = 1.80$ ), which did not differ significantly from each other. The effect sizes of the differences between the Average and Borderline ( $d = 0.64$ ) and the Low-Average and Borderline ( $d = 0.76$ ) are medium.

## **Chapter 4: DISCUSSION**

### **Aim 1: FDMSES Development**

Overall, the construct of financial decision-making self-efficacy for older adults was supported. The scale development process resulted in a 4-item, unidimensional financial decision-making self-efficacy scale (FDMSES) with adequate internal consistency for use with adults age 60 or older. However, there remain several opportunities for further refinement of this novel construct. The factor solution accounted for 42% of the variance in the scale, which is substantial but less than would be expected for an established construct. The brevity of the scale and the number of response options may have limited the amount of construct relevant variance. This interpretation is supported by evidence that the mean FDMSES total score was relatively high and was significantly negatively skewed. The skewed distribution of scores suggests that the scale did not capture the full spectrum of self-efficacy beliefs, missing the variability at the high end.

Yet, it may be reasonable to expect high levels of FDMSE among our older adult sample due to the nature of the inclusion criteria. All participants were currently or had recently engaged in financial decision-making. Engagement in financial decision-making might in and of itself be evidence of FDMSE because people with low levels of FDMSE would be expected to avoid making decisions by acting impulsively or abdicating responsibilities to someone else. Therefore, the factor solution might account for more variance and the distribution of scores might be more normally distributed in a sample of the general population of older adults, who may or may not engage in financial decision-making. For practical purposes, the concept of FDMSE is only actually useful among people who are making financial decisions. Screening tools are often skewed because the purpose of the scale is to identify low scorers, who are most

likely to benefit from further evaluation, rather than to distinguish between average and high levels of a given trait.

The item with the highest factor loading was “How often do you feel anxious about your finances?” Financial anxiety would be expected to be both a consequence of and a contributing factor to low self-efficacy for financial decisions, which might account for the large factor loading. Notably, this is the only scale item that does not include the word “decisions.” The other items deal specifically with aspects of decision-making (i.e., confidence, and worries or downhearted feelings about previous decisions), and they had factor loadings of similar magnitudes. It is possible that variability in past financial decision-making opportunities contributed to error variance in these items that was not shared with the financial anxiety item. While all participants had finances, which might be a source of anxiety, the types and importance of past financial decisions likely varied substantially among participants, thereby attenuating the factor loadings of items related to financial decisions differentially.

At first glance, it is somewhat surprising that the item most obviously connected to self-efficacy (“How confident are you in making big financial decisions?”) did not have the largest factor loading. However, a single confidence item may not be maximally sensitive to the true variation in self-efficacy beliefs for specific financial decisions (e.g., major purchases, wealth management, or estate planning). This result suggests the need for greater item specificity because financial decision-making experiences are certainly a key component of the development of self-efficacy. The inclusion of scale items related to specific experiences would contribute to the construct of FDMSE by reflecting both the process of developing self-efficacy beliefs based on experiences of success or failure at specific tasks and the resulting behaviors

that lead to engagement or avoidance of future opportunities for mastery experiences of those tasks.

From the initial pool of six items, the items related to financial risk-taking and fear about losing one's financial freedom were excluded. The item concerning financial risk-taking was the only item for which a majority of participants did not choose the response option indicating the highest level of self-efficacy ("Quite comfortable"). Surprisingly, this finding suggests that comfort taking financial risks is not strongly related to self-efficacy for making financial decisions. Some important financial decisions require a degree of risk-taking, but other decisions may be based primarily on personal values, such as estate planning or making charitable donations. However, there may be other possible explanations of why this item failed.

It is worth considering that the risk-taking item did have a small but significant correlation with one other item, feeling downhearted regarding financial decisions. Perhaps self-reported comfort taking financial risks in the past is influenced by current negative expectations about the future related to depressogenic thinking. Even sub-clinical depressive symptoms might lead participants to underestimate their previous comfort level when taking risks.

Another possible explanation of the lack of relationship between risk-taking and self-efficacy is that risk tolerance and life experiences are moderators. Even when faced with inherently risky decisions, self-efficacy might be highest among those who believe in their ability to select the option that best matches their personal risk preference. If this is the case, the wording of the response options for this item ("Quite comfortable", "Somewhat comfortable", and "Not at all comfortable") may have reduced the variability in responses. For example, people with high levels of FDMSE may have endorsed feeling "Not at all comfortable" taking risks because they generally prefer conservative financial positions. Yet, the same individuals would

have endorsed feeling “Quite comfortable” when faced with a complex choice between different risk levels.

Individual differences in life circumstances, such as financial security or socioeconomic status, may also have served to obscure the relationship between FDMSE and comfort taking risks. For example, wealthy participants with high FDMSE may have rated their comfort taking risks more similarly to those with low FDMSE because they considered riskier decision-making scenarios than other participants (e.g., investing in a startup or making a large personal loan) when responding. Similar to the previous suggestion about the confidence item, the inclusion of items describing more specific risk-taking scenarios (e.g., related to earning money, saving, spending, or credit) might capture important variance in FDMSE when a single item failed to do so.

In contrast to the problem observed with the risk-taking item, the vast majority of participants chose “Not at all worried” in response to the question about someone taking away their financial freedom, indicating high self-efficacy. This item was extremely negatively skewed, much more so than the other scale items, and it did not correlate significantly with any of the original pool of items. This item may be suitable for identifying older adults who perceive themselves to be at-risk of financial exploitation, but the focus of the question appears to be too narrow to contribute meaningfully to the construct of FDMSE.

## **Aim 2: Convergent Validity**

Contrary to our hypotheses, the FDMSES was not strongly correlated with tests of neuropsychological functioning or financial skills and abilities. After correcting for multiple comparisons, there were small but significant positive correlations between the FDMSES and years of education, word reading ability, and measures of executive function, the Trail Making



Test Part B (this correlation is negative because faster times indicate better performance) and the Stroop Color-Word subtest. We expected a greater number of significant correlations of larger magnitude than were observed. However, the pattern of significant correlations appears to be meaningful, despite the absence of several predicted relationships.

The correlations between the FDMSES and education and word reading provide evidence that FDMSE is related to academic achievement and literacy. Skills necessary for higher education, such as literacy, numeracy, and critical thinking, are also important when making financial decisions. People with more years of education and better reading ability may be more likely to experience financial decision-making successes that build their self-efficacy because they have the requisite skills to make informed decisions. The relationship between FDMSE and years of education might also reflect increased opportunity for financial decision-making that is associated with higher socioeconomic status, resulting from secondary and post-secondary education. More opportunities to make financial decisions provide more chances to build self-efficacy.

The small but significant correlations between the FDMSES and measures of executive functioning are an interesting finding. These variables accounted for unique variance in the FDMSES even after controlling for age and education in hierarchical regression models. The term executive functioning is typically thought to encompass planning and organizational abilities, which are likely associated with successful financial decision-making. Specifically, the Trail Making Test Part B requires alternating between two mental sets while completing a timed visual scanning task, a skill known as set switching. The Stroop Color-Word test requires the inhibition of verbal responses, according to a simple rule and under timed conditions. More so than cognitive abilities probed by other tests in the study battery, set switching and response

inhibition appear to be directly applicable to the decision-making process. In order to make a good decision, it is necessary to hold two or more sets of financial options in mind simultaneously make comparisons between them, which is an example of set switching. Confident decision-making also requires inhibiting impulsive responses, such as accepting a deal that is too good to be true. The timed nature of these tasks limits the participant's ability to sacrifice speed for accuracy and adds an element of stress, which may produce test conditions that are somewhat similar to conditions of financial decision-making.

In contrast, correlations between the FDMSES and other neuropsychological tests were non-significant and in most cases near zero. It may be that impairments in executive functioning are more detrimental to the decision-making process than impairments in other cognitive abilities. It is plausible that set switching and response inhibition are integral to the specific process of making a decision, which may require simultaneously holding alternatives in mind to make comparisons and inhibiting impulsive responses. Poor executive functioning may influence self-efficacy beliefs by reducing the occurrence of successful experiences and increasing the subjective difficulty of reaching a given decision. Even if the eventual decision is appropriate, perceived difficulty during the decision process itself, such as might occur due to poor executive functioning, would be expected to have a negative effect on FDMSE also.

Other cognitive abilities might either contribute to the decision-making process more generally, be more amenable to compensatory strategies, or both. For example, verbal fluency might be helpful when discussing or negotiating a financial decision, but communicating more slowly might be a simple adjustment that does not interfere directly with the quality or perceived difficulty of the decision process. Older adults may even be able to compensate for memory

problems without sacrificing quality by using strategies, such as note taking, re-reading important documents, and consulting a trusted advisor when making financial decisions.

Another possible explanation for the smaller than expected magnitudes of correlations between the FDMSES and neuropsychological tests is that people with declining cognitive abilities might be overly confident about making financial decisions. For example, even if the quality of a decision is degraded due to cognitive decline, the consequences of that poor decision may be remote, and thus the effect on FDMSE would be time lagged. Cognitive impairment might also reduce the ability to understand and learn from negative consequences of financial decisions, no matter how proximal or distant from the time of the decision. Since it is reasonable to expect some mild and gradual cognitive decline in our community sample of older adult decision-makers, there may be non-linear relationships between cognitive abilities and FDMSES, which attenuate correlations. Additionally, participants with lower than average lifetime cognitive abilities might also have higher than expected levels of FDMSE if they have not been able to learn from past experiences or have not had opportunities to make important financial decisions that were cognitively challenging.

It is somewhat more difficult to explain the surprising lack of correlation between the FDMSES and the Independent Living Scales (ILS) Money Management scale and subscales. Initially, we hypothesized a strong relationship between the FDMSES and financial skills and abilities, but as was observed with most of the neuropsychological variables, the correlations were non-significant and near zero. In reviewing the test content, it became clear that the ILS does not address financial decision-making directly. It is a test designed to determine whether a person has the most basic functional abilities necessary for independent living. For instance, the ILS might be used to make recommendations about the level of care needed for a patient

transitioning from a rehabilitation program to independent living. The Money Management subscale tests arithmetic, financial skills (e.g., writing a check to pay a bill, and counting money), and basic knowledge of common financial concepts and information (e.g., insurance, Social Security, and the approximate prices of goods). It is possible that low scores on this subtest are more related to cognitive difficulties than financial decision-making ability and self-efficacy. Indeed, the ILS was significantly correlated with every neuropsychological variable with absolute magnitudes ranging from  $r = .19$  to  $.50$ . Even still, it is disappointing that there was no relationship between the FDMSES and financial knowledge. It may be that the ILS does not include content that is relevant to older adult financial decision makers, such as deciding when to collect social security benefits and knowledge of investment or tax strategies.

In addition, there may be both statistical and theoretical explanations for the modest overall correlational findings. The statistical properties of the FDMSES most likely resulted in attenuated correlations with other variables. Self-efficacy beliefs are expected to be normally distributed, but the FDMSES was negatively skewed. This raises the strong possibility of range restriction, which could substantially reduce the magnitude of correlations. A wider range and improved normality might result in larger correlations, but we would expect the basic pattern of findings to remain the same.

However, improved psychometric properties of the FDMSES might not substantially alter the matrix of correlations. Theoretically, it may have been unreasonable to expect large correlations between neuropsychological performance and FDMSE in the first place. Financial decisions can be quite complex, and good financial decision-making requires drawing upon a diverse set of abilities, such as basic arithmetic and probability estimation, but also communication and value judgments. Social, emotional, and cognitive factors are all important

for making successful choices and developing FDMSE, but the relative importance of any single factor may differ between and within individuals across situations and over time, producing a large amount of error variance.

Neuropsychological functioning is one important component of decision-making, and intact general cognitive abilities are necessary for making financial decisions. Yet, the relationship of cognitive functioning to the development of FDMSE is probably rather remote in the lives of older adults, which may explain why the magnitudes of the correlations are small.

Another confounding issue is that older adults may differentially update their self-efficacy beliefs based on the effects of cognitive aging or a prodromal disease process. For example, Alzheimer's disease is characterized by a lack of insight into cognitive decline. A person experiencing the early stages of Alzheimer's disease would not necessarily feel less confident in his or her ability to make financial decisions. The opposite phenomenon may also occur. A person who is anxious about possible signs of Alzheimer's disease may feel less confident making financial decisions despite experiencing only normal cognitive aging effects.

### **Aim 3: Group Differences**

We hypothesized that older adults at increased risk of poor financial decision-making would have lower mean levels of FDMSE. Comparisons were made based on three groupings: current financial decisional abilities, history of elder financial exploitation, and neuropsychological performance. In each case, there was strong support for our hypothesis.

**Financial decisional abilities.** As expected among a community sample of older adults who engage in financial decision-making, impaired financial decisional ability was relatively rare. Only 8% of the overall sample was rated as having either "Some Concerns" or "Major Concerns" about their current decisional abilities. This small group had a significantly lower

mean FDMSES score than the rest of the sample, and an effect size near the upper end of the medium range. This result provides evidence for the hypothesis that people at-risk of poor financial decision-making have lower levels of FDMSE, but the directionality of the effect is unknown.

It may be that these individuals have a lifetime history of low FDMSE and poor decisional abilities, which limited their ability to accrue the knowledge and experience necessary for making important financial decisions. It is also feasible that FDMSE levels have decreased in response to a change in financial decisional abilities. This second possibility presupposes that people with impaired FDA have some awareness of their difficulties. Given that these individuals were all engaged in financial decision-making at the time of the study, it is unclear how much insight into their own limitations they possessed.

A third possibility is that impaired FDA increases the probability of negative financial outcomes, such as financial exploitation. These negative experiences in turn may decrease the person's FDMSE without necessarily reducing engagement in financial decision-making entirely. Support for this interpretation comes from a post-hoc analysis that repeated the FDA group comparison on the subset of participants with a history of financial exploitation. As expected, a greater percentage of people with a history of financial exploitation also had impaired FDA (27.8%) than in the overall sample. There was no statistical difference between mean levels of FDMSE based on FDA abilities within this subset of participants. This result suggests that impairment does not necessarily reduce FDMSE above and beyond the experience of financial exploitation. Considering that 62.5% of participants with impaired FDA also had a history of financial exploitation, it may be that negative financial experiences resulting from

impaired FDA are primarily responsible for decreased FDMSE rather than insight into one's own poor decisional abilities.

Although the difference between groups based on FDA was not statistically significant among people with a history of exploitation, the effect size was nearly identical to the effect observed for the full sample. The lack of a significant difference might be due to the larger amount of variance in the group with intact FDA and a history of exploitation. If a few participants with poor FDA were not correctly identified for some reason (e.g., they discussed a simple decision) but did report financial exploitation, their scores might reduce the statistical power to detect a mean difference.

**History of elder financial exploitation.** The overall rate of financial exploitation was 18%, which is similar to national prevalence estimates and more common than impaired FDA. Our hypothesis that people with a history of financial exploitation would have lower mean levels of FDMSE was supported, and the effect size was large. Again, it is not possible to determine the causal direction of this effect, but there are several possibilities.

It may be that people with low levels of FDMSE are at increased risk of being financially exploited. Low FDMSE would likely result in avoidant and impulsive decision-making and a lack of financial knowledge, which might create opportunities for exploitation to occur. People with low FDMSE may also lack the confidence to follow an appropriate course of action or seek help, creating more opportunities for exploitation or perpetuating ongoing exploitation. Due to the fact that the determination of whether an incident of exploitation occurred was made by clinicians based on information elicited during the structured interview, some participants may not have even fully recognized that they were exploited. The existence of poor insight in to the experience of exploitation would seem to support the interpretation that low FDMSE is more

likely to precede financial exploitation. However, there might be indirect effects of the exploitation that serve to reduce FDMSE without recognition of the exploitation itself.

Another explanation is that financial exploitation directly decreases levels of FDMSE. It may be that the experience of financial exploitation undermines confidence to make future decisions. This process would probably occur even, or perhaps especially, if the victim was entirely without fault in the fraud and had previously had high levels of FDMSE.

Other victims may engage in or avoid behaviors that create opportunities for financial exploitation. In these cases, there may be a feedback loop between low FDMSE and negative financial experiences, such as financial exploitation. The effects of negative financial outcomes may gradually erode the perception of FDMSE. Over time, lower FDMSE may result in behaviors that produce more negative consequences of potentially increasing levels of severity, with financial exploitation being the most severe.

Further evidence of the strong negative effect of financial exploitation on FDMSE comes from a post-hoc analysis that repeated the financial exploitation group comparison on the subset of participants with impaired FDA. As previously described, the impaired FDA group had a significantly lower mean FDMSE than the overall sample, but those with both impaired FDA and a history of financial exploitation did not differ significantly from participants with intact FDA and a history of financial exploitation.

Within the subset of people with impaired FDA, the group with a history of financial exploitation had a statistically significant lower mean FDMSE. The effect size was very large, a nearly 2 SD difference, meaning that there was very little overlap in scores between the two groups. None of the people with impaired FDA and no history of financial exploitation scored



below the mean of the other group; only one person with impaired FDA and a history of exploitation scored above the mean of the group with no history of exploitation.

Notably, the mean FDMSE for the impaired FDA group without a history of financial exploitation was slightly higher than the overall mean of the full sample, indicating that the previously observed effect of FDA on FDMSE was driven entirely by those who had both impaired FDA and a history of financial exploitation. These results further highlight the important effect of financial exploitation on FDMSE but still do not settle the causality of the effect. However, it appears very unlikely that insight into one's poor FDA decreases FDMSE. To the contrary, people with impaired FDA may have slightly above average confidence in their decision-making abilities unless they have experienced financial exploitation.

**Neuropsychological Performance.** We hypothesized that participants with a greater number of low scores on our neuropsychological test battery would have lower levels of FDMSES, and there was a significant main effect. Post-hoc comparisons showed that our hypothesis was supported for the Borderline group (4 or more scores  $< 1$  SD) compared with the both the Average (0 or 1 scores  $< 1$  SD) and the Low-Average (2 or 3 scores  $< 1$  SD) groups. The effect sizes were medium and roughly similar in magnitude. However, the Low-Average group did not differ significantly from the Average group. This result is interesting in that only two neuropsychological tests had small, significant correlations with the FDMSES, but the lowest performing group defined by overall test performance had a significantly lower mean FDMSES than the other groups. The FDMSES may be as much or more strongly related to an individual's general cognitive functioning than it is to any specific cognitive ability. For example, a variety of different profiles of cognitive weaknesses might influence FDMSE by reducing cognitive efficiency important for making financial decisions. Even still, our grouping

method appears to have captured poor cognitive performance within the Borderline group in the domains of memory and executive functioning, which are commonly associated with cognitive decline. Therefore, it may be that using cut-off scores resulted in reliable classifications because of the reduced influence of error variance from individual test scores.

There are several possible explanations for the association between cognitive functioning and FDMSE. It may be that judgments of self-efficacy are based, at least in part, on insight into one's current cognitive abilities. In this case, cognitive decline may directly reduce FDMSE. However, some participants in the Borderline group may have lower lifetime intellectual abilities and may not be experiencing a cognitive decline. People with below average cognitive abilities might never develop typical levels of self-efficacy, even if they engage in financial decision-making, or they may have fewer opportunities for mastery experiences. Another possibility is that a general lack of confidence is responsible for both low FDMSE and poor neuropsychological performance.

### **Limitations**

The present study has several limitations that may reduce the generalizability of these findings. Importantly, the items selected for the scale were chosen after the wording of items on the LFDRS interview were already established. There may be aspects of the construct that are not captured by the current scale. The development process could be improved by generating more potential items. For example, items about confidence for different types of important financial decisions (e.g., investing, saving, purchasing, giving gifts) might be sensitive to finer gradations of self-efficacy. It is also noteworthy that three of the final scale items relate to emotions. It may be that the scale is capturing variance associated with underlying emotional dysfunction, such as anxiety or depression, rather than the emotional aspects of having low or

high FDMSE. It is plausible that depressed or anxious participants would both rate their self-efficacy lower than average and perform worse on neuropsychological tests. A negative outlook might even make it more likely for such participants to disclose instances of financial exploitation or not try hard enough to explain their decision-making process well. Future research should include mood measures to account for the effects of mood.

However, it should be noted that the rates of financial exploitation would not be expected to be inflated due to mood problems because clinical judgment was used to determine instances of exploitation, regardless of the participant's opinion about the experience. Furthermore, the rate of financial exploitation in our sample is similar to studies using different methodologies. If anything, the rate of financial exploitation might be underestimated due to failure to disclose pertinent details or impaired memory. However, if this problem exists it would serve to reduce the ability to discriminate between groups based on history of financial exploitation, which was actually quite good in this sample.

The nature of the sample itself may limit the range of the scale because all of the participants were engaged in decision-making. People with very low levels of FDMSE would be expected to avoid making financial decisions, or they might be less willing to discuss the decisions that they make. Therefore, the FDMSES might be skewed towards higher self-efficacy. It is possible that the original scale items might function differently in a broader sample. For example, the risk-taking and fear about financial freedom items, which were dropped from the scale, might be relevant to people with extremely low levels of FDMSES.

Another limitation of the study is that there is no other measure of self-efficacy. It may be that the FDMSES is not sensitive to decision-making but rather to general self-efficacy. This possibility offers an alternative explanation for the lack of significant correlations between the

FDMSES and the Money Management subtest of the ILS, which was hypothesized to be too easy and therefore not sensitive to variations in FDMSE. In addition to measures of self-efficacy, a more difficult measure of financial literacy would help determine whether the FDMSES does correlate with greater financial knowledge as would be expected based on the theory of self-efficacy.

Despite these limitations, the FDMSES is a promising novel measure of a construct with great social significance. As the share of the population over the age of 60 continues to grow, the importance of the financial decisions made by older adults will have greater effect on the economy. Yet, the process of age-related cognitive change and negative socio-cultural factors in decision-making are unlikely to be effectively reduced in the near future. Financial decision-making self-efficacy may prove to be a useful point of intervention because it has been possible to increase self-efficacy for other important behaviors and produce positive outcomes.

### **Summary and Conclusion**

Overall, our goal to develop a brief, psychometrically sound measure of financial decision-making self-efficacy was successful. The scale is unidimensional and had acceptable internal consistency, which was only slightly lower than the most comparable existing scale, Lown's Financial Self-Efficacy Scale (Cronbach's  $\alpha = .73$  and  $.76$ , respectively). Hypotheses regarding the convergent validity of the FDMSES were partially supported with the strongest evidence emerging from group comparisons based on risk factors for poor decision-making. Generally, the results of this study support the need for further research on financial decision-making self-efficacy because it appears to be a unique decision-making factor for older adults. We hope that the brevity and targeted nature of the scale will make it acceptable for use in clinical practice. The FDMSES may add important information about the psychological aspect of

financial decision-making among older adults that is not captured by traditional tests of financial skills and knowledge or cognitive tests. Low scores on the FDMSES may also serve as a warning sign of elder financial exploitation, especially in the context of cognitive decline. The FDMSES might also be useful to measure the psychological effects of financial management interventions or interventions for victims of elder financial exploitation focused on recovery.

## APPENDIX

Table 1

*Descriptive Statistics of Sample Demographics*

Variable	Mean	SD	Min.	Max.	N	%
Age (Years)	71.5	7.4	60	93		
Education (Years)	15.3	2.6	9	24		
Gender						
Male					52	26
Female					148	74
Race						
Non-Hispanic White					96	48
African-American					104	52
Financial Decisional Ability						
No Concerns					184	92
Some Concerns					10	5
Major Concerns					6	3
Financial Exploitation						
No History					164	82
Exploited					36	18

SD = standard deviation.

Table 2

*Descriptive Statistics of Neuropsychological Tests*

Test	N	Mean	SD	Min.	Max.
MMSE	200	28.50	2.06	18	30
WRAT-IV Word Reading	200	57.37	8.07	30	69
Category Fluency	200	19.43	4.97	6	33
COWAT	200	38.38	12.79	9	75
BNT	198	13.88	1.40	7	15
Trail Making Test (seconds)					
A	196	41.020	20.52	10	225
B	196	108.35	56.32	37	>300
Stroop					
Words	197	85.54	15.11	36	126
Colors	191	60.91	12.10	24	91
Color Word	191	30.84	9.15	2	60
RAVLT					
Trial 1	199	5.13	1.60	2	10
Trials 1-5 Total	198	42.70	9.70	13	65
Learning Over Trials	198	17.07	7.18	-2	38
List B	198	4.77	1.59	0	9
Immediate Recall	197	8.45	3.24	1	15
Delayed Recall	198	7.91	3.69	0	15
ILS – Money Management					
Total	200	29.86	4.14	8	34
Procedural Problem Solving	200	16.02	2.37	5	18
Performance/Information	200	11.85	2.65	0	14

SD = standard deviation, MMSE = Mini-Mental Status Examination, WRAT-IV = Wide Range Achievement Test-IV, COWAT = Controlled Oral Word Association Test, BNT = Boston Naming Test, RAVLT = Rey Auditory Verbal Learning Test, ILS = Independent Living Scales.

Table 3

*Response Frequencies of Financial Decision-Making Self-Efficacy Scale Items*

Item	Question	Response 1	Response 2	Response 3
6	How confident are you in making big financial decisions?	<i>Not confident</i> 5.5 %	<i>Unsure</i> 24.0%	<i>Confident</i> 70.5%
7A& B	How often do you worry about financial decisions you recently made?	<i>Often</i> 11.5%	<i>Sometimes</i> 17.0%	<i>No worry</i> 71.5%
17	How comfortable have you been in the past with taking financial risks?	<i>Not at all comfortable</i> 42.0%	<i>Somewhat comfortable</i> 39.5%	<i>Quite comfortable</i> 18.5%
21	How often do you feel anxious about your finances?	<i>Often</i> 9.5%	<i>Sometimes</i> 29.0%	<i>Never or rarely</i> 61.5%
24	How often do you feel downhearted or blue about your financial decisions?	<i>Most of the time</i> 4.5%	<i>Some of the time</i> 38.0%	<i>None of the time</i> 57.5%
29	How fearful are you that someone will take away your financial freedom?	<i>Very worried</i> 3.5%	<i>Somewhat worried</i> 10.0%	<i>Not at all worried</i> 86.5%



Table 4

*Descriptive Statistics of Financial Decision-Making Self-Efficacy Scale Items and Total Scale*

Item	Min.	Max.	Mean	Std. Error	SD	Skewness	Std. Error	Kurtosis	Std. Error
6	1	3	2.65	.04	.58	-1.45	.17	1.11	.34
7A&B	1	3	2.60	.05	.69	-1.45	.17	.64	.34
17	1	3	1.77	.05	.74	.41	.17	-1.09	.34
21	1	3	2.52	.05	.66	-1.06	.17	-.07	.34
24	1	3	2.53	.04	.58	-.81	.17	-.33	.34
29	1	3	2.84	.03	.46	-2.78	.17	7.10	.34
Total Scale	5	12	10.3	.13	1.87	-1.12	.17	.50	.34

Table 5

*Correlation Matrix of Hypothesized Financial Decision-Making Self-Efficacy Scale Items*

Item	6	7A&B	17	21	24	29
6	1					
7A&B	.35**	1				
17	.09	.06	1			
21	.47**	.45**	.06	1		
24	.25**	.34**	.17*	.53**	1	
29	.06	.13	.00	.08	.11	1

\* $p < .05$  level. \*\* $p < .01$  level. \*\*\* $p < .001$  level.

Table 6

*Factor Loadings Based on Three Exploratory Factor Analysis (EFA)*

Item	EFA 1			EFA 2		EFA 3	
	Factor 1	Factor 2	Communality	Factor 1	Communality	Factor 1	Communality
6	.254	.582	.403	.543	.295	.539	.291
7A&B	.344	.459	.329	.544	.296	.538	.290
17	.173	-.007	.030	.111	.012	--	--
21	.530	.577	.615	.853	.728	.866	.749
24	.999	-.001	.999	.606	.368	.599	.359
29	.113	.068	.017	--	--	--	--

Table 7

*Factor Loadings Based on Three Confirmatory Factor Analyses (CFA)*

Item	CFA 1		CFA 2		CFA 3	
	Factor 1	Communality	Factor 1	Communality	Factor 1	Communality
6	.545	.297	.542	.294	.539	.291
7A&B	.551	.303	.545	.297	.538	.290
17	.113	.013	--	--	--	--
21	.845	.713	.856	.733	.866	.749
24	.611	.373	.603	.364	.599	.359
29	.123	.015	.121	.015	--	--

Table 8

*Result of Reliability Analyses of Financial Decision-Making Self-Efficacy Scale*

Item	Corrected Item- Total Correlation	Squared Multiple Correlation	Cronbach's $\alpha$ if item deleted
6	.46	.25	.70
7A&B	.49	.24	.69
21	.65	.44	.58
24	.48	.30	.69
	<u>Cronbach's <math>\alpha</math></u>		
Total Scale	.73		

Table 9

*Correlations Between Financial Decision-Making Self-Efficacy Scale, Demographics, and Psychological Test Battery*

	FDMSES	Age	Gender	Race	Education	WRAT-IV	MMSE
FDMSES	1	0.12	0.05	-0.12	0.19**	0.20**	0.05
Age	0.12	1	0.11	-0.30**	-0.01	0.11	-0.19**
Gender	0.05	0.11	1	-0.32**	0.1	0.09	-0.18**
Race	-0.12**	-0.30**	-0.32**	1	-0.23**	-0.36**	-0.14
Education	0.19**	-0.01	0.1	-0.23**	1	0.55**	0.24**
WRAT-IV	0.20**	0.11	0.09	-0.36**	0.55**	1	0.43**
MMSE	0.05	-0.19**	-0.18**	-0.14*	0.24**	0.43**	1
Category Flu.	0.04	-0.24**	-0.01	-0.13	0.07	0.17*	0.35**
COWAT	0.06	-0.07	-0.03	-0.19**	0.29**	0.54**	0.35**
BNT	0.03	-0.24**	0	-0.11	0.21**	0.32**	0.45**
TMT A	-0.13	0.32**	-0.07	0.19**	-0.20**	-0.21**	-0.27**
TMT B	-0.23**	0.26**	0.01	0.29**	-0.34**	-0.47**	-0.55**
Stroop Word	0.08	-0.12	-0.04	-0.13	0.19*	0.46**	0.41**
Stroop Color	0.14*	-0.30**	-0.09	-0.06	0.16*	0.33**	0.48**
Stroop CW	0.20**	-0.27**	0.01	-0.1	0.28**	0.36**	0.46**
RAVLT T1	-0.05	-0.25**	-0.03	-0.01	0.14*	0.23**	0.34**
RAVLT Total	0.02	-0.29**	-0.16*	-0.02	0.15*	0.26**	0.47**
RAVLT LOT	0.09	-0.14*	-0.17**	-0.02	0.06	0.1	0.27**
RAVLT List B	0.02	-0.15*	-0.12	-0.01	0.07	0.11	0.33**
RAVLT IR	-0.03	-0.26**	-0.12	-0.07	0.17*	0.21**	0.37**
RAVLT DR	-0.06	-0.32**	-0.13	-0.05	0.11	0.18**	0.39**
ILS – MM	0.05	-0.06	0.13	-0.34**	0.37**	0.49**	0.49**
ILS – PPS	0.02	-0.01	0.15*	-0.27**	0.32**	0.37**	0.28**
ILS – P/I	0.05	-0.08	0.07	-0.29**	0.29**	0.43**	0.50**

FDMSES = Financial Decision-Making Self-Efficacy Scale, WRAT-IV = Wide Range Achievement Test-IV Word Reading, MMSE = Mini-Mental Status Examination, Category Flu. = Category Fluency, COWAT = Controlled Oral Word Association Test, BNT = Boston Naming Test, TMT = Trail Making Test, Stroop CW = Stroop Color-Word, RAVLT = Rey Auditory Verbal Learning Test, T1 = Trial 1, LOT = Learning over trials, IR = Immediate Recall, DR = Delayed Recall, ILS = Independent Living Scales, MM = Managing Money, PPS = Procedural Problem Solving, P/I = Performance/Information. Entries above the diagonal are adjusted for the false discovery rate due to multiple tests. \* $p < .05$  level. \*\* $p < .01$  level. \*\*\* $p < .001$  level.

*Correlations Between Financial Decision-Making Self-Efficacy Scale, Demographics,  
and Psychological Test Battery (cont.)*

	Category Flu.	COWAT	BNT	TMT A	TMT B	Stroop Word	Stroop Color
FDMSES	0.04	0.06	0.03	-0.13	-0.23**	0.08	0.14
Age	-0.24**	-0.07	-0.24**	0.32**	0.26**	-0.12	-0.30**
Gender	-0.01	-0.03	0.00	-0.07	0.01	-0.04	-0.09
Race	-0.13	-0.19**	-0.11	0.19**	0.29**	-0.13	-0.06
Education	0.07	0.29**	0.21**	-0.20**	-0.34**	0.19**	0.16*
WRAT-IV	0.17*	0.54**	0.32**	-0.21**	-0.47**	0.46**	0.33**
MMSE	0.35**	0.35**	0.45**	-0.27**	-0.55**	0.41**	0.48**
Category Flu.	1	0.38**	0.42**	-0.30**	-0.46**	0.26**	0.44**
COWAT	0.38**	1.00	0.32**	-0.26**	-0.46**	0.40**	0.42**
BNT	0.42**	0.32**	1.00	-0.23**	-0.43**	0.28**	0.30**
TMT A	-0.30**	-0.26**	-0.23**	1.00	0.60**	-0.30**	-0.34**
TMT B	-0.46**	-0.46**	-0.43**	0.60**	1.00	-0.43**	-0.56**
Stroop Word	0.26**	0.40**	0.28**	-0.30**	-0.43**	1.00	0.68**
Stroop Color	0.44**	0.42**	0.30**	-0.34**	-0.56**	0.68**	1.00
Stroop CW	0.34**	0.47**	0.31**	-0.42**	-0.57**	0.48**	0.68**
RAVLT T1	0.26**	0.29**	0.34**	-0.18**	-0.38**	0.15*	0.31**
RAVLT Total	0.45**	0.39**	0.44**	-0.33**	-0.50**	0.25**	0.38**
RAVLT LOT	0.34**	0.20**	0.25**	-0.24**	-0.25**	0.18**	0.18**
RAVLT List B	0.29**	0.20**	0.15*	-0.20**	-0.24**	0.21**	0.20**
RAVLT IR	0.43**	0.36**	0.35**	-0.26**	-0.45**	0.13	0.28**
RAVLT DR	0.41**	0.29**	0.36**	-0.26**	-0.46**	0.10	0.27**
ILS – MM	0.22**	0.34**	0.36**	-0.42**	-0.50**	0.28**	0.20**
ILS – PPS	0.18**	0.31**	0.24**	-0.30**	-0.31**	0.25**	0.13
ILS – P/I	0.18**	0.26**	0.34**	-0.39**	-0.51**	0.21**	0.20**

*Correlations Between Financial Decision-Making Self-Efficacy Scale, Demographics, and Psychological Test Battery (cont.)*

	Stroop CW	RAVLT T1	RAVLT Total	RAVLT LOT	RAVLT List B	RAVLT IR	RAVLT DR
FDMSES	0.20**	-0.05	0.02	0.09	0.02	-0.03	-0.06
Age	-0.27**	-0.25**	-0.29**	-0.14	-0.15*	-0.26**	-0.32**
Gender	0.01	-0.03	-0.16*	-0.17*	-0.12	-0.12	-0.13
Race	-0.1	-0.01	-0.02	-0.02	-0.01	-0.07	-0.05
Education	0.28**	0.14	0.15*	0.06	0.07	0.17*	0.11
WRAT-IV	0.36**	0.23**	0.26**	0.10	0.11	0.21**	0.18**
MMSE	0.46**	0.34**	0.47**	0.27**	0.33**	0.37**	0.39**
Category Flu.	0.34**	0.26**	0.45**	0.34**	0.29**	0.43**	0.41**
COWAT	0.47**	0.29**	0.39**	0.20**	0.20**	0.36**	0.29**
BNT	0.31**	0.34**	0.44**	0.25**	0.15*	0.35**	0.36**
TMT A	-0.42**	-0.18*	-0.33**	-0.24**	-0.20**	-0.26**	-0.26**
TMT B	-0.57**	-0.38**	-0.50**	-0.25**	-0.24**	-0.45**	-0.46**
Stroop Word	0.48**	0.15*	0.25**	0.18*	0.21**	0.13	0.10
Stroop Color	0.68**	0.31**	0.38**	0.18*	0.20**	0.28**	0.27**
Stroop CW	1.00	0.37**	0.41**	0.16*	0.17*	0.34**	0.27**
RAVLT T1	0.37**	1.00	0.69**	-0.18**	0.28**	0.47**	0.50**
RAVLT Total	0.41**	0.69**	1.00	0.58**	0.40**	0.82**	0.80**
RAVLT LOT	0.16*	-0.18**	0.58**	1.00**	0.24**	0.58**	0.52**
RAVLT List B	0.17*	0.28**	0.40**	0.24**	1.00	0.21**	0.28**
RAVLT IR	0.34**	0.47**	0.82**	0.58**	0.21**	1.00	0.88**
RAVLT DR	0.27**	0.50**	0.80**	0.52**	0.28**	0.88**	1.00
ILS – MM	0.29**	0.25**	0.33**	0.19**	0.15*	0.29**	0.32**
ILS – PPS	0.21**	0.18**	0.26**	0.15*	0.11	0.18**	0.22**
ILS – P/I	0.26**	0.23**	0.29**	0.16*	0.14*	0.29**	0.30**



*Correlations Between Financial Decision-Making Self-Efficacy Scale, Demographics,  
and Psychological Test Battery (cont.)*

	ILS – MM	ILS – PPS	ILS – P/I
FDMSES	0.05	0.02	0.05
Age	-0.06	-0.01	-0.08
Gender	0.13	0.15*	0.07
Race	-0.34**	-0.27**	-0.29**
Education	0.37**	0.32**	0.29**
WRAT-IV	0.49**	0.37**	0.43**
MMSE	0.49**	0.28**	0.50**
Category Flu.	0.22**	0.18*	0.18*
COWAT	0.34**	0.31**	0.26**
BNT	0.36**	0.24**	0.34**
TMT A	-0.42**	-0.30**	-0.39**
TMT B	-0.50**	-0.31**	-0.51**
Stroop Word	0.28**	0.25**	0.21**
Stroop Color	0.20**	0.13	0.20**
Stroop CW	0.29**	0.21**	0.26**
RAVLT T1	0.25**	0.18*	0.23**
RAVLT Total	0.33**	0.26**	0.29**
RAVLT LOT	0.19**	0.15*	0.16*
RAVLT List B	0.15	0.11	0.14
RAVLT IR	0.29**	0.18*	0.29**
RAVLT DR	0.32**	0.22**	0.30**
ILS – MM	1.00	0.80**	0.85**
ILS – PPS	0.80**	1.00	0.35**
ILS – P/I	0.85**	0.35**	1.00

Table 10

*Results of Age and Education-Adjusted Hierarchical Regressions of Financial Decision-Making Self-Efficacy Scale Predicted by Neuropsychological Test*

Model	N	Step	IV	b	Std. Error	$\beta$	F	R <sup>2</sup>	$\Delta F$	$\Delta R^2$		
1	196	1	Age	.03	.02	.13	6.19**	.06				
			Education	.15**	.05	.21						
		2	Age	.05**	.02	.19	7.46***	.10			9.46**	.04
			Education	.09	.05	.13						
			TMT B	-.01**	.003	-.23						
2	191	1	Age	.027	.02	.11	5.24**	.05				
			Education	.15**	.05	.21						
		2	Age	.04*	.019	.17	5.91**	.09			6.91**	.03
			Education	.11*	.053	.15						
			Stroop CW	.04**	.016	.20						

TMT = Trail Making Test, Stroop CW = Stroop Color-Word. \* $p < .05$  level. \*\* $p < .01$  level. \*\*\* $p < .001$  level.

Table 11

*Results of t-tests Comparing Financial Decision-Making Self-Efficacy Scale Means by  
Financial Decisional Ability (FDA) and Financial Exploitation*

FDA	Intact			Impaired			<i>t</i> -test	<i>p</i>	<i>d</i>
	N	Mean	SD	N	Mean	SD			
Full Sample	184	10.41	1.83	16	9.00	1.97	2.95	.004	0.74
Exploited Only	26	9.35	2.15	10	8.00	1.70	1.77	.086	0.70

  

Financial Exploitation	No History			Exploited			<i>t</i> -test	<i>p</i>	<i>d</i>
	N	Mean	SD	N	Mean	SD			
Full Sample	164	10.59	1.69	36	8.97	2.10	4.32	<.001	0.85
Impaired FDA	6	10.67	1.03	10	8.00	1.70	3.45	.004	1.90

SD = Standard Deviation, *d* = Cohen's *d*.

Table 12

*Descriptive Statistics of the Financial Decision-Making Self-Efficacy Scale, Demographics, Financial Decisional Ability, and Financial Exploitation*

Variable	N	Average		Low-Average			Borderline		
		Mean or %	SD	N	Mean or %	SD	N	Mean or %	SD
FDMSES*	132	10.45	1.83	36	10.67	1.80	32	9.28	1.84
Age (Years)†	132	70.02	6.43	36	71.89	7.41	32	76.94	8.74
Education (Years)†	132	15.87	2.52	36	14.56	2.77	32	14.03	2.09
WRAT-IV Word Reading†	132	59.65	6.03	36	54.67	9.15	32	50.97	9.86
Gender*									
Male	27	20.5 %		12	33.3 %		13	40.6 %	
Female	105	79.5 %		24	66.7 %		19	59.4 %	
Race									
Non-Hispanic White	66	50.0 %		17	47.2 %		13	40.6 %	
African-American	66	50.0 %		19	52.8 %		19	59.4 %	
Financial Decisional Ability†									
No Concerns	129	97.7 %		35	97.2 %		20	62.5 %	
Some Concerns	3	2.3 %		1	2.8 %		6	18.8 %	
Major Concerns	0	0.0 %		0	0.0 %		6	18.8 %	
Financial Exploitation†									
No History	114	86.4 %		31	86.1 %		19	59.4 %	
Exploited	18	13.6 %		5	13.9 %		13	40.6 %	

\* = The results of a one-way ANOVA or  $\chi^2$  test are significant at the  $p < .01$  level.

† = The results of a one-way ANOVA or  $\chi^2$  test are significant at the  $p < .001$  level.

Table 13

*Descriptive Statistics of Neuropsychological Tests by Neuropsychological Performance Level*

Variable	Average			Low-Average			Borderline		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
MMSE	132	29.2	1.08	36	27.94	1.84	32	26.22	3.27
Category Fluency	132	20.86	4.50	36	18.69	4.03	32	14.38	4.38
COWAT	132	42.36	11.52	36	34.03	11.66	32	26.84	10.42
BNT	131	14.28	.85	35	13.37	1.68	32	12.81	2.04
Trail Making Test (seconds)									
A	130	36.02	10.78	35	40.42	10.85	31	62.61	38.91
B	130	84.22	26.91	35	118.83	42.02	31	197.74	67.78
Stroop									
Words	130	90.45	11.49	36	80.67	16.57	31	70.58	15.44
Colors	128	65.70	9.42	33	56.06	9.89	30	45.83	9.90
Color Word	128	34.11	7.59	33	28.48	6.24	30	19.47	8.15
RAVLT									
Trial 1	132	5.55	1.55	35	4.91	1.27	32	3.63	1.16
Trials 1-5 Total	132	46.61	7.58	35	39.14	7.39	31	30.06	7.62
Learning Over Trials	132	19.00	6.49	35	14.43	5.64	31	11.84	8.07
List B	132	5.07	1.57	35	4.60	1.54	31	3.68	1.22
Immediate Recall	132	9.65	2.63	34	6.82	3.18	31	5.10	2.53
Delayed Recall	132	9.29	3.05	35	6.20	3.58	31	4.00	2.56
ILS									
Total	132	30.85	30.85	36	28.72	4.68	32	27.03	5.28
Procedural Problem	132	16.38	2.10	36	15.36	2.64	32	15.25	2.78
Solving									
	132	12.47	1.90	36	11.36	2.97	32	9.84	3.74
Performance/Information									

SD = standard deviation, MMSE = Mini-Mental Status Examination, WRAT-IV = Wide Range Achievement Test-IV, COWAT = Controlled Oral Word Association Test, BNT = Boston Naming Test, RAVLT = Rey Auditory Verbal Learning Test, ILS = Independent Living Scales Money Management Subtests.

Table 14

*Results of a One-Way ANOVA of Neuropsychological Performance on Financial Decision-Making Self-Efficacy Scale*

	Sum of Squares	Degrees of freedom	Mean Square	<i>F</i>	<i>p</i>
Between Groups	40.90	2	20.45	6.13	.003
Within Groups	657.10	197	3.34		
Total	698.00	199			

Table 15

*Results of Tukey's Honest Significant Difference Test of neuropsychological performance on Financial Decision-Making Self-Efficacy Scale Total Score*

Group	Comparison Group	Mean Difference	Std. Error	<i>p</i>	<i>d</i>
Average	Low-Average	-.22	.34	.798	-0.12
	Borderline	1.17	.36	.004	0.64
Low-Average	Average	.22	.34	.798	0.12
	Borderline	1.39	.44	.006	0.76
Borderline	Average	-1.17	.36	.004	-0.64
	Low-Average	-1.39	.44	.006	-0.76

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**ABSTRACT****DEVELOPMENT OF A FINANCIAL DECISION-MAKING SELF-EFFICACY  
MEASURE FOR OLDER ADULTS**

by

**EVAN GROSS****December, 2016****Advisor:** Dr. Peter Lichtenberg**Major:** Psychology (clinical)**Degree:** Master of Arts

Financial decision-making is important for older adults, and many are at increased risk for elder financial exploitation due to a combination of biological, social, and psychological factors. The role of self-efficacy for financial decision-making in this population has received little attention from researchers, but evidence suggests it may be a critical aspect in motivating positive decisions and avoiding exploitation. This study developed the Financial Decision-Making Self-Efficacy Scale (FDMSES) for older adults. Participants ( $N = 200$ , mean age = 71.5) completed the Lichtenberg Financial Decision-Making Rating Scale (LFDRS) and a neuropsychological test battery. Items from the LFDRS related to financial decision-making confidence and mood were selected *a priori* based on a literature review. Factor analyses produced a four-item unidimensional scale, accounting for 42.2% of the variance with factor loadings ranging from .54 to .87 and adequate internal consistency (Cronbach's  $\alpha = .73$ ). Higher FDMSES scores were associated with better performance on tests of executive functioning, even after accounting for age and education ( $\Delta R^2$  ranged from .02 to .04), but were not associated with financial skills and knowledge. Mean FDMSES scores were lower among people with impaired financial decisional ability ( $t = 2.95$ ,  $p < .01$ ) and people with a history of elder

financial exploitation ( $t = 4.97, p < .001$ ). These findings highlight the importance of self-efficacy for making real-life financial decisions and avoiding financial exploitation regardless of basic financial abilities. The FDMSES is a brief, psychometrically sound measure for use with older adults and holds promise as a screener to detect psychological vulnerability to financial exploitation, an outcome measure for financial literacy interventions, and an addition to financial surveys.

**AUTOBIOGRAPHICAL STATEMENT**

Evan Gross received his Bachelor of Art's in Music and French Literature from Bard College at Simon's Rock. He has worked as a research assistant at the Mather LifeWays Institute on Aging and the Laboratory for Human Neuroscience at the Northwestern University Feinberg School of Medicine. He is a clinical psychology student in the neuropsychology track at Wayne State University and a pre-doctoral trainee at the Institute of Gerontology, where he works with Dr. Peter Lichtenberg on issues related to elder financial exploitation and financial decision-making.