

Financial Self-Efficacy Scale: Development and Validation of a Measurement Tool

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Abstract

Given the fact that many Americans are struggling with their daily financial management, many financial management training programs have been implemented with the aim of helping people increase their financial capability, to then lift them out of poverty. However, there is little empirical evidence about what works, what does not, and what the most effective strategy in improving individuals' financial capability is. One of the main reasons for this is the lack of standardized measurement to design rigorous studies. This dissertation aims to develop and validate a Financial Self-Efficacy Scale (FSES) to contribute to the pool of standardized measurements. The FSES was tested on 299 women who were over 18 years old living in the United States. The split-half method and internal consistency method were used to check the reliability of the scale. Content-related validity was checked by consulting an expert panel. Construct-related validity and criterion-related validity of the scale were examined by correlating the FSES with a New General Self-Efficacy Scale (NGSES). Factor analysis was also run to assess the dimensionality of the scale and provide further evidence for the reliability and validity of the scale. Results showed that the FSES had an excellent reliability coefficient alpha (.93). The scale covered all key domains in financial management. The FSES was positively correlated with the NGSES. Factor analysis showed four factors which were consistent with the common categories in financial management curricula. The FSES will serve as a reliable and valid instrument for researchers to use in program evaluation. It will be a useful tool for practitioners to assess clients' capability, facilitating the tailoring of programs to fit the needs of participants.

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Introduction

Lack of basic financial management knowledge and skills is one the main factors that lead to poverty among Americans, but overall financial literacy in America is low. A recent national survey concerning financial literacy found that a majority of Americans did not understand basic financial concepts, more than 50% did not plan ahead for retirement or unexpected circumstances, and more than 25% participated in high-risk financial behaviors (Lusardi, 2011). To address this, financial literacy education has been receiving increased attention as a sustainable way to lift people out of poverty and also as a means to empower people, especially women and certain vulnerable groups. In the United States, many financial literacy training curricula have been developed and tailored for different groups such as youth, college students, women, battered women, the elderly, and others. Despite this increase in the number of financial management programs, there are few rigorous studies that provide empirical evidence regarding the most effective strategies in the enhancement of financial capability (CFPB, 2014). One of the main reasons for this dearth of empirical studies is the lack of standardized measurement.

Most previous evaluations of financial management training programs have tended to focus on the changes in financial knowledge, savings rate, financial confidence, and changes in some financial behaviors and attitudes, and so on (Bernheim, Garrett, & Maki, 2001; Zhan, Anderson, & Scott, 2006; Weaver, Sanders, Campbell, & Schnabel, 2008; Postmus, Plummer, & Murshid, 2010). As financial self-efficacy has been found to be one of the major factors influencing the development of financial knowledge and changes in financial behaviors, several scholars have attempted to develop instruments to measure financial self-efficacy. Examples are a computer self-efficacy scale (Compeau

and Higgins, 1995); a career decision-making self-efficacy scale (Betz, Klein, & Taylor, 1996); an eating self-efficacy scale (Glynn and Ruderman, 1986); an internet self-efficacy scale (Eastin and LaRose, 2000), among others. However, measurements of self-efficacy in financial management still lack a standardized scale able to provide a precise estimation of an individual's level of financial self-efficacy.

The purpose of this dissertation is to develop and validate a self-administered online scale that measures financial self-efficacy for women over 18 years old. It aims to examine the following hypotheses: (1) the developed Financial Self-Efficacy scale (FSES) will exhibit robust psychometric properties, including a replicable factor structure and strong internal consistency reliability; (2) the FSES will positively correlate with the new General Self-efficacy scale (NGSES); (3) the FSES will have five factors which correlate positively with each other.

This dissertation relies on existing definitions of self-efficacy. In general, self-efficacy relates to people's perceived capability. According to Bandura (1997), "perceived self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p.3). Self-efficacy is different from self-esteem since it measures the individual's perception of their ability, whereas self-esteem measures one's self-worth (Bandura, 1997). Self-efficacy relates to "people's sense of being able to take control over their actions and outcomes" (Baldwin, Baldwin, & Ewald, 2006, p.1).

Terminology in this area is not yet settled. For financial literacy, there is no standard definition of this term, but most agree that the notion includes both understanding and applying financial knowledge to undertake basic financial

management (Jump\$tart Coalition, 2007; Servon & Kaestner, 2008; Vitt, Anderson, Kent, Lyter, Siegenthaler, & Ward, 2000). However, developments in the field of financial training suggest that financial capability is a more inclusive term that not only focuses on knowledge and skills but also takes into account other external factors such as access to capital, financial services, and financial policies. For instance, people who have the same financial knowledge and skills might have different financial outcomes due to racial/gender discrimination or cultural barriers. Accordingly, Johnson and Sherraden (2007) recommend financial programs focus on financial capability which includes both internal capacities and external conditions that gave people opportunities to become financially self-sufficient. The U.S. Department of the Treasury (2010) also defines financial capability as “the capacity, based on knowledge, skills, and access, to manage financial resources effectively” (p.1). Finally, there does not seem to be a standard definition of financial self-efficacy. In this study, financial self-efficacy refers to beliefs in one’s capabilities in managing their personal finances. It mainly measures people’s confidence that they can do the indicated actions and it does not measure people’s experiences.

This dissertation is organized into two main sections: (a) scale development and (b) scale testing. The scale testing section details a variety of methods to examine the reliability and validity of the scale. The scale was tested on a sample of 299 women who were above 18 years old and had lived in the United States for at least three years. The split-half method and internal consistency method were used to check the reliability of the scale. In terms of validity, the content-related validity was checked by an expert panel. The criterion-related validity and construct-related validity were checked by

correlating the results from the self-efficacy scale with the results from the New General Self-Efficacy scale (NGSE). In addition, factor analysis was run to assess the dimensionality of the scale and provide further evidence for the reliability and validity of the scale.

The results showed that the developed FSES had robust psychometric properties, including a good validity and reliability when used with women who were more than 18 years old in the United States. Its reliability analysis yielded an excellent coefficient alpha. The expert panel agreed that the scale covered all main domains of financial literacy, which is good evidence for content related validity. Correlation analysis showed that the scale was positively correlated with the NGSE scale, which was good evidence for criterion-related validity and construct related validity. Factor analysis showed a four factors scale instead of five factors as hypothesized. However, these four factors were consistent with the hypothesized five domains of financial literacy and could be used as sub-scales to measure self-efficacy in different aspects of financial literacy. All factors showed a strong reliability coefficient.

The development and testing of the FSES provides researchers, educators, and practitioners a standardized tool to measure the changes in financial self-efficacy of their clients or trainees. Researchers could use the FSES to design experimental or quasi-experimental studies which would provide empirical evidence regarding what optimally effective strategies in financial management training are. In addition it could help evaluators compare different programs and develop evidence based programs, and help practitioners choose and tailor programs to fit with the needs of participants. As the scale has been found to be valid and reliable in measuring women and battered women, it will

be an effective tool for programs that focus on enhancing women's financial capability, potentially contributing to poverty reduction among disadvantaged women.

Chapter 1: Literature Review

This study aims to develop and test a standard measurement of financial self-efficacy for women. This literature review will outline what is currently known about financial self-efficacy, especially among women, and describe some of the current measurements that are often used to measure financial self-efficacy. First, a summary of financial management programs will be provided to describe the main components of personal financial management. Second, research about impacts of these programs will be reviewed. Existing self-efficacy measures in general and financial self-efficacy measures in particular will also be discussed. Finally, Bandura's self-efficacy theory will be introduced as a theoretical framework for this study.

Financial management education has been widely implemented in the United States with the main purpose of increasing participants' financial knowledge and skills and financial self-efficacy. Many financial curricula have been developed and tailored for different populations, such as youth, middle-aged, immigrants, low-income families, and so forth. Financial management programs often provide participants with a range of knowledge and skills from basic financial management such as credit and savings to advanced financial planning such as debt management and investment. The programs can last from one week to several weeks depending on the depth of knowledge and skills. Methods of training include in-class lectures, online training modules, seminars, and workshops covering a wide range of knowledge and skills such as identifying assets and

liabilities, understanding banking options, reviewing and improving credit scores, purchasing a house or a car, budgeting, saving, and investing.

The National Endowment for Financial Education (NEFE) (n.d.) developed a set of financial education workshop kits tailored for different populations such as youth, the elderly, low income people, people with disabilities or health problems, and people in special circumstances (domestic violence, addiction). They also have a college series providing money management topics such as dealing with debt, budgeting after graduation, preventing identity theft, managing spending, saving, and financial risks, ways to control money and avoid money traps for college students.

The Federal Deposit Insurance Corporation (FDIC) (2013) developed the Money Smart curriculum for four target groups including adults, youth, older adults, and small business. The curriculum for adults consists of 11 modules covering topics relating to bank services, consumer rights, credit and credit history, checking account management, credit card management, saving, borrowing, home ownership, and financial recovery. The curriculum for youth aged 12-20 includes eight modules covering similar topics: bank services, credit and credit card management, checking account management, and savings. In addition, it includes specific topics for youth such as paying for college and cars, choosing apartments, and mortgages. The curriculum for older adults focuses on raising awareness about financial exploitation of the elderly and planning for unexpected events. It covers seven specific topics about common types of elder financial exploitation, common types of scams that target veterans and homeowners, different types of identity theft and medical identity theft, preparation for unexpected life events, and disasters. The curriculum for small businesses provides new entrepreneurs with basic information on

how to organize and manage their business. It has 10 training modules about common types of business, available banking services for small business, time management, financial management, risk management, record keeping, and tax preparation.

The Partnership for After School Education (PASE) (2007) developed a financial management curriculum “Dollars and Sense: Building Financial Dreams” for young adults age 18 to 24. The curriculum provides young adults with basic financial knowledge and skills about saving, preparing for retirement, and future financial planning for themselves and their families. It focuses on teaching young adults about savings and budgeting for daily life, how to increase their savings with different investment types, and how to critically choose the best investment options for their retirement.

Since women often have lower financial knowledge, financial confidence, and less access to financial resources than men, they have unique and specific financial education needs (OECD, 2013). In response, the Women’s Institute for Financial Education (WIFE) has developed training materials to teach women about savings and investing, budgeting, and preparing for retirement. Besides basic financial management topics, WIFE prepares women for life after divorce or widowhood (WIFE, n.d.).

Several financial management training curricula specifically targeted for battered women have also been developed: *Hope and Power for Your Personal Finances* (National Endowment for Financial Education & National Coalition against Domestic Violence, 2000); *Personal Economic Planning* (PEP) (VonDeLinde & Correia, 2005); *Redevelopment Opportunities for Women’s Economic Action Program* (REAP) (Sanders, Weaver & Schnabel, 2007); and *Moving Ahead through Financial Management* (Postmus, Plummer, & Murshid, 2010). Curricula for battered women often incorporate

knowledge about economic abuse, strategies to deal with financial and safety challenges after divorce, and strategies to address challenges after financial records have been misused by the abusers (Allstate Foundation, 2009).

Johnson and Sherraden (2007) argued that financial management programs which only focused on knowledge and skills failed to take into account other external factors such as access to capital, financial services, and financial policies. For instance, people who have the same financial knowledge and skills might have different financial outcomes due to racial/gender discrimination or cultural barriers. Low income people are also less likely to have savings accounts. Therefore, Johnson and Sherraden (2007) suggested financial programs should focus on financial capability which includes both internal capacities and external conditions that give people opportunities to become financially self-sufficient.

Several financial education programs have adopted the latter approach and have added savings accounts, matched savings accounts, or investment clubs to their financial education programs. For example, the Save for America program offers no-fee savings accounts for youth who participate in a financial education program at school (Save for America, 2012). Juma Ventures, a non-profit organization focusing on youth, also offers matched saving accounts with youth's savings are matched 1:1 or 3:1, depending on the saving goals, such as education, homeownership, computer purchases, etc. (Juma Ventures, 2011).

There are many factors suggesting a need for an enhanced financial capability. In general, Americans often have limited financial capability. A recent national survey with 1,488 American adults found more than 50% of the respondents did not plan ahead for

retirement and children's college education. Only 49% of respondents said they set aside some money for an emergency fund which could cover three months of expenses.

Regarding financial product usage, about 12% of the population were unbanked (do not have checking, savings, or any type of banking accounts). More than 25% of respondents reported using high-cost borrowing methods such as payday loans, advances on tax refunds, and pawn shops. It is also alarming that more than 10% of the people who had a mortgage did not even know what their down payment was or the mortgage interest rate. A majority of respondents had limited knowledge of basic economic principles such as inflation, risk management, or interest compounding (Lusardi, 2011).

The situation regarding youth financial literacy is not much brighter. Graduates are facing increasing student loans (58% increase from 1997 to 2007) (Reed, 2008) and credit card debt (a 74% increase in 2009 compared to 2004) (Sallie Mae, 2009). A recent report on youth financial literacy also found that more than 50% of respondents aged 12-17 did not understand basic financial concepts (Lusardi, Mitchell, and Curto, 2010). Lusardi and colleagues (2010) also found that financial literacy was highly correlated with socio-demographic factors such as gender, education level, and family background. For instance, college males who grew up in families that have savings and investments are 45% more likely to know about risk diversification than females who have a high school diploma and who grew up in poor families with no savings.

Effects of Financial Literacy Programs

The effects of financial literacy programs have been examined in several studies. For example, Bernheim, Garrett, and Maki (2001) conducted a cross-sectional household survey with a national sample of adults aged 30 to 49 regarding the long term effects of

the financial education mandate in high school. They collected information about the subjects' current incomes, savings, assets, liabilities, and demographic data, and then cross-referenced this information with the years of high school attendance to compare students who were exposed to financial education during their education and those who were not. The study found that the savings rate of the group that had financial education was 4.15% higher than the group which did not have financial education (Bernheim, Garrett, & Maki, 2001).

The effects of financial education vary depending on participants' characteristics. Zhan, Anderson, and Scott (2006) conducted a pre-test, post-test study to measure the impacts of the Financial Links for Low Income People (FLLIP) program on 163 participants and found that while the training improved the knowledge of participants in all key financial areas, the levels of impacts were associated with the level of English proficiency, race/ethnicity, marital status, and level of education. For example, Hispanic participants averaged higher scores than other racial groups; married people had lower scores on average than singles; and participants who held at least a high school diploma averaged higher scores than people who did not. The study used 48 true-false and multiple choice questions that covered five areas of financial management such as “predatory lending practices, public and work-related benefits, banking practices; savings and investing strategies; credit use and interest rates” (Zhan, Anderson, & Scott, 2006, p.58).

In another evaluation of financial programs for adolescents and high school (NEFE High School Financial Planning program), Danes and Brewton (2009) used a 17 question survey which included 9 questions about financial behavior, 7 questions about

financial knowledge, and 1 question about financial confidence. They used the post- then pre-test method to measure the changes. Students were surveyed right after the training, then they were asked about what they knew before the training using the same set of questions; finally, they were asked again three months after the training using the same measurement. The study found that students' financial knowledge, behavior and confidence increased right after taking the training. These changes were sustained by applying this knowledge into practice during the three months following the training (Danes & Brewton, 2009).

The outcome evaluation study of the Redevelopment Opportunities for Women's Economic Action Program (REAP) with battered women conducted by Sanders, Weaver, and Schnabel (2007) was one of the early studies examining the impacts of financial literacy programs specifically for battered women. It utilized a quasi-experimental design in which two domestic violence shelters were selected to implement the training and two other similar shelters were selected for comparison purposes. Data were collected simultaneously for both groups following the class schedules. The REAP program included four class sessions, each lasting three hours, covering four topics: money and power; budgeting; building and repairing credit; and banking and investing. It focused on helping the women build a good credit history and become financially independent from the abusers.

This study measured the training impacts in terms of financial literacy and financial self-efficacy among REAP participants compared to non-participants. Measurement to assess financial literacy was developed based on the main components of the curriculum. It included 35 items covering factual knowledge about financial

management. The participants rated themselves on a 4-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). The higher the participants' scores, the higher their level of financial literacy. Cronbach's alpha for this measure was .81 (Sanders, Weaver, & Schnabel, 2007).

To measure financial self-efficacy, the REAP study used a sub-scale of the Domestic Violence-Related Financial Issues scale (DV-FI) which included 5 items asking about financial self-efficacy. The DV-FI scale is a multidimensional scale that includes 23 items and has five sub-scales, namely "financial self-efficacy, financial security and future safety, perceived financial role in partner abuse, economic abuse, and financial distress and relationship decisions) (Weaver, Sanders, Campbell, & Schnabel, 2009, p.581). Cronbach's alpha for each factor is .86, .80, .75, .78, and .78 respectively (Weaver et al., 2009).

More recently, Postmus et al. (2010) completed a process evaluation of the Moving Ahead through Financial Management program for battered women. The program provides training for DV advocates and volunteers in working with DV victims as they work on their independent financial management. The curriculum covers strategies in locating financial resources, managing financial issues including financial problems during and after divorce, safety issues for DV victims, and strategies in building personal finances. The research team conducted interviews (either in person or by phone) with more than 100 participants who have at least attended either the individual or group session from domestic violence agencies and shelters in 10 states. Each had three rounds of interviews. Researchers also conducted interviews with 18 key stakeholders. Each had two rounds of interviews. The study measured the following

variables: economic, psychological, and physical abuse experiences, financial literacy, economic empowerment, economic self-sufficiency, economic self-efficacy, quality of life, and depression. They used the definition of economic self-sufficiency from Gowdy and Pearlmutter (1993) in which economic self-sufficiency is defined as “the manifestation of a wide range of behaviors related to financial management.” Their definition of economic self-efficacy, cited from Weaver, Sanders, Campbell, and Schnable (2009) is one’s belief in having enough resources and confidence to complete financial tasks. Economic self-efficacy was measured by the five-item financial self-efficacy sub-scale of the DV-FI scale. The findings showed a significant improvement in financial literacy, economic self-sufficiency, and economic self-efficacy. Other outcomes such as economic, psychological, and physical abuse, depression, and quality of life were not significant.

The frameworks used to evaluate the outcomes of financial education programs vary, depending on the purposes of the study, its research questions, and available resources. It also depends on what are considered reasonable outcomes in the evaluation time frame (Sebstad, Cohen, & Stack, 2006). For example, Kirpatrick (1994) introduced a four- level framework to evaluate both short term and long term outcomes of training in general. The first level is evaluating participants’ reactions to the training, which is similar to doing a satisfaction survey. In this level, the evaluators mainly explore whetherthe participants like the training, which part of the training they like, and how they rate the training, and it also secures feedback to improve the training. This is often the first and simplest step in most training evaluations; however, it provides evidence about the favorability of the program. The second level is evaluating learning, in which

the evaluators attempt to measure changes in the knowledge, skills, and attitudes of the participants. This is an essential part of every training evaluation, providing evidence regarding the short term outcomes of the training. The third level is evaluating behavior. This level is more difficult, since it takes time to change behavior, and participants also need opportunities to show the changed behavior. The fourth level is evaluating training results. This is the final and most difficult level, in which the evaluators try to measure the distal outcomes and final results of the training.

Sebstad, Cohen, and Stack (2006) also proposed a framework to evaluate the outcomes and impacts of financial education. They proposed that the input variables should not be just the training itself, but should also include participants' financial learning experiences (e.g., social networks and exposure to good financial practices) as learning outcomes are affected by social factors. In their evaluation framework, the first level of financial literacy outcomes includes financial knowledge, skills, and attitudes. The second level of outcomes includes financial behaviors and practices. The long-term impacts can be increased assets, savings rate, and so forth.

Recently, in an effort to help evaluate financial management programs, the Consumer Financial Protection Bureau (CFPB) developed a working definition of financial well-being based on open-ended interviews with 59 adult consumers, 30 financial practitioners, and consultation with experts (CFPB, 2015). The definition was comprised of four main elements, including "having control over day-to-day, month-to-month finances; having the capacity to absorb a financial shock; being on track to meet your financial goals; and having the financial freedom to make the choices that allow you

to enjoy life” (CFBP, 2015, p.19). Among these, the first and fourth elements apply to the present and the second and third elements concern individual’s future well-being.

Most evaluation studies focused on measuring the changes in knowledge, skills, and financial self-efficacy. However, findings of these studies are limited due to lack of rigorous design. One of the barrier and challenges in designing rigorous evaluation studies is the lack of standardized measurements.

Self-efficacy theory

This section presents self-efficacy theory as a theoretical framework on which this dissertation is based. The construct of self-efficacy was first introduced in the 1970s by Bandura – a psychologist and professor at Stanford University. During his life time, he once served as President of the APA and received several awards for his contribution to psychology development, including the Distinguished Scientific Contribution Award of the American Psychology Association, and the Distinguished Scientist Award. Bandura is the father of social learning theory and social cognitive theory and has contributed tremendously to the development of psychology (Pajares, 2004).

Since its inception, self-efficacy has been studied from different perspectives which could be grouped into two main approaches (a) motivational theories which perceive self-efficacy in regard to motivation, and (b) cognitive theories which perceive self-efficacy in regard to “expectancies” and “perception of control” (Gecas, 1989, p.292). The main difference among these approaches is the emphasis on control. The motivational theories focus on the “motivation of control”, whereas the cognitive theories focus on the “experience of control” (Gecas, 1989, p.292). This dissertation considered

self-efficacy from a cognitive theoretical perspective, and Bandura's social cognitive theory was reviewed to understand the construct of self-efficacy.

Bandura's social cognitive theory originated from his social learning theory. In 1963, Bandura published the book "*Social learning and personality development*" which explained the process of learning as a cognitive process that happened via observation of the behavior itself and observation of the reward or punishments for that behavior, which was known as vicarious experience. However, in 1970s, Bandura started recognizing that his social learning theory was missing one key element, which was self-beliefs. He published the article "self-efficacy: toward a unifying theory of behavior change" in 1977 and proposed an integrative theoretical framework to behavior changes and how self-efficacy influenced these changes. He developed this theory further and called it 'social cognitive theory' in his book "Social Foundations of Thoughts and Actions: A Social Cognitive Theory" published in 1986 (Pajares, 2002).

The foundation of Bandura's (1986) social cognitive theory is "triadic reciprocity", which illustrates the interaction among three factors, behavior, environmental, and personal factors (p.77). Behavior refers to skills and actions. Environmental factors refer to aspects such as social context and situation. Personal factors are cognition, self-efficacy, or self-confidence (Bandura, 1986). For example, in order to improve the trainees' financial literacy, if using a social cognitive theory framework, the trainer would have to improve their financial related knowledge and skills (behavior), their access to capital or environment that allows them to have more chances to practice their skills (environment), and their confidence in their ability to realize the skills (personal).

However, as suggested by Bandura, these factors are not equal. Among these three, personal factors play a key role in initiating and maintaining the behavior, and among all the cognition that affects human functioning, self-efficacy plays a central part in social cognitive theory. The main idea in self-efficacy theory is that people's lives are guided by their perceived beliefs in their capabilities. People with high self-efficacy tend to view challenges as something to overcome and master. Conversely, people with low self-efficacy tend to believe that they could not overcome these challenges, and therefore they often avoid challenges and choose easier tasks to do.

In his self-efficacy theory, Bandura (1977) also distinguished between “efficacy expectations” and “outcome expectations.” “Efficacy expectations” are “the conviction that one can successfully execute the behavior required to produce the outcomes” (Bandura, 1977, p.193). This is the judgment about one's capabilities in performing a certain behavior. “Outcome expectations” is defined as “a person's estimate that a given behavior will lead to certain outcomes” (Bandura, 1977, p.193). This is a judgment about the individual's environment. According to Bandura (1977), the “efficacy expectation” determines the initiation as well as the maintenance of action. An individual might believe that a certain behavior will result in a certain outcome; however, if they doubt their ability to perform that behavior, then that belief does not affect their action. For instance, if an individual does not believe that he/she could save regularly, then even if they believe that regular saving leads to financial stability, they might not start saving or will barely be able to maintain their saving habit. This is the main development in Bandura's social cognitive theory in which he believes that self-efficacy plays a determinant role in behavioral change.

In his most recent book *Self-efficacy: The exercise of control* (1997), Bandura developed the concept of self-efficacy further and put it within the context of human agency. In this development, Bandura (1997) stated that self-efficacy is the key component in human agency, in which he defined “agency” as “acts done intentionally” (p.3). In this case, self-efficacy is considered the main source of power to make changes. If people do not believe that they are able to implement the actions, then they will do little to initiate the actions. In addition to “triadic reciprocity” in social cognitive theory, Bandura in this book emphasized that “human agency” operates within its social structural system and “people are both producers and products of social systems” (Bandura, 1997, p.6). People are impacted by sociostructural factors but also change these factors. People with a high level of self-efficacy tend to be able to make use of the advantageous situations or figure out ways to overcome disadvantageous situations, whereas people with a low level of self-efficacy are less able to take advantage of opportunities and quickly feel discouraged by difficulties (Bandura, 1997).

To test his hypothesis that one’s self-efficacy determine whether he/she starts a new behavior, the effort that he/she will put into the change, and the sustainability of the change, Bandura then conducted some experimental studies with people with severe phobias and another experiment in treatment to reduce emotional arousal in order to test the relationship between self-efficacy and behavioral change. Results showed that self-efficacy is positively correlated with initiation and maintenance of the behavior change. The higher the self-efficacy, the more effort people will put into the change, and the longer that they will maintain the change (Bandura, 1977).

According to Bandura (1977, 1997), the level of self-efficacy is based on the four following factors: “enactive mastery experience, vicarious experience, verbal persuasion, physiological and affective states.” “Performance accomplishment” refers to the personal experiences with successful performance in the past. Repeated successes help strengthen self-efficacy. Once a certain level of self-efficacy is established, occasional failures will not have much negative impact on one’s self-efficacy. Enhanced self-efficacy in one area of functioning will greatly help with other similar functioning and support to some extent with other different areas. For example, an increased level of self-efficacy in dealing with a certain animal phobia will also help reduce fear of other animals and can also help reducing social anxiety in some circumstances.

“Vicarious experience” refers to the experience of observing other people succeed in overcoming certain challenges without negative consequences (Bandura, 1977, 1997). Observing other people succeed can help increase one’s belief that they could also do similar things if they put in enough effort. In addition, modeled behaviors may help increase self-efficacy better if the modeling has specific outcomes. For instance, seeing others successfully manage their finance with clear outcomes of debt reduction and increased savings would help one have more confidence and motivation in finding ways to better manage their own finances. Observing a wide variety of people with different characteristics and circumstances also helps increase self-efficacy better, giving observers no reasons to excuse themselves from believing that they can perform similar activities.

“Verbal persuasion” refers to the idea that people can be talked into believing that they can perform a certain activity (Bandura 1977, 1997). Verbal persuasion has limited effect in enhancing self-efficacy compared to the personal experiences of success or

directly witnessing how others succeed. However, verbal persuasion combined with provision of necessary support to succeed can have a good effect in strengthening efficacy. Verbal persuasion without any support to facilitate successful action can lead to failure, which will negatively affect one's self-efficacy.

“Emotional arousal” is another factor that can affect self-efficacy. According to Bandura (1977, 1997), people's fear and anxiety are partly influenced by their emotions. Negative emotions can increase anxiety, which will impede successes. Successful experiences in the past can help reduce negative emotions and fears. “Vicarious experience” can also help reduce anxiety. Controlling “emotional arousal” is important in reducing “avoidance behavior” and keep people on task (Bandura 1977, p.199).

Pajares (2002) also stressed self-efficacy was not always consistent with outcomes. In general, high self-efficacy leads to high performance and good results. For example, students who have high self-efficacy in math are more likely to have better performance in math and better results than students with low self-efficacy in math. However, this is not always true. Jernigan (2004) conducted a mixed method study to explore students' beliefs about learning and their motivation. She surveyed 101 students who were taking Portuguese classes and four student advisors at University of Texas, Austin and conducted phone interviews with seven students who dropped out before completing the course, six auditing students and five students whose surveys need further information. She found that self-efficacy did not always transfer to better education outcomes. Students with too much self-efficacy might be less motivated to work hard on studying a language. Students with less self-efficacy might try harder since they think

that they are naturally bad at language and they need to work harder to master the language.

Self-efficacy is different from other self-related concepts such as self-esteem. These terms are sometimes used interchangeably as they fall into the same category; however, they measure completely different things. Self-esteem is an evaluation of self-worth (Bandura, 1997). Smith and Mackie (2007) also defined self-esteem as an overall judgment of the self, which was subjective and emotional. The main distinction among the two concepts is that self-efficacy measures one's perceived capability, whereas, self-esteem measures one's perceived self-worth. Self-efficacy tends to be task-specific, whereas self-esteem is often at the domain level (Pajares, 1997).

Other scholars distinguish the difference between these two concepts based on the sources of development. Marsh, Walker, and Debus (1991) made the distinction that a person's self-esteem comes from their comparisons of their own performance with others or with their own performance in other similar activities such as "I am stronger than my brothers" or "I am better at math than history". By making these comparisons, one develops their judgment of self-worth. In contrast, the judgment of one's self-efficacy comes from their experience in successful performance in a given task in the past or their observation of others' success.

According to Bandura (1997), there is no direct relationship between self-efficacy and self-esteem. A person having a high level of self-efficacy does not mean that person also has high self-esteem, and vice versa, a person with high level of self-esteem does not necessarily have high self-efficacy. For example, individuals who consider themselves as incapable of managing their finances do not necessarily evaluate

themselves poorly if they do not put much value in financial management. On the other hand, it takes more than self-esteem to perform well in a given task. Some people might have low expectations of their performances, and thus enjoy high self-esteem resulting from successful performances; however, their self-efficacy in these performances remains low.

Existing measurements about self-efficacy

There have been quite a few self-efficacy scales developed since the inception of the self-efficacy concept. In general, self-efficacy scales usually use three approaches: (a) general measures (Gecas, 1989; Sherer et al., 1982); (b) domain – specific measures (e.g. Health Locus of Control Scale (Wallston, Wallston, Kaplan, & Maides, 1976); college academic self-efficacy (Owen & Froman, 1988); occupational self-efficacy scale (Schyns & Collani, 2002); physical self-efficacy scale (McAuley & Gill, 1983); and the most common approach is (c) task-specific measures (e.g. Entrepreneurial Self-efficacy Scale (McGee, Peterson, Mueller, & Sequeira, 2009); Interpersonal Skills Efficacy Scale (Munson, Zoerink, & Stadulis, 1986); Counseling Self-Estimate Inventory (Larson et al., 1992); Career Counseling Self-Efficacy Scale (O'Brien, Heppner, Flores, & Bikos, 1997); a computer self-efficacy scale (Compeau & Higgins, 1995); a career decision-making self-efficacy scale (Betz, Klein, & Taylor, 1996); an alcohol abstinence self-efficacy scale (DiClemente, Carbonari, Montgomery, & Hughes, 1994); a breastfeeding self-efficacy scale (Dennis & Faux, 1999)); an eating self-efficacy scale (Glynn & Ruderman, 1986); a coping self-efficacy scale (Chesney, Neilands, Chambers, Taylor, & Folkman, 2006); an exercise self-efficacy scale (Shin, Jang, & Pender, 2001).

All of these measurements structure their scales around the level of confidence in implementing the desired tasks. All of them use a Likert scale, except one which used Yes/No questions (i.e. Physical self-efficacy scale, (McAuley & Gill, 1983)). The Likert scales ranged from 4 to 10 point Likert scales. All of the aforementioned studies reported some evidence of validity and reliability. The reliability evidence is mainly based on the coefficient alpha. Ten out of the 14 scales reviewed have a coefficient alpha over .85, with the lowest coefficient alpha being .72. Validity evidence included construct validity, content validity, concurrent validity, and predictive validity. Ten out of the 14 scales reviewed used factor analysis. Factor analysis, reliability analysis, and construct validity were the most common types of analyses used in these studies. In most studies, the authors provided evidence for construct validity by correlating their scales with other scales; however, some studies demonstrated construct validity through factor analysis. Please see Appendix A for more information about all reviewed self-efficacy scales.

The development of self-efficacy scales started in the late 1970s and early 1980s. Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs, and Rogers (1982) developed the first general self-efficacy scale comprised of two sub-scales: a general self-efficacy subscale (17 items) and a social self-efficacy subscale (6 items). The items were developed in three main areas, including “willingness to initiate behavior;” “willingness to expend effort in completing the behavior;” “persistence in the face of adversity.” Sherer et al. (1982) tested the scale on a sample of 376 students in introductory psychology classes. The construct validity of the scale was examined by correlating it to six other personal characteristics measures, including the Internal-External Control Scale (I-E) (Rotter, 1966); the Personal Control Subscale of the I-E Scale (Gurin, Gurin, Lao, &

Beattie, 1969); the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1964); the Ego Strength Scale (Barron, 1953); the Interpersonal Competency Scale (Holland & Baird, 1968); and the Self-esteem Scale (Rosenberg, 1965). The General self-efficacy factor has a moderate correlation with the six scales ranging from -.287, -.355 to .431 or .451 and went in the expected directions. The social self-efficacy showed a weak correlation with five scales, except a moderate positive correlation with the Interpersonal Competency (.432). In addition, the authors checked the criterion validity by analyzing its correlation with past successes in jobs, education, and military experiences. The results showed a weak correlation, mostly under .3 except the correlation with number of times fired being -.304. The alpha coefficient for the general self-efficacy sub-scale was .86, and for the social self-efficacy sub-scales, .71 (Sherer et al., 1982).

Chen, Gully, and Eden (2001) critiqued Sherer's general self-efficacy scale (SGSE) for its low content validity. Chen and colleagues then developed a new General Self-efficacy Scale (NGSES) and compared it to the SGSE scale. The NGSE included the seven items in Sherer's SGSE and seven additional new items. The items were scored on a Likert scale from strongly disagree (1) to strongly agree (5). It was tested with 316 undergraduate students in psychology classes. Based on the items' face validity, factor loading, and correlations, the authors removed six items and left the NGSES to have eight items only.

The content validity of the scale was checked by two student panels, one comprised of 8 students in industrial and organizational psychology and 14 undergraduate students in a psychology class. They gave students a list of 35 mixed items from three scales (8 items from NGSES, 17 items from SGSE, and 10 items from the

Rosenberg's self-esteem scale and asked students to rate whether the items were similar to the provided definition of GSE and self-esteem. The results showed that the NGSES was more related to the definition of general self-efficacy than the SGSE. They also asked the students to answer the Rosenberg (1965) Self-Esteem 10 item scale to examine the discriminant validity. Results showed that these two scales were distinct but also highly related with a high correlation of .87. The test-retest analysis also yielded that the scale was stable ($r=.67$). The scale had a coefficient alpha of .85 (Chen et al., 2001).

However, one's self-efficacy often varies depending on the specific task that person needs to achieve (Bandura, 2006). An individual with high level of general self-efficacy might not have high level of financial self-efficacy. Therefore, general self-efficacy measurements have limited prediction when measuring specific tasks. That is why researchers desiring to measure a specific task-related self-efficacy need to develop a separate self-efficacy measure for that particular task. For instance, McGee, Peterson, Mueller, and Sequeira (2009) developed an entrepreneurial self-efficacy scale to measure the confidence of individuals in four areas of entrepreneurial tasks, including: (a) searching (identifying entrepreneurial opportunities); (b) planning (transforming ideas into activities); (c) marshaling (gathering necessary resources to do the plan); and (d) implementing (carrying out and managing the plan). The scale was tested on a large pool (N=303) of "nascent entrepreneurs" (people who are starting their own businesses) (McGee, Peterson, Mueller, & Sequeira, 2009, p. 973). The authors reduced the number of total items from 26 to 19 after the factor analysis and found that the scale has five factors including searching, planning, marshaling, implementing-people and implementing-financial. The coefficient alphas of each factor were all above .80. The

results also showed that each item had a good discrimination index which meant each item measured a distinct construct but all measured a similar concept. The Confirmatory Factor Analysis showed a good result with CFI = .96, TLI = .95, and RMSEA = .06. This study contributes to the field with an ESE measurement based on specific tasks. It also creates a good model for an entrepreneurial education program, suggesting these programs should consider the multi-dimensional and sequential aspects of entrepreneurial tasks (McGee, Peterson, Mueller, & Sequeira, 2009).

The domain specific self-efficacy scales which focus on measuring several similar tasks that could be grouped together under one domain are not very common. As listed in the Appendix A, there are four scales of this type so far. For example, Wallston and his colleagues developed two Health Locus of Control scales: one was an 11 item unidimensional scale in 1976 and another was an 81 item multidimensional scale in 1978. The multidimensional scale is comprised of three subscales reflecting three dimensions of belief on health locus of control: internality (IHLC); powerful others (PHLC); and chance (CHLC) externality. The unidimensional scale was provided with some initial psychometric values with a coefficient alpha of .72 and evidence for the concurrent validity (Wallston et al., 1976). The multidimensional scale was not fully tested until 1982. Windfield (1982) tested this scale on more than 150 medical and dental students and examined the validity and reliability of the scale. Results showed that the test-retest reliability was good for IHLC and PHLC, but not for CHLC. The CHLC also had low internal consistency with coefficient alpha of .49. The predictive validity of these subscales was low and they are not good predictors for other health relevant behaviors (Windfield, 1982).

In terms of the financial management area, there are several non-standardized measurements to measure financial knowledge, behaviors, and attitudes that were developed mainly for particular studies. In their recent book, Grable, Archuleta, and Nazarinia (2011) compiled a list of financial planning and counseling scales. Although the book had more than 300 pages listing all the measurements related to financial knowledge and management, financial related attitudes and behaviors, there were only three sets of financial self-efficacy items with one having two items and two having one item each. Danes, Huddleston-Casas, and Boyce (1999) developed a financial self-efficacy change scale with two items “I believed the way I managed my money would affect my future; I feel confident about making decisions that dealt with money” with a five-point Likert scale from 1 (almost never) to 5 (almost always). Then, in another study, Danes and Haberman (2007) developed two other financial self-efficacy scales, each of which had one item. One was “I believe the way I manage my money will affect my future” with scoring from 1 (strongly disagree) to 5 (strongly agree). The other was “I feel confident about making decisions that deal with money” with scoring from 1 (almost never) to 5 (almost always). These scales were developed to use in evaluation studies and the reliability and validity of these scales were not reported.

Dietz, Carrozza, and Ritchey (2003) developed a financial self-efficacy scale to examine whether financial self-efficacy explains gender differences in retirement saving strategies. The scale included three items which were adapted from the Pearlin global mastery scale (Pearlin & Schooler, 1978), which are “I have little control over financial things that happen to me; I often feel helpless in dealing with the money problems of life; There is little I can do to change many of the important money issues in my life”. The

reliability coefficient alpha reported was low at .69 and there is no validity evidence for this scale. Although the author mentioned that they ran a Confirmatory Factor Analysis (CFA) and all three items have item loadings more than .7, there was neither a report about the dimensionality of the scale nor the construct validity of the scale. The content validity of this scale was weak as the items do not cover all aspects of financial self-efficacy.

Weaver, Sanders, Campbell, and Schnabel (2009) developed a financial self-efficacy scale as a sub-scale in the DV-FI measure. The DV-FI scale includes 24 items with five factors. There are financial self-efficacy, financial security and future safety, perceived financial role in partner violence, economic abuse, and financial distress and relationship decisions. The scale was tested on a sample of domestic violence victims at a shelter, with $N=113$.

Financial self-efficacy in this study was a five item sub-scale in the DV-FI measurement, covering an individual's confidence in selected financial management tasks such as credit card debt, credit rating, employment, and education opportunities. The items were worded in terms of confidence such as "I am confident that I can meet my goals for becoming financially secure; I am confident that I can meet my goals for eliminating credit card debt; I am confident that I can meet my goals for improving my credit rating; I am confident that I can meet my goals for obtaining adequate employment; I am confident that I can meet my goals for accessing educational opportunities" (Weaver et al., p. 577).

The coefficient alpha was .86 for the sub-scale of financial self-efficacy. Construct validity was tested by exploring the correlation between five factors of the DV-

FI scale with the Family Resource Scale (Dunst & Leet, 1987), Conflict Tactics Scale (Straus, Hamby, Boney-McCoy, & Sugarman, 1996), and Psychological Maltreatment of Women Inventory (Tolman, 1999). The Financial self-efficacy sub-scale was found to be positively correlated with the Family Resource Scale; however, the correlation with other scales was not significant (Weaver et al., 2009). The test-retest reliability was examined by the stability coefficient of the test scores two weeks apart for the comparison group (n=35). The financial self-efficacy sub-scale showed a moderate stability over 2 weeks ($r = .62$).

Despite some evidence about reliability and validity, the Financial Self-Efficacy sub-scale (Weaver et al., 2009) has a number of limitations. First, this sub-scale includes only five items, which do not cover all major domains of financial management. Second, the authors tested the construct validity by examining the correlation with the Family Resource Scale which is not relevant to self-efficacy. Third, as the authors of this study also agree, results of this study only apply to women living in shelters. Further study needs to examine its validity and reliability with DV victims who do not seek shelter help.

Recently, Lown (2011) developed and tested a 6 item financial self-efficacy scale for researchers, educators, counselors, and advisors. The financial self-efficacy scale was developed based on Schwarzer and Jerusalem's (1995) General Self-Efficacy Scale (GSES). The author used four items from the original GSES scale and added six more items about financial management related tasks and used a four point Likert scale from 1 (not true at all) to 4 (exactly true). The scale was distributed online to university employees.

Results showed that the scale had a modest coefficient alpha of .76. Criterion related validity was checked through correlation with the Retirement Personality type (RPT) scale. Although the correlation was positive and significant, the question was about the suitability of using the RPT as a criterion. The RPT scale was used to identify different types of people in terms of retirement savings attitude and had limited validity in measuring people's confidence in saving for retirement.

Although the author adapted the General Self-efficacy items to create a measure of financial self-efficacy, factor analysis results showed that the scale contained two distinct factors: general self-efficacy and financial self-efficacy (Lown, 2011). Therefore, the goal of developing a robust financial self-efficacy was not realized.

Clearly there is a need for a better measure of financial self-efficacy to use in program evaluation and practice. This dissertation attempts to develop and test a standard financial self-efficacy scale for use by evaluators, researchers, social workers, and trainers. In the financial management area, women tend to have less knowledge about financial literacy, are more intimidated in financial decision making, and are less confident in investing money (Anthes & Most, 2000). A recent study also found that women had lower financial self-efficacy than men, which influenced their investment behavior. The lower financial self-efficacy made women choose less risky investment options (Montford & Goldsmith, 2015). Therefore, this dissertation focuses on developing and testing the scale on women only.

Chapter 2: Research Methods

This dissertation was built on an earlier study (here called the pre-dissertation study) which was conducted to provide the basis for the current study. The pre-dissertation study focused on developing a financial self-efficacy scale for battered women. The scale development and scale testing in the pre-dissertation study included the following steps:

Pre-dissertation study

1. Scale development:

a. Literature review

The literature discussing self-efficacy concepts, financial self-efficacy and previous studies using any kind of financial self-efficacy measures to evaluate the impacts of financial literacy programs on participants' financial self-efficacy, financial literacy programs and studies evaluating financial literacy programs was reviewed. In addition, literature concerning domestic violence, empowerment for women in domestic violence situation, financial literacy training for battered women was also included.

The financial self-efficacy construct was operationalized based on different financial literacy curricula. From reviewing literature and curricula of financial literacy programs, five main categories of financial management were identified, including: (1) cash flow and debt management, (2) repair and building credit, (3) financial goals development, (4) saving and investing, and (5) taxation and financial protection (See Table 1).

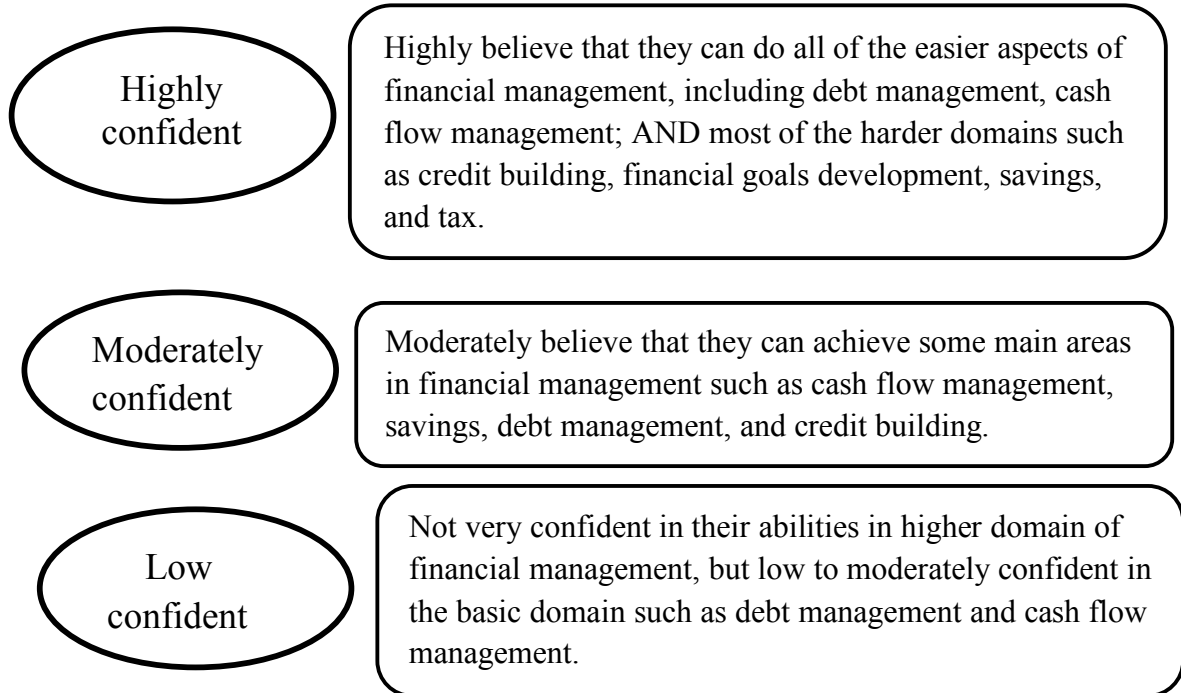
Table 1

Definition of each category of financial management

Categories	Definition
1. Cash flow and debt management	Includes basic skills in managing income, spending, and paying bills.
2. Repair and building credit	Includes skills in credit cards management and knowledge about how to solve a financial problem and financial fraud if occurred.
3. Financial goals development	Includes skills in setting financial goals and developing plans to achieve financial goals
4. Saving and Investing	Includes skills in putting money aside for saving and investing the savings.
5. Taxation and financial protection	Includes skills in managing tax filing, protecting oneself from identity theft and solving it, if it occurred.

The basic knowledge and skills in personal financial management were used to develop the construct map. A construct map here mainly means an operationalized definition of the construct and a map detailing what each level of the concept means (Wilson, 2005). The financial self-efficacy construct map included a working definition of financial self-efficacy and a map illustrating what a high level of financial self-efficacy meant and what a low level of financial self-efficacy meant. Items to measure financial self-efficacy were developed based on this construct map (see Figure 1). Following the guide for constructing self-efficacy scales of Bandura (2006), items were worded in way that expressed the capability of respondents “I can...,” and the rating scale showed levels of confidence from one to five with one is “not confident at all” and five is “highly confident.”

Figure 1. Financial self-efficacy construct map



b. Consultation with experts

The items and the construct map were refined throughout the process of the instrument development. An expert panel including three people was formed, which had one expert in program evaluation, one expert in financial literacy training; and one expert in domestic violence. The expert panel was consulted regularly, especially during the item development step. In addition, an outside expert from Rutgers University who had been doing extensive research about financial literacy research for battered women was consulted. The expert panel reviewed both the construct map and the items and provided comments about the fit of the items to the construct map and the definition of the concept; the clarity of the wording, the scale structure, and other features. An expert panel review meeting with the three above-mentioned experts was convened after the first

draft of the scale was developed to review the scale with a set of already prepared questions (please see Appendix B for the set of the questions).

Overall, the panel thought that the measurement had face validity, the items measured what they were intended to measure and that they were appropriate to the definition of financial self-efficacy, and covered the main domains of financial self-efficacy. The comments were mainly about (a) simplifying the language and targeting the core activities under each domain; (b) focusing on short term financial management, since some of the investment activities could take a long time to start and people often thought about investment only after they have paid off their debt and were a little bit more solvent; and (c) revising the scale to 5 levels instead of 7 levels. After the meeting, email consultations and individual meetings were arranged to revise the scale. Many drafts of the items were sent back and forth to get comments and feedback from the experts. In total, the items were revised more than twenty times before the final version were ready for a pilot test.

c. Think-aloud interviews

After the items were reviewed by the expert panel, they were tested with five women via think-aloud interviews. Two of them were graduate students and one was undergraduate student at the University of Minnesota, and two were from the community. All of them were between 18-40 years old. According to Wilson (2005), a think-aloud interview is a technique of investigation in which interviewees are asked to say out loud their thoughts while responding to the questions. During this process, the interviewees were observed carefully to see if there were any questions that were difficult to

understand, which questions might make participants feel uncomfortable, which questions the participants misunderstood, which questions might offend respondents, etc.

The think-aloud interviews did not spot any questions that might offend or make the interviewees feel uncomfortable. Only one question in the demographic information about immigration status was a little bit confusing because participants have different ideas about what “immigrant” means. So, the question was reworded into “Were you born in the United States?” The think-aloud interviews also helped the researcher recognize that people often weigh their abilities based on past experience. Therefore, a note was put into the scale, “You do NOT need to be actually doing the actions now to rate yourself high. Instead, this is about the extent of your confidence in **thinking that you can** do the actions” to remind people think about their “perceived ability” rather than “experience.”

d. Focus group discussion

In addition to the think-aloud interviews, a focus group discussion was conducted to get feedback and comments about the items, scale structure, demographic questions, and wording of the letter of invitation. The focus group was conducted with a group of 12 graduate students enrolled in the program evaluation course at the School of Social Work, University of Minnesota. They were asked to take the scale and then provide comments about the instrument, questions that they thought might be offensive or irrelevant, questions that might have double meanings, the attractiveness of the letter of invitation, etc. (Please see Appendix C for the focus group questions).

The focus group was helpful in identifying some redundant questions and complicated, high level reading words such as “expenses,” “credit abuse.” A brief

explanation of the two terms including EITC and identity theft were added because some people might not know what these terms mean. In addition, participants also gave some good suggestions to make the invitation letter more attractive. They suggested adding some explanations about the importance of the study and why that their taking the survey could contribute to make a difference. Other than that, most people found the questions easy to understand, straightforward and did not take much time to complete.

e. Pilot test

After the scale was refined following the feedback from the think-aloud interviews and focus group discussion, it was pilot tested in an undergraduate class on personal and family financial management and a graduate class on social work research methods. For the undergraduate class, students received the scale by email and they submitted their answers online. The graduate class took the scale on paper in class.

The number of responses from the undergraduate class was 35 and the graduate class was 15. Most of them were female. Basic item analysis was conducted with data from the two groups both separately and together. Results of the two analyses did not yield much difference. The quality of each item was evaluated based on item-total Pearson score, item difficulty, standard error, infit and outfit index. Items with a low items-total score and which had an infit index of less than -2 and an outfit index of more than 2 were revised or discarded. Six items in total were discarded from the total of 30 items. Results of the pilot test revealed a coefficient alpha of 0.95. The non-parametric curves showed that the 5 level rating scale was working well in general.

2. Scale testing:

The scale was converted into an online format using Google form and then sent to

the students' university listserv and all the domestic violence agencies known by the researcher to recruit participants. Ninety-one responses were received that met the inclusion and exclusion criteria and were entered for analysis. Basic item analysis were conducted to check the reliability and validity of the scale.

The item analysis showed five items with low item-total Pearson scores. Four of them were removed because these also did not fit with the total scale. These five items were the ones that ask about their confidence in filing their own income tax, applying for EITC, setting aside money for future unexpected expenses, and making independent and equal decision making power with their partners. The item-non parametric curve analysis showed that the Likert scale 1-5 worked well and was sufficient in differentiating people from a low level of financial self-efficacy and a high level of financial self-efficacy. The person-item map showed that the persons and the items had a large portion overlapping, which meant the items were appropriate to the level of the participants. Some items were below the level of the participants. However, this was expected, given that the majority of the people who responded had a college degree.

Dissertation

Results from the pre-dissertation study guided this dissertation focus on the revision of the scale and testing its reliability and validity with a broader population of women. The author wished to see if there is any difference between women and battered women in terms of financial self-efficacy. In addition, testing on a broader population of women allows the scale to be used in more studies. The following hypotheses were tested:

1. The FSES will exhibit robust psychometric properties, including a replicable

factor structure and strong internal consistency reliability.

2. The FSES will positively correlate with the new General Self-efficacy Scale (NGSES) (Chen et al., 2001).
3. The FSES will have five factors which correlate positively with each other (See Table 2).

Table 2

Hypothesized factors and items

Factors	Items (n=22)
Factor 1: Cash flow & debt management (3 items)	1. I can keep track of my spending to see where I need to make changes 2. I can pay my bills on time. 3. I can develop a plan to pay off my debt as early as possible.
Factor 2: Repair and building credit (3 items)	4. I can reduce my use of credit by making good spending decisions. 5. I can find resources to help me solve a difficult financial problem. 6. I can recognize and avoid a financial fraud.
Factor 3 Setting financial goals (4 items)	7. I can set financial goals for my future well-being. 8. I can develop a plan to achieve my financial goals. 9. I can stick to my financial plan 10. I can achieve my financial goals if I try hard enough.
Factor 4: Saving and Investing (6 items)	11. I can put aside some money for future unexpected expenses. 12. I can put money into a savings account regularly for future goals. 13. I can save for retirement. 14. I can figure out how much money I can save per month. 15. I can invest my savings appropriately to achieve my financial goals. 16. I can be prepared to handle unexpected financial problems.

<p>Factor 5: Taxation and financial protection (6 items)</p>	<p>17. I can arrange for health insurance coverage I need.</p> <p>18. I can complete my income tax forms by myself.</p> <p>19. I can find resources to help me with completing my tax forms if I need it.</p> <p>20. I can get my Earned Income Tax Credit (EITC) if I am eligible.</p> <p>21. I can protect myself from identity theft.</p> <p>22. I can find resources to help me solve an identity theft problem if it happens to me.</p>
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Since all of the items had gone through a thorough process in developing items in the pre-dissertation study, I did not repeat all the steps of the scale development part and only did the following three steps: (a) literature review, (b) consultation with experts, (c) think-aloud interviews. The process used to validate the scale included statistical analyses that examined the scale's reliability and validity: (a) testing the reliability by split-half method; (b) testing the validity by having an expert panel review the content validity; and (c) correlating the results with other similar measures (Thorndike & Thorndike-Christ, 2010). In addition, factor analysis was used to examine the reliability and validity of the scale.

1. **Scale development**

The financial self-efficacy scale for battered women in the pre-dissertation study was revised based on the preliminary testing. Four items that had low item-total Pearson score and did not fit with the overall scale were removed.

a. Literature Review

Additional updated literature about economic empowerment and financial literacy training was reviewed. In addition, the literature review included more literature about financial literacy education for general women, self-efficacy for women and

financial self-efficacy for women, financial literacy training curricula for women, existing scales in self-efficacy and financial self-efficacy.

b. Consultation with experts

The revised scale was sent out to the dissertation committee for further comments. Comments from the committee helped revise the items' wording, making it more specific. One double-barreled question was identified, which was "I can arrange for health, automobile or property insurance coverage that I need." The item was then revised into "I can arrange for health insurance coverage that I need" because health insurance is typically the highest priority in risk protection. The committee also provided comments on revising the categories of the demographic questions regarding race, age, and marital status. Categories from the U.S. Census were used as a reference to revise these categories.

c. Think-aloud interviews

Think-aloud interviews were conducted with five women from different age groups. There were no items that were hard for them to understand and everything seemed to be comprehensible. Therefore, no changes were made after the think-aloud interviews.

2. Scale Testing

Given the limited scale testing and validation in the pre-dissertation study, this dissertation focused on conducting a variety of methods to test and validate the scale. In addition, the scale was tested with a wider population of women, rather than only battered women as in the pre-dissertation study. The followings were steps were taken to check the reliability and validity of the scale.

a. Reliability

The reliability of a measurement refers to the securing of consistent results at different times that the measurement is used (Carmines & Zeller, 1979). A reliable measure helps researchers ensure that the changes of participants over time are due to the intervention, not due to measurement errors. Thus, reliability is concerned with random measurement error, e.g. ambiguous wording of the questions, different interview emphasis when conducted by different interviewers, changes in mood or health status of the interviewees, etc. (Carmines & Zeller, 1979). There are four main methods that are often used to test the reliability of measurement: test-retest method or alternative-form method, split-half method, and internal consistency method (Carmines & Zeller, 1979; Murphy & Davidshofer, 2005).

Test-retest method: In the test-retest method, the researcher tests the measurement with the same population more than once. Similar results at both points in times indicate good reliability (Carmines & Zeller, 1979). This method is effective in checking the measurements that will be used in pre-test post-test studies. However, it is more expensive, takes a longer time, and requires more commitment from participants. So, this method was not chosen to test the reliability of the FSES.

Alternative-form method: In the alternative-form method, the key thing is to develop an equivalent test and administer it at a different time with the same population, and then correlate the results of two tests (Carmines & Zeller, 1979). This method addresses the test memory of the test-retest method. However, it is not easy to develop an alternative test and make sure that the two tests are equivalent. This method could be

even more expensive and require longer time than the test-retest method. So, this method was also excluded from this study.

Split-half method: the split-half method is more economical and does not require the respondents to take the survey more than once. In this method, the researchers randomly assign the items of the measurement into two sets of items and then do statistical analysis to see if the two sets of items classify respondents the same way. If they classify respondents similarly, then it is a good indication of reliability (Carmines & Zeller, 1979).

Internal consistency method: is the estimate of reliability by obtaining the coefficient alpha (α). This method is simple and economical as all that is needed is to run a statistical analysis to obtain the coefficient alpha. It is also related to the split-half method as it is the average of all possible split-halves (Carmines & Zeller, 1979; Murphy & Davidshofer, 2005). Given the limited time and budget, the split-half method and internal consistency method were used to check the reliability in this study.

b. Validity

The validity of a measurement refers to the extent that the measure accurately reflects the real meaning of the construct and covers all of its operationalized definition. In other words, validity is concerned with whether the instrument measures what it really intends to measure. Traditionally, validity has been seen as having different forms of evidence such as criterion related validity, content related validity, and construct related validity (American Educational Research Association, American Psychological Association, National Council for Measurement in Education, 1985; Cronbach, 1990). Each form has different methods to test its validity.

Content-related validity is concerned with whether the measurement covers all of the domains of tasks that are specified in the concept and whether all of the important content is presented in the measurement items. The way to check the content-related validity is to compare the items to the domain from which the measurement was developed to see if all domains are covered (Linn & Gronlund, 2000). In this study, the expert panel examined the content-related validity by first reviewing the definition of the financial self-efficacy construct to make sure that the definition is good and clear, then reviewing the construct map to see if it covered all domains of the financial self-efficacy, and finally, by looking into the items to see if the items cover all important domains and contents of the construct.

Criterion-related validity is concerned with whether the measurement assesses a performance similarly to other measures. Normally, the way that criterion related validity is checked is by comparing the assessment results of the new measurement with the results of an already established and validated measure. If they produce similar results, then the new measurement has good evidence of criterion related validity (Linn & Gronlund, 2000).

Construct-related validity is concerned with whether the assessment results support meaningful interpretation of the characteristics assessed. There are several ways to test construct-related validity. It can be tested by defining the tasks or analyzing the mental or behavior processes needed to do the task, and then checking whether the items cover these processes. Another way is to check its correlation with other measures that are supposed to be positively or negatively correlated with the construct (Linn & Gronlund, 2000). Actually, more and more researchers believe that any types of validity

evidence can contribute towards construct-related validity (Angoff, 1988; Cronbach, 1990; Landy, 1987; Messick, 1988). Examining the construct-related validity of a scale is central and most important in validity testing (Grable, Archuleta, and Nazarinia, 2011).

In this study, both criterion-related validity and construct-related validity were checked by comparing the results of using the self-efficacy scale with the results of using the New General Self-efficacy scale. The New General Self-efficacy (NGSE) is an 8 item scale used to measure the general self-efficacy of participants. This is a widely used scale and has a coefficient alpha of .85 (Chen et al., 2001). Permission to use the scale was sought via email contact with the author. Correlation analysis was used to test the correlation between the two results.

Sampling

The sample in this study is a convenience sample with some inclusion and exclusion criteria as follows: (a) being female; (b) being over 18 years old; (c) having lived in the United States for at least three years. The reason for a three year cut off is to choose people who have had enough time in the U.S. to understand and utilize most of the basic personal financial services in the U.S.

Female children who are under 18 years old were not included in this study. The final scale for testing had 22 items. In order to conduct Confirmatory Factor Analysis (CFA), there needs to be a minimum of five answers for each item (Thorndike & Thorndike-Christ, 2010). Accordingly, the minimum number to conduct CFA would be 110. This study had a sample of 299 people, which exceeded the minimum.

Subject Recruitment

A call for participation was sent out via email listservs and networks nationwide.

University listservs and other email lists were also used to reach out to the young Population of women. The survey was sent to listservs of undergraduate and graduate students at the schools of social work at the University of Minnesota and San Jose State University. In addition, I also asked several professors to distribute the survey to some community agencies, domestic violence agencies, and non-profit organizations to reach the non- academic populations and people with low income. Each participant had a chance to win one of the five \$25 Amazon gift cards or a grand prize of a \$100 Amazon gift card. This study received approval from the University of Minnesota Institutional Review Board (IRB). (See appendix D for the recruitment letter that was distributed via emails).

Data Collection

All data were collected online via Google Forms. Participants received a link to the online financial self-efficacy scale. The first page was the informed consent form providing some background information about the study, risks and benefits of being in the study, compensation, confidentiality of data collected, the voluntary nature of the study, and contact information of the researcher and the IRB of the University of Minnesota (see Appendix E). Participants clicked in a box to confirm that they had read the information and gave consent to participate in the study. They were then directed to the survey. Answers were automatically stored online by Google Form and were later downloaded in excel and .csv formats.

The advantage of online data collection is that one can reach a wider population in a very short time and not be limited by geographic locations. Online data collection is also very economical. The online data collection software also automatically saves data,

minimizing errors due to data entry. However, the disadvantage of online data collection is that it only reaches a fairly highly educated population who know how to use and have access to computers and the internet. Participants completed the survey and then received another email asking if they would be willing to take a short survey about general self-efficacy to examine the criterion-related validity and construct-related validity.

Data analysis

SPSS version 22 and jMetrik was used to analyze the data. jMetrik is free software designed specifically to conduct certain types of psychometric analyses. Gotzmann and Bahry (2012) have given a high review for this software. They said, compared to other expensive statistical software, jMetrik allows the researchers to conduct a comprehensive and “integrated” psychometric analyses with no cost and high ease of use (Gotzmann & Bahry, 2012, p.57). Since all data were collected online and the answers were automatically saved into data spreadsheets, there was no need to enter the data and check the accuracy of the entry. However, data cleaning was conducted to delete responses from male participants. Descriptive analyses were conducted to get demographic information. SPSS version 22 was used to conduct Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). To check the reliability and validity of the scale, the following analyses were conducted:

1. Item analysis

Item analysis, defined as “a loosely structured group of statistics that can be computed for each item in a test” (Murphy & Davidshofer, 2005, p. 202), contributes to the reliability examination of a scale by providing information about whether all items measure the same thing. It helps locating “bad” items through the following index:

a. Item difficulty

Item difficulty is calculated by the percentage of people selecting the right answer (Murphy & Davidshofer, 2005). With this calculation, the higher the difficulty index, the easier the item is. In the case of this dissertation, since it is a Likert scale, there are no right or wrong answers. Therefore, a difficulty score of “0” means no one feels confident that they could do that activity. On the other hand, a score of “1” means everyone feels confident that they could be able to implement that action. In both cases, the item should be removed from the measurement as it does not help to differentiate the ability of the respondents. Any item that has item difficulty of either 0 or 1 should be removed from the scale.

a. Item discrimination

Item discrimination refers to the ability of an item to differentiate people with higher ability from people with lower ability, how well the item correlates with other items and how well it correlates with the total scale. Item – total correlation (the correlation between item score and test score) is often used to estimate the item discrimination (Murphy & Davidshofer, 2005). A positive item-total correlation means the item is measuring the same thing with the test; a near “0” item-total correlation means the item has little power to differentiate people with higher ability from people with lower ability; a negative item-total correlation means the item does not measure what the test measures. Removing items with negative item-total correlation or near “0” will help improve the reliability of the test (Murphy & Davidshofer, 2005). The cut-off point for item-total correlation varies based on the purpose of the test; however, the most common

cut-off is .3 (Comrey & Lee, 1992, cited in Pett, Lackey, & Sullivan, 2003). These researchers also provided a guideline for interpreting item-total correlation as follows:

.45 (20% shared variance): fair

.55 (30% shared variance): good

.63 (40% shared variance): very good

.71 (50% shared variance): excellent

(Comrey & Lee, 1992, cited in Pett, Lackey, & Sullivan, 2003, p.209).

b. Item-characteristic curves (ICCs)

Item-characteristic curves (ICCs) are defined as a “mathematical function describing the relationship between the construct measured by a test and a response to a specific test item” (Murphy & Davidshofer, 2005, p.225). It is closely related to item response theory which hypothesizes that people with higher ability will have a higher probability of selecting the correct answer. ICCs visual provide information about how the responses look like and how the scores correlate with the people’s abilities (Murphy & Davidshofer, 2005). In addition, an ICC also provides information about the function of distractors. In the case of financial self-efficacy scale, it will provide information about the functioning of the Likert scale and how good the Likert scale is in rating people’s ability.

2. Split-half analysis:

Split-half analysis was used to examine the internal consistency of the scale. In this analysis, the sum score of responses for even items and the sum score of responses for odd items are calculated, then the correlation between these sum scores is estimated.

Then, the Spearman-Brown formula is applied to estimate the split-half correlation as follows (Pedhazur and Schmelkin, 1991)

$$r_{xx} = \frac{2r}{1+r}$$

r_{xx} : Split – half reliability of the measure

r : correlation between the two halves of the scale

3. Reliability analysis

Reliability analysis was used to get the Coefficient alpha (α). The coefficient alpha is another indicator of the internal consistency of the scale. It is defined as “the proportion of the variability in observed scores thought to be due to differences in true scores” (Murphy & Davidshofer, 2005, p.133). The coefficient alpha provides a better estimate of the internal consistency, as it is the average of all possible split-half reliability coefficients (Cronbach, 1951; Pedhazur & Schmelkin, 1991). For most types of tests, a coefficient alpha of .90 and higher is considered a high level of reliability; a coefficient alpha of .80 to .90 is considered moderate to high; a coefficient alpha of .70 to .80 is considered low to moderate; and a coefficient alpha under .70 is considered low (Murphy & Davidshofer, 2005). In addition to the coefficient alpha, the standard error of measurement (SEM) provides an estimate of the variability of the true score due to standard error (Murphy & Davidshofer, 2005).

4. Correlation analysis

To test the validity of the scale, the correlation between the FSES and the NGSES scale was examined. Since the NGSES is a valid and standardized scale, a strong and positive correlation between the FSES and NGSES would provide strong evidence for the validity of the scale.

5. Factor analyses

Factor analyses including Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), were also conducted. Factor analysis involves the process of restructuring and analyzing the relationship among a set of variables, then grouping them into some dimensions or factors (Nunnally & Bernstein, 1994, cited in Pett, Lackey, & Sullivan, 2003). EFA was conducted first to explore the possible dimensions of the scale. EFA is the most commonly used tool when the researchers do not know whether the scale is unidimensional or multidimensional. It examines the interrelationship of the items and gives the researchers an idea about the possible dimensions of the scale (Pedhazur & Schmelkin, 1991; Tabachnick & Fidell, 2001). After exploring the possible factors of the scale by EFA, CFA was used to test data fit with the identified factors and a reliability test to examine the internal consistency of each factor. In contrast with EFA, CFA is a tool to test the hypothesis regarding the dimensionality of the scale, and it is used when the researchers already have some ideas about the scale's dimensions (Pedhazur & Schmelkin, 1991; Pett, Lackey, and Sullivan, 2003). SPSS was used to conduct the factor analyses.

Sample of Participants:

There were 303 responses in total; however, four of them were deleted because four were identified as male. The demographic questionnaire had a question about gender to help eliminate responses from men. In addition, questions about race, marital status, immigrant status, age, education level, and employment status were asked to give the researcher some descriptive information about the respondents which would add some information to the discussion of the results. Categories for race, age, marital status were

referenced from the categories in the Census data. Immigration status was identified by the fact whether a person was born in the U.S. or not. If the answer is no, then the person was asked to answer how many years they have been in the U.S. Given that the financial management knowledge of this scale is designed based on the U.S. financial system, the length of time in the U.S. could affect their familiarity with the U.S. financial system. In addition, questions about previous financial management training, employment status, and personal income were also asked to give the researcher additional information about factors that might affect their perceived financial management ability. I also added a question about experience with domestic abuse to determine if there are differences in terms in responses between people who have experienced domestic abuse and those who have not. (See Appendix F).

The majority of participants in this sample were white (69%), followed by Asian (14%). Almost all of the participants in the “other” category were Hispanic, Latino origin or Mexican-American (10%). African Americans accounted for 2%. There were no American Indians and Alaska Natives or Native Hawaiian and Pacific Islanders. As mentioned above, immigration status in this study was identified through birth place. Therefore, immigrants were defined as people who were not born in the United States. Immigrants accounted for 15% of the participants, and the majority was non-immigrants which accounted for 85% of the participants. Most participants who identified as immigrants had stayed in the United States for quite a long time, with an average of 20 years, which suggested they were likely familiar with the financial system in the US. The shortest amount of time that one participant had spent in the US was 5 years, followed by

another person who had spent 12 years in the US. Thus, all of the participants satisfied the requirement of living in the US for at least three years.

More than half of participants were single and one-third were married. Only 7% of participants were divorced; and 2% were either divorced and living with new partners or in a domestic partnership. The majority of participants (82%) were young women under 40 years old (16% 18 to 24; 39% 25-30; 20% 31 to 35; 7% 36-40). Among the middle-aged and elderly population, 5% of the sample were between 41 to 45 years old, 6% were between 46 to 50 years old, and 7% were over 50 years old.

Most participants (92.6%) either had a college degree or graduate degree. Only 6.7% had not received a college degree, and less than 1% had only a high school diploma or did not finish high school. Regarding training on financial management, one-third of participants had some financial literacy training and two-thirds had never had any financial literacy training. Most participants in this sample (86.5%) had never experienced any type of domestic abuse. About 10% reported emotional abuse from their partners and 2.4% experienced physical abuse. About 1% of participants experienced more than one type of abuse. The majority of participants were working, with 51% working full time and 30% was working part time, and 19% were not working. The income of participants was spread out, with 42% having personal income less than \$25,000. About one-third had incomes between \$25,000 and \$50,000 and 10% had relatively high personal income of more than \$75,000. (See Table 3).

Chapter 3: Results

Reliability evidence

1. Item analysis results

The item analysis results showed that the distribution was fairly normal, since the skewness (-0.243) was between -1 and +1, which indicated that the distribution was not skewed dramatically. In addition, the mean and median were similar (83.0 and 83.44). Looking at the distribution graphically, one could see that the histogram was unimodal and the scores gradually fell away from the mean on either side (see Figure 2).

The item analysis from jMetrik also provided the item difficulty and the item discrimination of each item. Table 4 presents results of the item difficulty and item discrimination for each item. The item difficulty ranged from the easiest at .886 to the most difficult at .61. All item difficulty was above .5, which showed that there was no item that had less than half of the respondents getting the correct answers. This means that the items were not too difficult for the participants.

All items had a positive item-total correlation, which means all items were positively correlated with the whole scale and that all items were measuring the same thing with the scale. Most items had item total-correlation values higher than .40, which means each item at least could account for 16% of the variability in the test score. Item 18 had the lowest item total-correlation at .338, which means this item only accounted for 9.9% of the variability in the test score. This item was removed from the scale. The cut off point for this scale was .35.

The item-characteristic curve of each item also showed that the items were functioning well (see Figure 3). People with higher ability had a higher probability of

selecting 5 (highly confident-the purple line), whereas people with lower ability had a higher probability of choosing 1, 2, or 3. For example, in the item characteristic curve of item 1, people who had higher theta (ability) had a higher probability of choosing 5, people in the middle theta range had a higher probability of selecting 4 (the green line) and people in the lowest theta range had a higher probability in selecting 1 (the black line- not confident at all). In addition, there was no straight line that was parallel with the theta axis, which means that the Likert scale from 1 to 5 is working well.

The test characteristic curve was a positive line (gradually increasing the true score as theta increases), which showed that the measurement had a good discriminating ability in which people with higher ability would have a higher probability of having higher score and people with lower ability would have a greater probability of having lower score (see Figure 4).

2. Person-item map

The person-item map shows the ability of participants in comparison with the difficulty of the items to see if the items are too difficult or too easy for the participants (see Figure 5). The person-item map showed that the person density and the item frequency had a large overlapping part, with most people in the range of medium difficult items. This means the items were appropriate to the level of participants. Some items were below the level of participants. This result was consistent with the item difficulty index above. These results were expected, given the high level of education of participants in this sample. More than 92% of respondents either had a college degree or graduate degree. However, this scale would be good to measure people who are at a lower education level.

3. Split-half analysis

The split-half analysis yielded a correlation of .95, which is a very strong correlation. As mentioned in the method chapter, the split-half analysis was used as an alternative for the test-retest method. Its purpose was to find evidence for the reliability of the scale over time. The correlation of .95 above shows that the financial self-efficacy scale was reliable over time and the score differences at different test times would be due to the intervention, not due to the measurement error.

4. Reliability analysis

The reliability analysis shows a result for Coefficient alpha of 0.93, which means 93% of the score variance was true score variance. In other words, 93% of the observed scores are true scores, which is a high level of reliability. The Standard Error Measurement (SEM) is 3.95 which is small, given the mean score is 83.4.

Validity evidence

a. Content-related validity

Content-related validity was checked by the expert panel to see if the items covered all domains of financial management and if the questions asked what it intended to measure. The expert panel reviewed the construct map and the items to see if they covered all domains of financial management. All four experts said that the scale had the right questions to measure financial self-efficacy and it covered all main domains of financial management. They also suggested some changes that had already been addressed in the scale development phase.

b. Response related validity

Response related validity was examined through the think-aloud interviews. Five interviews were conducted to assess whether respondents understood the questions the same way as they were intended and if there was any question that seemed to be confusing to people. In all the five think-aloud interviews, there was no question that seemed to confuse interviewees. They found it straightforward and easy to understand, except for the demographic question about immigration status which was changed in the scale development phase.

c. Construct-related validity and criterion-related validity

Construct-related validity and criterion-related validity were tested based on the correlation with the new General Self-efficacy Scale (NGSES). The new GSES was changed into an online format and sent to all 299 participants who responded to the FSES scale. Among the 299 people, 84 people took the NGSES. Their data were removed from the FSES data and matched with the responses to the new GSES data. A correlation was run between the responses of the FSES and the GSES, which yielded a result of .43. This was a very good validity coefficient as most validity coefficients are often small and usually do not exceed .5 (Murphy & Davidshofer, 2005). Thus, the FSES scale had a positive correlation with the new GSES scale. This means people who had high general self-efficacy also had a high financial self-efficacy. This demonstrated good construct and criterion-related validity of the FSES.

d. Factor Analysis

Factor analyses were run to assess the dimensionality of the scale. First, exploratory analysis was conducted to explore the dimension possibility of the scale. The

Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .925, which showed that the sample was adequate for factor analysis. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is between 0 and 1. Results closer to 1 are desired, and the minimum should be .6 in order to conduct factor analysis (Pett, Lackey, and Sullivan, 2003). The Bartlett's test of sphericity was significant ($\chi^2 = 3731.886, p = .000$), which indicated that the correlation matrix was not an identity matrix. Bartlett's test of sphericity hypothesizes that the correlation matrix is an identity matrix, which would indicate that the items are unrelated and therefore it would be impossible to identify a structural pattern. These two tests provide a minimum standard which should be passed before a factor analysis is conducted (Pett, Lackey, and Sullivan, 2003). Results of both these tests demonstrated that factor analysis was appropriate.

Exploratory factor analysis showed the possibility of having four factors in the FSES. The total variance explained by these four factors is illustrated in Table 5. The first two factors accounted for 55% of the variance and the four factors accounted for 65% of the variance. The decision to group items to factors was made by the factor loading of each item from the rotated factor pattern matrix and rotated factor structure matrix. The factor loadings of each item from the rotated factor structure matrix and factor pattern matrix are presented in Table 6 and Table 7. The items highlighted in bold represent the highest loading. Decisions on assigning items to factors were based on factor loadings of both structure matrix and pattern matrix and conceptual thinking about the fit of items. The structure matrix was reviewed first to determine which items go with which factors. Items with strong loading in more than one factor were underlined. Then, the pattern matrix was used to guide decisions about items that had strong loadings in more than one

factor. In addition, a conceptual fit is conducted to see if all items under a factor fit with each other conceptually. Based on these, four factors were extracted. The naming of the factors was based on the common themes of all items and also on the items that had the highest loadings (Pett, Lackey, & Sullivan, 2003). Tables 6 and 7 present the factor loadings for each item in the scale, arranged by size of the loadings for each factor.

The structure matrix and the pattern matrix were consistent in terms of classifying items into factors based on factor loadings. For all of the items that have strong loadings on more than one factor in the structure matrix, the pattern matrix helped to make the decision on where to put the items, except for item 10. In the structure matrix, item 10 had similar loadings on both factor 1 and factor 3 (.632 and .611, respectively). Their loadings in the pattern matrix were .307 and .268 respectively. If one based the decision on the factor loadings, then this item should be placed in factor 1. However, this item conceptually fit with factor 3 more, since it focused on financial goals achievement. As suggested by Pett, Lackey, and Sullivan (2003), in addition to reviewing the factor loadings to make decision in placing the items, conceptual thinking should also be used to see if the items conceptually fit together. Therefore, the researcher decided to place item 10 to factor 3, which was about financial goals.

Based on the results of the EFA, four factors were extracted that were not completely parallel with the hypothesized factors. However, some factors were very similar to the hypothesis. Table 8 compares the factors based on EFA and five factors based on hypothesis. Among these four extracted factors, two factors (Saving and Investing; Financial Goals Development) were almost identical with the hypothesized factors, except that item 9 was switched into factor Savings and Investing in the actual

model. Factor 4 (Cash Flow Management & Credit Basis) included three same items as the factor Cash Flow and Debt Management in the hypothesized factor. It also included item 4 about reducing credit usage, which was hypothesized to be in the Repair and Building Credit factor. The rest of the items in the hypothesized factors Taxation and Financial Protection and Repair and Building Credit fell into one factor, Knowledge about Financial Resources, in the actual model.

After four factors were extracted, Confirmatory Factor Analyses and reliability analyses were conducted for each factor to see the factor loadings of each item within their factors and the coefficient alpha of each factor. Table 9 presented the results of CFA for each factor. All items in each of the factor had very good factor loadings with no value less than .40 (Pett, Lackey, and Sullivan, 2003).

In addition, reliability analysis of each factor showed that all factors have a moderate to high coefficient alpha (.80 to .90). Table 10 presented the descriptive statistics, between-factor correlations, and coefficient alpha for the four generated subscales of the FSES. The correlation between the subscales ranged from .414 (for the subscales *cash flow management and credit basis & savings*) to .743 (for the subscales *knowledge about financial resources & savings*). The reliability estimates presented in parentheses on the diagonal ranged from .81 to .87 with a total scale coefficient alpha equal to .93.

Chapter 4: Discussion

In regard to the three hypotheses in this study, the findings provide evidence to support the hypotheses as follows:

1. *The FSES will exhibit robust psychometric properties, including a replicable factor structure and strong internal consistency reliability:* The FSES was tested on a decent sample size and showed an excellent reliability coefficient (.93). All reliability of the factors also showed a strong reliability coefficient (all were above .80), indicating that these factors could be used as sub-scales to measure individual's confidence in different domains and aspects of financial literacy management. All of the items had item total-correlation above .4 (except item18), which means all of these items correlated well with the total scale. All of this evidence showed that the scale had robust psychometric properties and strong internal consistency reliability.

2. *The FSES scale will positively correlate with the new General Self-efficacy scale (NGSES).* The study's findings supported this hypothesis. Responses of the FSES positively correlated with the responses of the NGSES (.43), which is strong evidence of construct-related validity and criterion-related validity. In summary, this financial self-efficacy scale is a reliable and valid scale which could be used as a comprehensive measurement to measure all aspects of personal financial management.

3. *The FSES will have five factors which correlate positively with each other.* The scale's extracted factors were consistent with the hypothesized factors, except for hypothesized factor 2. The actual factors only had four factors instead of five as the hypothesis. All three items in the hypothesized factor 2 were moved to other factors,

specifically item 4 in the hypothesized factor 2 was moved to factor 4 in the actual factors and items 5 and 6 were moved to factor 2 in the actual factors. Item 9 in the hypothesized factor 3 was moved to item 1 in the actual factor.

The factor analysis suggested a four-factor structure instead of a five-factor structure as hypothesized. The women in this sample appeared to view the items about ‘repair and building credit’ as a part of the debt management instead of seeing it as a separate domain. All of the financial fraud, tax, and identity theft items seemed to be understood under one category in which I named “the financial resources” category. This is still consistent with the often common categories of financial literacy curricula. Thus, the four factors extracted from this FSES could be used to evaluate participants’ self-efficacy after each training module of financial literacy that they have been completed.

Factor 1 “Savings and Investing” focused on their perceived confidence in being able to put money aside for savings, to invest the savings in a minimum way and stick to their financial plan. There are seven items in this factor. Among those, four items were about saving behaviors (saving for future unexpected expenses, saving for retirement, saving for future goals); two items were about saving attitudes (stick to the saving plan and be prepared for unexpected events); one item was about investment. The item that had the highest loading in this factor was item 12 “I can put money into a saving account regularly for future goals” with .820 factor loading. The item about investing has a factor loading of .654. Thus, this factor mainly measures the perceived confidence on saving ability. The measure of investment ability was limited to some initial, basic investment skills.

Factor 2 “Knowledge about financial resources” included seven items covering an individual’s perceived confidence in their knowledge about some simple financial fraud that targets individuals or families, identity theft; confidence in finding resources to help them with tax related matters; and health insurance application access. Among these seven items, three items were about finding resources (resources to complete tax returns, resources to solve an identity theft issue, resources to solve a difficult financial problem); two items about knowledge (knowledge about financial fraud and identity theft); and two items about skills (skills in getting health insurance and protecting oneself from identity theft). The factor loadings of these seven items were pretty similar (ranging from .584 for item about insurance coverage to .660 for item about finding resources to solve an identity theft problem). Thus, all of these items play a fairly equal role in the factor. ...

Factor 3 “Financial goals achievement” included three items covering individual’s perceived confidence on developing and achieving a financial plan. This factor was named mainly for the item that has the highest loading (item 8) “I can develop a plan to achieve my financial goals” with a factor loading of .978, followed by item 7 about developing financial goals ‘I can set financial goals for my future well-being.’ Item 10 ‘I can achieve my financial goals if I try hard enough’ focused on the individual’s attitude toward their financial goals achievement and had the lowest factor loading (.301).

Factor 4 “Cash flow management and credit basis” covered the most basic domain in personal financial management. The item that has the highest loading is item 4 ‘I can reduce my use of credit by making good spending decisions’ (.846), followed by another item about spending (.777). The bill paying items had lower factor loadings (.642 and .762). However, the difference in factor loadings among items is not big; thus they all

contributed well and relatively equally to the factor. It was named “cash flow management and credit basis” because it included two items about spending and two items about paying bills and debt.

The new four factors extracted from the factor analysis could be used as a new way to categorize modules in financial management curricula. The main difference between the new four factors and the hypothesized factors was that the new model combined the cash flow and credit building into one factor and grouped all items related to financial resources under one factor. It seems that it made clear distinction between financial related skills (managing daily cash flow and credit cards, saving and investing, setting financial goals) and knowledge about financial resources (resources to solve financial fraud, identity theft, health insurance access, tax resources). Trainers and program managers could use these factors and its items to design new intervention and training programs.

Strengths of this study

Compared to other previous financial self-efficacy scales, this FSES offers a solid scale which covers all key domains of financial literacy. Other financial self-efficacy scales (Danes & Brewton, 2009; Dietz et al., 2003; Weaver et al., 2009; Lown, 2011) are relatively short from one to six items. Having more items allow the researcher to evaluate more thoroughly different aspects of financial management. It also enables the researcher to have a better assessment in each financial management domain if needed. The FSES has a high reliability coefficient (.93) compared to .76 for Lown (2011), .69 for Dietz, Carozza, and Ritchey (2003), and .86 for Weaver et al. (2009).

This is also the first scale in which the author developed the items from scratch and by examining the core behavior and skills in financial management rather than adapting from general self-efficacy scale. As Bandura pointed out, people who have high general self-efficacy might not have high self-efficacy in some specific tasks. Therefore, it is important to separate task specific self-efficacy from general self-efficacy. In addition, the items of this scale follow Bandura's (2006) recommended wording for developing self-efficacy scale with “I can” which is a “judgment of capability” (p.308), compared to the items wording in Lown (2011) with “I worry...”; “I lack..”; or “it is challenging...”, which is a statement of thoughts or reality. The consistency in wording all items starting with “I can” also allows researchers to have a more precise measurement of self-efficacy level as efficacy belief differ in level and strength (Pajares, 1997).

By developing the items based on key behaviors in financial management, the FSES specifies the tasks it aims to measure. As Bandura (1997) pointed out self-efficacy was task-specific. Instruments which are general or domain specific can only measure individual's general confidence without clarifying which specific situation or tasks that the individual is confident in. Such instruments are limited in predictive value and unclear in what they measure (Bandura, 2006).

As suggested by Johnson and Sherraden (2007), financial education should aim for financial capability which includes both internal capacities and external conditions that enable people to become financially self-sufficient. Therefore, this scale takes into account both of these factors and includes items about external conditions such as resources to purchase health insurance, applying for the Earned Income Tax Credit,

resources to solve identity theft issues, and resources to solve a difficult financial problem. These items help to measure the perceived confidence in accessing some of the financial resources in addition to the perceived confidence in aspects of financial literacy.

Limitation of the Study

Like other studies, this study is not perfect. The sample may have introduced bias. The participants' recruitment process might have influenced the participation. Participants were informed that they would be entered into a raffle to win one of the five \$25 gift cards and one \$100 gift card. This might have influenced their motivation to participate in the study. In addition, participation in this study relied heavily on an individual's willingness to respond to the advertisement and their voluntary participation. Thus, this sample was self-selected and might have a selection bias in which people who volunteered to take the scale might be more comfortable in recognizing their financial self-efficacy.

The interpretation of the data was limited because responses of this study were through self-report, based on the perceived confidence of the participants. According to Lusardi (2011), there was a disconnection between perceptions and financial behaviors. She found that among the people who gave themselves a high score in their daily financial management tasks, twenty-five percent of them still had some behaviors considered "not very smart" such as withdrawing cash from credit cards, late payment, or overdrawing their checking accounts. Therefore, a high level of financial self-efficacy might not mean proficient financial management behaviors. However, financial self-efficacy is one of important traits that influence financial behaviors. Individuals with higher level of financial self-efficacy are more likely to put their knowledge into action

(CFPB, 2015). For instance, if someone has knowledge about stock investment and he/she has higher level of financial self-efficacy then he/ she is more likely to invest in the stock market.

The study also relied on online recruitment, which limited its reach to only people who had access to computers connected to the internet and who had some computer skills. Thus this sample may have been somewhat biased because people who have access to computers, the internet and who have computer skills tend to be more educated and be able to do more complicated tasks. In fact, more than 90% of study participants either had a college or graduate degree. Second, more than 30% of the participants had previous financial literacy training. Third, the majority of the people was working and had a decent amount of income. Most of them (either worked part-time or full-time). For people who worked full-time, almost all of them had a personal income of more than \$25,000. All of these factors could have contributed to their high level of financial self-efficacy. In addition, this study included only female adults. Therefore, the reliability and validity of the scale are limited to the female population. Further testing on male participation would help assess whether this scale is valid on men and if there is any modification needed to help measure men's financial self-efficacy.

In addition, the sample in this study is not very diverse with underrepresentation from African Americans, low income people, and people who do not have high education. The sample included 69% White, 14% Asians, 10% Hispanic, Latino origin or Mexican American, 2% African American, and 5% of the test takers were three or more races. The age group of this sample is also quite young (most of them were under 35 years old). The income level also did not truly represent a poverty level. Although more

than 40% of the participants had annual income of less than \$25,000, this did not mean they were poor, as most of them were students and might work part time only.

Implications for future research

Future research could help enhance the FSES by testing it on a bigger sample and doing further analyses. For example, Differential Item Functioning (DIF) analysis could be done if a bigger sample is obtained. DIF analysis would allow researchers to assess the difference in financial self-efficacy score by race sex, or age. Future research could also focus more on criterion-related validity, testing the correlation of the FSE scales with other scales that have similar traits. In addition, discriminant validity could also be conducted to test the FSES against other measures that have the opposite trait.

Further analyses could also be conducted to create a shorter version of the scale. Researchers could do further analyses to identify the most essential items that capture the essence of financial management behaviors and remove less important items without reducing the coefficient alpha significantly. Researchers could group the items by internal capacities and external conditions (Johnson & Sherraden, 2007) as two sub-scales, then test it and do factor analysis to see if each of the sub-scales is unidimensional. If all items fare well under each sub-scale, then we could use the sub-scales to measure individual's self-efficacy in financial knowledge and skills and access to financial resources separately.

This scale should be tested on other samples to examine its validity and reliability in other populations. For example, this study could be replicated on men or youth. If replicated, the FSES can be used to further knowledge regarding men and youth's financial self-efficacy. Then, high school teachers and school counselors could use the

FSES to measure the financial self-efficacy of high school students before or after financial literacy training. The scale could also be tested with various racial/ ethnic subgroups to see if there are differences among these groups. Future studies could also replicate this study with people in other countries. Of course, in this case the researchers would need to revise the items to fit with the country's financial situation, since this FSES was designed based on the U.S. financial system.

Researchers could use the FSES in experimental or quasi-experimental studies. Since the FSES has been tested and validated, it could serve as a standard measurement in experimental research. Having a standard measurement would help enhance the evaluation of trainings significantly, as researchers will be able to measure the participants' level of financial self-efficacy more precisely. According to the CFPB report (2014), there is still a huge need for rigorous evaluation of financial capability strategies. Although there is growing evidence of effective approaches in improving financial capability, empirical evidence is still limited. The availability of the FSES would enable researchers design rigorous studies which provide empirical evidence about which the most effective method forenhancing financial capability. Based on the four-level framework to evaluate short term and long term outcomes of training that Kirpatrick (1994) presented, this scale could help evaluators and trainers to assess the most difficult level – the distal outcomes of training. Researchers could use this scale in longitudinal studies to measure the long term impacts of financial literacy training.

Implications for practice

The FSES could help trainers and social workers measure the self-efficacy of women before they receive services to assess their confidence in managing finance. This

information would help trainers deliver the information that the participants need and provide a training that is suitable with participants' levels. It could also help social workers decide which services or training that the clients might need. For example, a client with a low level of financial self-efficacy might need some mental support before entering a financial literacy training program in order to complete the training successfully. Information about the interactions between financial literacy programs and other physical and mental health programs will be very valuable to develop strategies for creating a comprehensive service for clients, and in fact the Financial Literacy and Education Commission (2012) has identified this topic as one of the top research priorities in the financial literacy area.

The FSES could help program managers choose and design effective financial management programs. As suggested by Bandura (2006), self-efficacy assessment helps "identify patterns of strengths and limitations in perceived capability," which "not only increases predictiveness, but provides guidelines for tailoring programs to individual needs" (p. 319). Self-efficacy assessment would help program managers identify what are the participants' strengths and weaknesses, and then tailor programs toward improving the areas of weaknesses. For example, if participants are assessed to be weak in managing debt or understanding financial fraud, then the programs can be tailored toward these areas. The FSES sub-scales could do this task, measuring participants' financial self-efficacy in each domain of financial management.

The FSES could also provide meaningful data for program managers to show to funders. They could use the FSES to measure participants' financial self-efficacy before and after training to see how the training has helped change participants' attitude toward

financial management. Although attitude is just a part of financial capability, it is an important aspect which greatly influences financial behaviors. Thus, enhancement in financial attitude predicts improvement in financial behaviors. This information would be of great value and interest to funders.

Practitioners and researchers could also test their financial literacy programs and develop evidence based programs. They could also compare different programs and see which one has better outcomes. The scale could help examine the programs' outcomes further and at a deeper level rather than just doing satisfaction surveys or assessing changes in knowledge only. Given the fact that funders nowadays prefer to fund programs which have more impacts, these evidence based programs would be very marketable.

This scale showed validity and reliability on measuring the financial self-efficacy of women. Financial management programs that target women in general and battered women in particular will not have to borrow or adapt from other financial self-efficacy scales that were not tested on women. They will now have a standardized scale to measure women's financial self-efficacy. Having a better way to measure women's financial self-efficacy will help design a better and more effective financial management programs. Ultimately, women will benefit more from these programs and are more likely to be able to escape poverty.

Conclusion

To understand and better respond to the needs of women in improving their financial situation, it is critical to have a valid and reliable measurement to measure their financial self-efficacy. The development and testing of this measurement will provide a standardized tool for researchers, educators, and social workers to assess the financial self-efficacy of participants or clients. Thus, this scale can help in improving financial literacy training or in developing interventions aimed at increasing financial self-efficacy for women.

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Appendix A: List of reviewed self-efficacy scales

#	Scales	Authors	Measure structure	Testing	α
Task specific self-efficacy scales					
1	Entrepreneurial Self-efficacy Scale	McGee, Peterson, Mueller, & Sequeira, 2009	5 point Likert scale (very little to very much)	Factor analysis; reliability;	All sub-scales are above .80
2	Counseling Self-Estimate Inventory (COSE)	Larson et al., 1992	10 point Likert scale	Factor analysis	Above .85
3	Computer self-efficacy scale	Compeau & Higgins, 1995	5 point Likert scale (Strongly disagree – strongly agree)	Factor analysis; Reliability (alpha),	.96
4	Career decision-making self-efficacy scale	Betz, Klein, & Taylor, 1996	10 level confidence continuum (no confidence at all to complete confidence)	Factor analysis; criterion validity; reliability (alpha)	.94
5	Alcohol abstinence self-efficacy scale	DiClemente, Carbonari, Montgomery, & Hughes, 1994	5 point Likert scale (continuum: not at all to extremely)	Factor analysis; reliability (alpha); construct validity;	.92
6	Breastfeeding self-efficacy scale	Dennis & Faux, 1999	4 point Likert scale (not sure at all to completely sure all of the time)	Content validity; coefficient alpha (reliability test)	.95
7	Eating self-efficacy scale	Glynn & Ruderman, 1986	7 point Likert scale (no difficulty controlling eating to most difficulty controlling eating)	Factor analysis; construct validity; predictive validity;	.92
8	Coping self-efficacy scale	Chesney, Neilands, Chambers, Taylor, &	11 point Likert scale (cannot do at all; moderately certainly can do;	EFA and CFA; reliability analysis; concurrent	.95

		Folkman, 2006	certain can do)	validity; predictive validity	
9	Internet self-efficacy scale	Eastin & LaRose, 2000	7 point Likert scale (strongly disagree to strongly agree)	Factor analysis; predictive validity; construct validity; reliability	.93
10	Diabetes management self-efficacy scale	Bijl, 1999	5 point Likert scale	Factor analysis; reliability; content validity; construct validity	.81
Domain specific self-efficacy scales					
11	Occupational self-efficacy scale	Schyns & Collani, 2002	6 point Likert scale (completely true to not at all true)	Reliability; construct validity;	.92
12	Physical self-efficacy scale	McAuley & Gill, 1983.	Yes/ No and score by administrators	Factor analysis; criterion related validity; predictive validity; reliability analysis	.72
13	Health Locus of Control Scale	Wallston et al. (1978) for development of the scale; Windfield (1982) for testing	6 point Likert scale (strongly disagree to strongly agree)	Factor analysis;	From .49 to .70 for subscales
14	College academic self-efficacy scale	Owen, 1988	5 point Likert scale	Reliability; concurrent validity; factor analysis	.85

Appendix B: Questions used by the expert panel to review the scale

1. Does the definition of financial self-efficacy make sense?
2. Does the scale measure what it intends to assess? Do these questions related to the topic or the definition of financial self-efficacy?
3. Are the scale domains accurately defined?
4. Do the items cover all the main domains
5. of financial self-efficacy? Are those the types of tasks that should be included in the scale? Does it cover the important tasks in financial management?
6. Are there any other tasks that should be included in the scale?
7. Do the items easy to understand and clear to readers? Do the items worded respectfully? Any item ambiguous and can be understood in different ways?
8. Does this rating scale make sense? Scoring?
9. Is the format of the scale easy to follow?
10. Any other comments?

Appendix C: Questions for the focus group

- 1. Cover letter:** Does it interest, motivate responders?
- 2. Instruction:** Is it clear and easy to understand?
- 3. Items:**
 - Is the language simple?
 - Are there any unclear items? Is there any question that you have to read more than 1 time to understand?
 - Check the understanding about meaning of the following questions: 4, 7, 8, 12, 19, 20, 27
 - Are the items easy to understand? Are the items worded respectfully? Any item ambiguous and can be understood in different ways?
- 4. Demographic Information:**
 - Are the questions worded respectfully?
 - Do the categories make sense?
- 5. Rating scale:**
 - Does this rating scale make sense? Scoring? Do you find it easy using this scale?
 - Is the format of the scale easy to follow?
- 6. Other comments?**

Appendix D: Recruitment Email

Dear students,

Hoa Nguyen, a doctoral student at the University of Minnesota, is doing her dissertation on testing a financial self-efficacy scale for women. She would like to ask for your help in taking the online survey in the link below. Participation is completely voluntary and anonymous and no identifying information will be recorded.

Your help is very important in testing the validity and reliability of this scale. The development of this scale will help many U.S. financial education programs for women evaluate their programs and enhance their services for women.

In addition, by taking this survey, you will also have a chance to win one of the five \$20 Amazon gift cards, or a Grand Prize of a \$100 Amazon gift card.

It will take less than 10 minutes to complete the survey. If you decide to participate, please click on the link below to start: <http://z.umn.edu/testscale>

If you have any questions or concerns, please email Hoa Nguyen at nguye835@umn.edu

Sincerely,

Appendix E: Consent Form

Project: Development of a financial self-efficacy scale for women

You are invited to be in a research study to develop a financial self-efficacy scale for women. You were selected as a possible participant because you are female and more than 18 years old. We ask that you read this form and ask any questions you may have before agreeing to be in the study. This study is being conducted by: Hoa Nguyen, a doctoral student at the University of Minnesota.

Background Information

The purpose of this study is to develop a valid and reliable scale to measure the beliefs women in their financial management capability. Having a good measure is crucial for the success of studies that seek to evaluate the impacts of financial literacy programs.

Procedures:

If you agree to be in this study, we would ask you to do the following things:

Take the computer-based survey that includes 24 questions about your confidence in your ability in financial management and provide some information about yourself. It will take less than 10 minutes to answer everything.

Risks and Benefits of being in the Study

Risk: There is no risk associated with taking the survey.

Benefit: There is no direct benefit for participants in this research.

Compensation:

There is no compensation for taking this survey.

Confidentiality:

The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify you. Research records will be stored securely and only researchers will have access to the records. No name will be tied to the survey.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota or with the domestic violence shelters that you are residing. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researchers conducting this study are Hoa Nguyen. If you have questions, **you are encouraged** to contact her at:

Hoa Nguyen

Phone: 612-564-8209

Email: nguy835@umn.edu

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

Statement of Consent:

I have read the above information. I consent to participate in the study by checking this box.

Appendix F: Items and Demographic Questions

Please **circle the appropriate number** in each statement **to rate how confident you are in taking** the financial actions listed below.

Note: You do NOT need to be actually doing the actions now to rate yourself high. Instead, this is about the extent of your confidence in **thinking that you can** do the actions.

Use the scale below to rate each item.

1	2	3	4	5
Not confident at all		Moderately confident		Highly confident

Statements	Ranking
1. I can keep track of my spending to see where I need to make changes	1 2 3 4 5
2. I can pay my bills on time.	1 2 3 4 5
3. I can develop a plan to pay off my debt as early as possible.	1 2 3 4 5
4. I can reduce my use of credit by making good spending decisions	1 2 3 4 5
5. I can find resources to help me solve a difficult financial problem.	1 2 3 4 5
6. I can recognize and avoid a financial fraud.	1 2 3 4 5
7. I can set financial goals for my future wellbeing.	1 2 3 4 5
8. I can develop a plan to achieve my financial goals.	1 2 3 4 5
9. I can stick to my financial plan.	1 2 3 4 5
10. I can achieve my financial goals if I try hard enough.	1 2 3 4 5
11. I can put aside some money for future unexpected expenses.	1 2 3 4 5
12. I can put money into a savings account regularly for future goals.	1 2 3 4 5
13. I can save for retirement.	1 2 3 4 5
14. I can figure out how much money I can save per month.	1 2 3 4 5
15. I can invest my savings appropriately to achieve my financial goals.	1 2 3 4 5
16. I can be prepared to handle unexpected financial problems.	1 2 3 4 5
17. I can arrange for health insurance coverage I need.	1 2 3 4 5
18. I can complete my income tax forms by myself.	1 2 3 4 5
19. I can find resources to help me with completing my tax forms if I need it.	1 2 3 4 5
20. I can get my Earned Income Tax Credit (EITC) if I am eligible.	1 2 3 4 5
* EITC: is a credit for people who earn low-to-moderate incomes. EITC can reduce your taxes, and can mean a refund.	

(IRS, 2011).	
21. I can protect myself from identity theft. <i>* Identity theft: is when someone steals your personal information such as credit card number, social security number, etc. and uses it to buy things or steal from you.</i>	1 2 3 4 5
22. I can find resources to help me solve an identity theft problem if it happens to me.	1 2 3 4 5

Demographic Information

Please circle the letter of the response that applies to you

1. Which one of the following races that you identify yourself with?
 - A. White
 - B. African- American
 - C. Asian
 - D. American Indian and Alaska Native
 - E. Native Hawaiian and Pacific Islander
 - F. Identified by two or more
 - G. Other, please specify _____

2. Were you born in the United States?
 - A. Yes
 - B. No

3. What is your marital status?
 - A. Never married
 - B. Married
 - C. Widowed
 - D. Divorced
 - E. Other, please specify _____

4. Please select the category that included your age::
 - A. 18-24
 - B. 25-30
 - C. 31-35
 - D. over 35 years old

5. Please indicate the highest level of education you have completed:
 - A. Some high school

- B. High school degree
 - C. Some college
 - D. College degree
 - E. Graduate degree
6. Have you had any training or classes about personal and family financial management (including both informal and formal training)?
- A. Yes
 - B. No
7. Do you have a financial advisor or financial analyst periodically working with you to help you plan your financial matters?
- A. Yes
 - B. No
8. Have you experienced any of the following forms of domestic abuse by your current or most recent partner?
- A. Physical abuse (pushing, slapping, physical intimidation, use of weapons, stalking)
 - B. Emotional abuse (threat, humiliation, blaming, undermine a victim's self-worth)
 - C. Financial abuse (making the victim financially dependent, not allowing the victim to work)
 - D. None of the above
9. Are you currently employed?
- A. No
 - B. Yes, part time
 - C. Yes, full time
10. In which of the categories below does your annual personal income fall?
- A. Less than \$25,000
 - B. \$25,000 - \$50,000
 - C. \$50,000 - \$75,000
 - D. \$75,000 - \$100,000
 - E. More than \$100,000

Table 3

Demographic Characteristics of the Sample (N=299)

Variable	n	%
Races	N=297	
White	204	68.7
African-American	6	2.0
Asian	40	13.5
American Indian and Alaska Native	0	0.0
Native Hawaiian and Pacific Islander	0	0.0
Identified by two or more	13	4.4
Other, please specify	34	11.4
Immigration Status	N=299	
Non-Immigrant	254	84.9
Immigrant	45	15.1
Marital Status	N=298	
Never married	172	57.7
Married	100	33.6
Widowed	0	0.0
Divorced	20	6.7
Other	6	2.0
Age	N=292	
18-24	48	16.4
25-30	114	39.0
31-35	58	19.9
36-40	19	6.5
41-45	15	5.1
46-50	17	5.8
over 50 years old	21	7.2
Education	N=299	
Some high school	1	0.3
High school degree	1	0.3
Some college	20	6.7
College degree	163	54.5
Graduate degree	114	38.1
Financial Literacy training	N=299	

Yes	98	32.8
No	201	67.2
Having financial advisor	N=299	
Yes	58	19.4
No	241	80.6
Experience with Domestic Abuse	N=297	
Physical abuse	7	2.4
Emotional Abuse	30	10.1
Financial Abuse	0	0.0
None of the above	257	86.5
Physical & Emotional Abuse	2	0.7
Emotional & Financial	1	0.3
Employment Status	N=299	
Full time	153	51.2
Part time	90	30.1
Not working	56	18.7
Annual personal income	N=297	
Less than \$25,000	125	42.1
\$25,000-\$50,000	94	31.6
\$50,000-\$75,000	47	15.8
\$75,000-\$100,000	15	5.1
More than \$100,000	16	5.4

Figure 2. Distribution of Sumscore

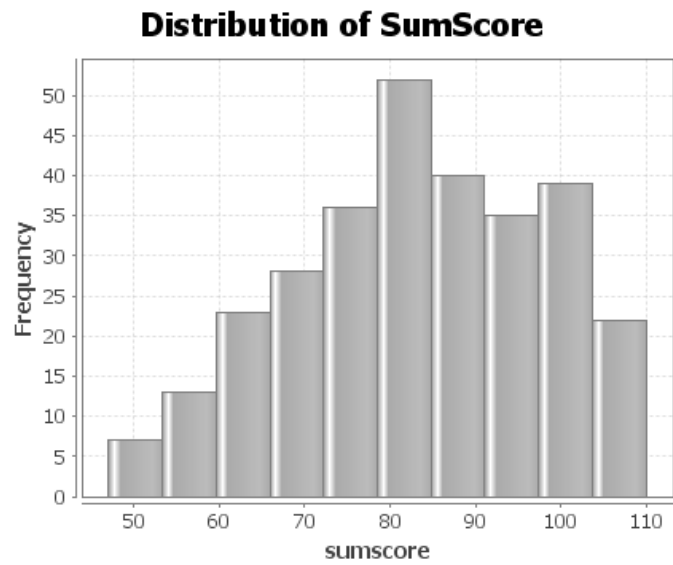
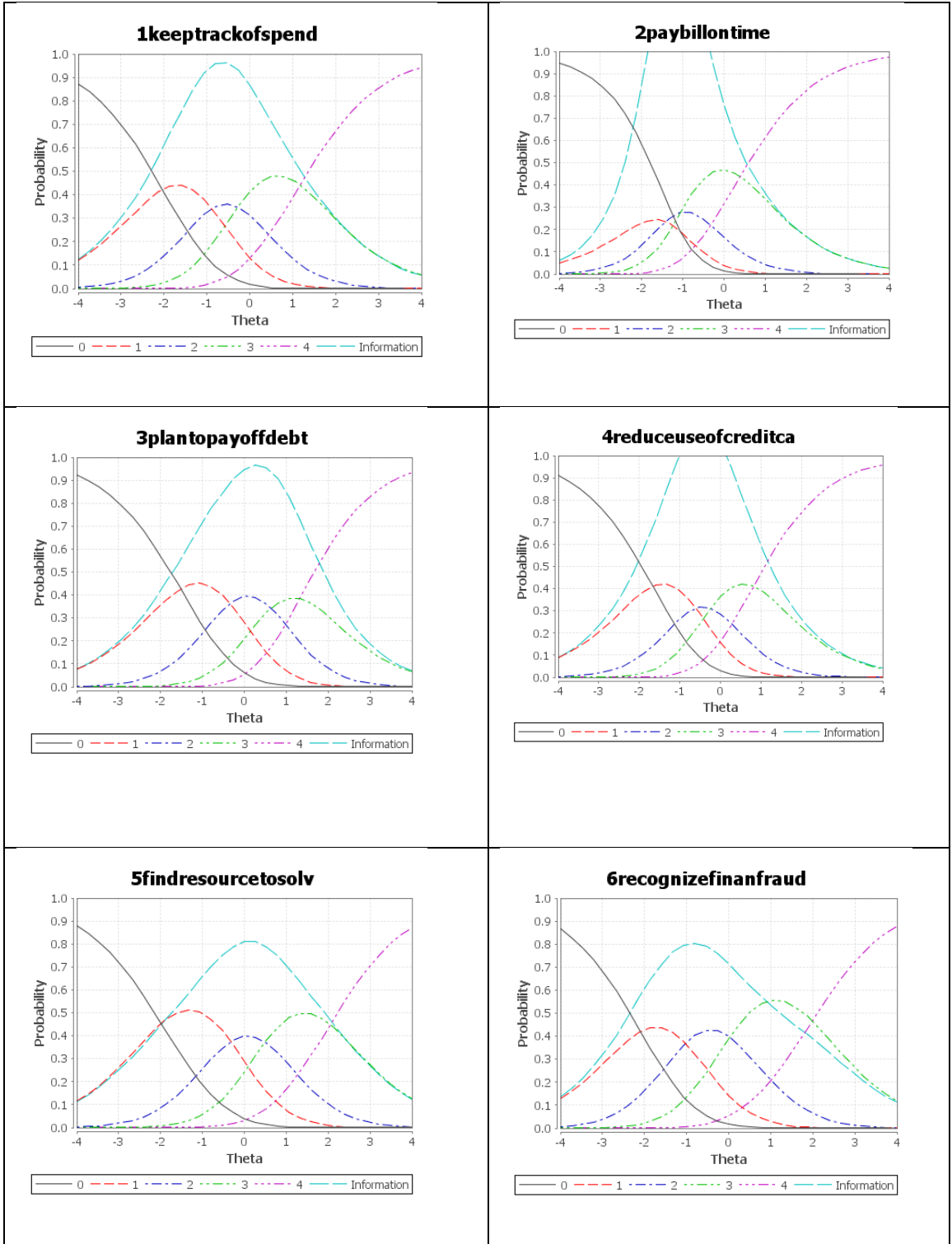
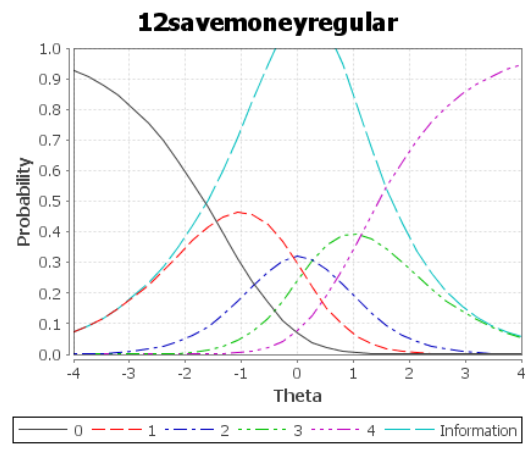
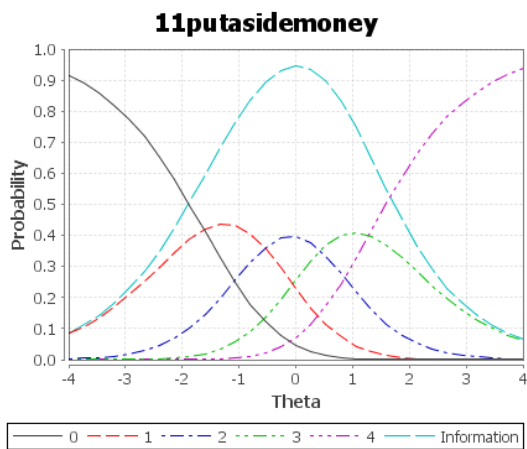
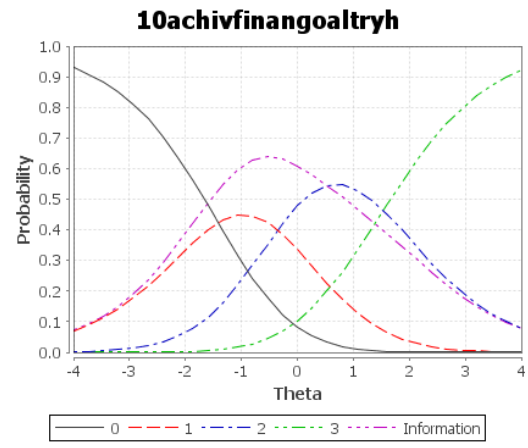
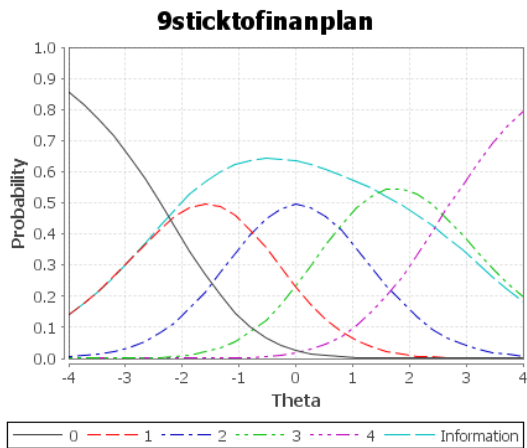
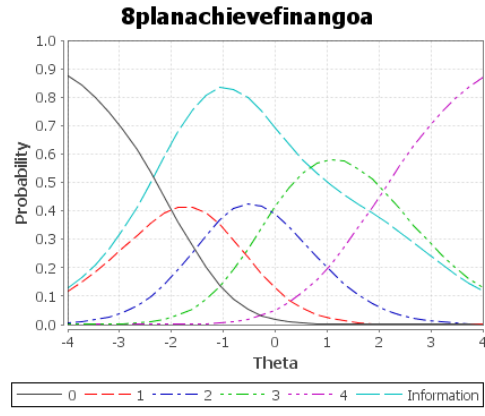
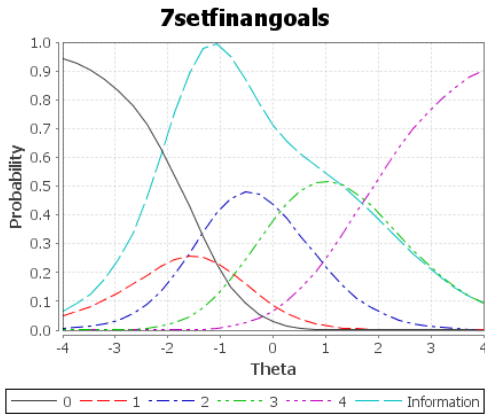
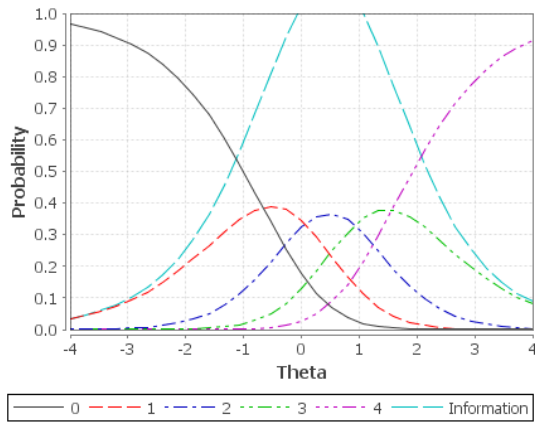


Figure 3. Item Characteristics Curve for each item

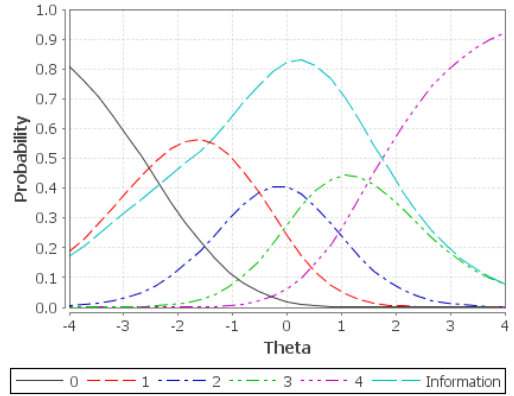




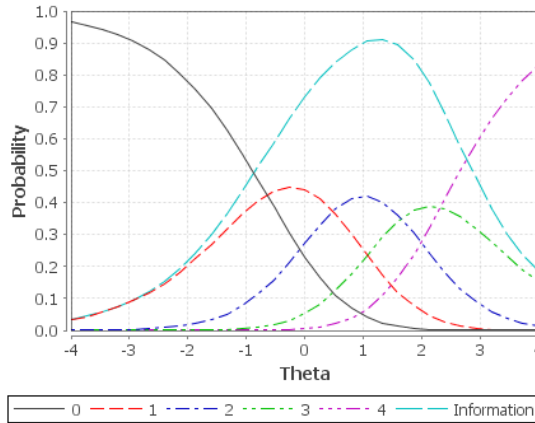
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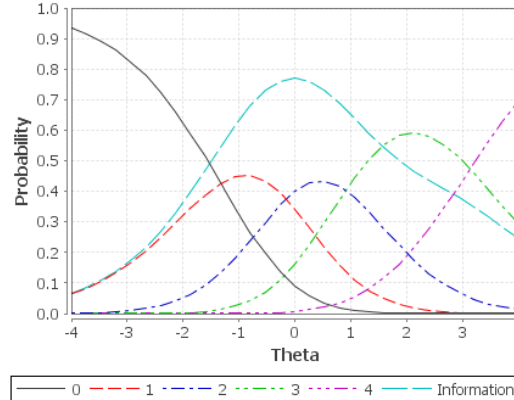
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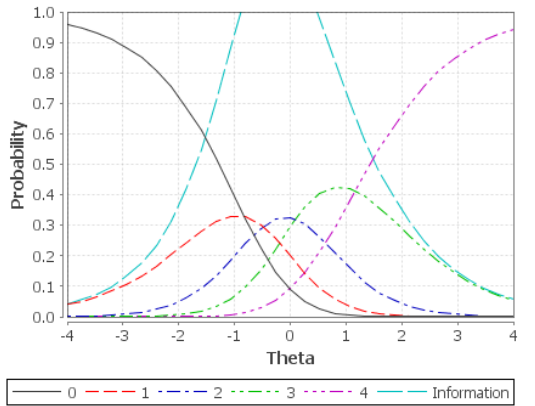
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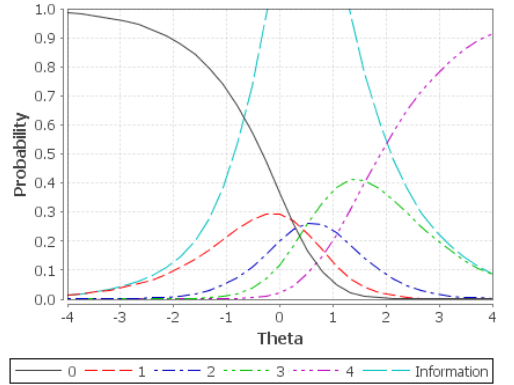
16handleunexpectfina



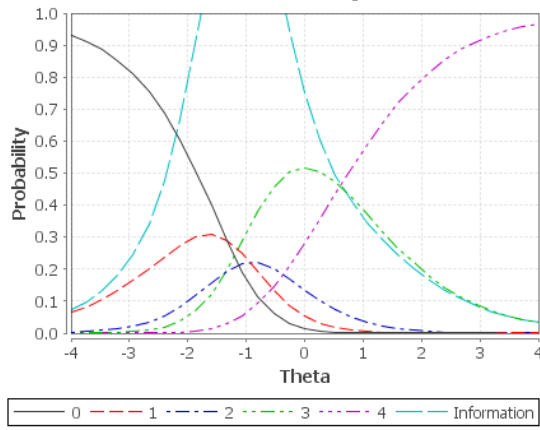
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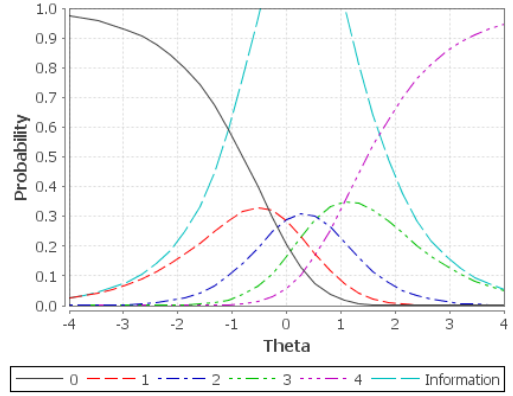
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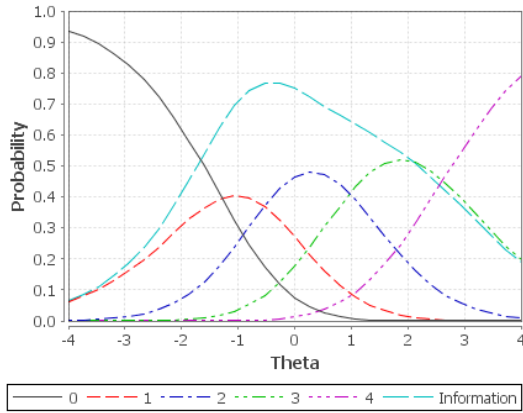
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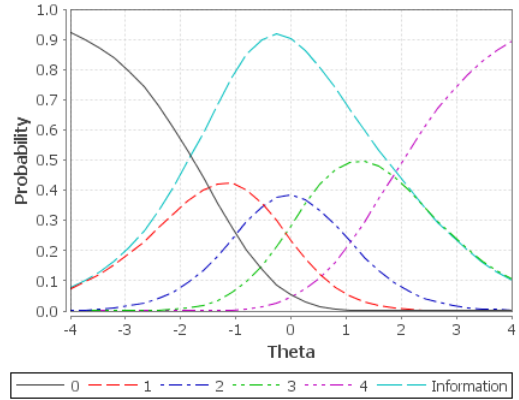


Figure 3. Test Characteristic Curve

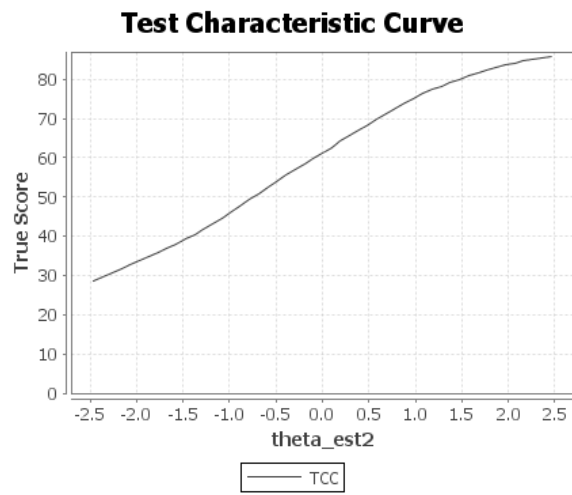


Figure 4. Person-Item map

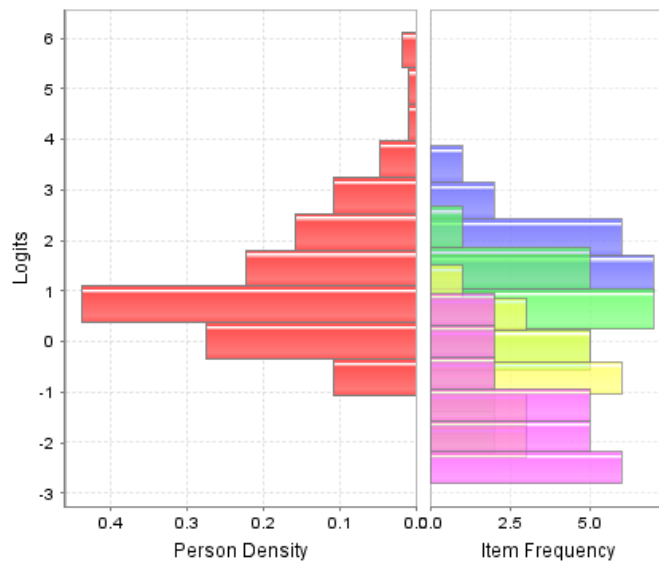


Table 4

Item difficulty and item total-correlation for each item

Items	Item Difficulty	Item total-correlation
1. I can keep track of my spending to see where I need to make changes	0.82	0.657
2. I can pay my bills on time.	0.886	0.582
3. I can develop a plan to pay off my debt as early as possible.	0.75	0.673
4. I can reduce my use of credit by making good spending decisions	0.826	0.705
5. I can find resources to help me solve a difficult financial problem.	0.734	0.618
6. I can recognize and avoid a financial fraud.	0.778	0.515
7. I can set financial goals for my future wellbeing.	0.788	0.679
8. I can develop a plan to achieve my financial goals.	0.778	0.723
9. I can stick to my financial plan.	0.718	0.719
10. I can achieve my financial goals if I try hard enough.	0.82	0.646
11. I can put aside some money for future unexpected expenses.	0.77	0.713
12. I can put money into a savings account regularly for future goals.	0.768	0.663
13. I can save for retirement.	0.694	0.627
14. I can figure out how much money I can save per month.	0.768	0.736
15. I can invest my savings appropriately to achieve my financial goals.	0.61	0.589
16. I can be prepared to handle unexpected financial problems.	0.67	0.734
17. I can arrange for health insurance coverage I need.	0.78	0.508
18. I can complete my income tax forms by myself.	0.67	0.338
19. I can find resources to help me with completing my tax forms if I need it.	0.88	0.436
20. I can get my Earned Income Tax Credit (EITC) if I am eligible.	0.73	0.469
21. I can protect myself from identity theft.	0.69	0.432
22. I can find resources to help me solve an identity theft problem if it happens to me.	0.752	0.435

Table 5

Total Variance Explained by the Four Extracted Factors of the FSES scale

Factor	Initial Eigenvalues			Extracted Sums Of Square Loadings		
	Total	% Variance	Cumulative%	Total	% Variance	Cumulative%
I	9.475	45.120	45.120	9.076	43.219	43.219
II	1.975	9.405	54.525	1.480	7.048	50.267
III	1.074	5.115	59.641	.723	3.442	53.709
IV	1.011	4.813	64.453	.569	2.711	56.420

Table 6

Factor Loadings from the Rotated Factor Structure Matrix for the Financial Self-Efficacy Scale

<i>FSES Items</i>	<i>Factors</i>			
	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>
I. Saving and Investing				
12. I can put money into a savings account regularly for future goals	.826	.309	.512	.631
11. I can put aside some money for future unexpected expenses	.820	.401	.547	.660
13. I can save for retirement	.697	.410	.441	.457
15. I can invest my savings appropriately to achieve my financial goals	.673	.404	.441	.457
16. I can be prepared to handle unexpected financial problems	.762	.519	.598	.590
9. I can stick to my financial plan	.765	.402	.682	.617
14. I can figure out how much money I can save per month	.741	.535	.589	.623
II. Knowledge about financial resources				
19. I can find resources to help me completing my tax forms if I need it	.259	.673	.228	.419
22. I can find resources to help me solve an identity theft problem if it happens to me	.310	.671	.351	.221
21. I can protect myself from identity theft	.393	.669	.351	.287
6. I can recognize and avoid financial fraud	.349	.641	.438	.358
20. I can get my Earned Income Tax Credit (EITC) if I am eligible	.362	.574	.301	.366
17. I can arrange for health insurance coverage if I need	.421	.580	.314	.366
5. I can find resources to help me solve a difficult financial problem	.468	.595	.588	.517
III. Financial goals achievement				
8. I can develop a plan to achieve my financial goals	.663	.448	.967	.599
7. I can set financial goals for my future well being	.629	.453	.834	.607
10. I can achieve my financial goals if I try hard enough	.632	.461	.611	.547
IV. Cash Flow management & Credit basis				
4. I can reduce my use of credit by making good spending decision	.668	.413	.583	.812
1. I can keep track of my spending to see where I need to make changes	.561	.458	.555	.750
2. I can pay my bills on time	.535	.398	.447	.655
3. I can develop a plan to pay off my debt as early as possible	.642	.354	.676	.711

Table 7

Rotated Factor Pattern Matrix for the 21 item FSES: Principal Axis Factoring with Promax Rotation

<i>FSES Items</i>	<i>Factors</i>			
	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>
I. Saving and Investing				
12. I can put money into a savings account regularly for future goals	.851	-.164	-.117	.207
11. I can put aside some money for future unexpected expenses	.747	-.048	-.081	.228
13. I can save for retirement	.733	.100	-.101	-.025
15. I can invest my savings appropriately to achieve my financial goals	.653	.088	.281	-.325
16. I can be prepared to handle unexpected financial problems	.581	.147	.073	.083
9. I can stick to my financial plan	.516	-.066	.280	.133
14. I can figure out how much money I can save per month	.503	.170	.054	.169
10. I can achieve my financial goals if I try hard enough	.307	.109	.268	.125
II. Knowledge about financial resources				
19. I can find resources to help me completing my tax forms if I need it	-.178	.711	-.195	.312
22. I can find resources to help me solve an identity theft problem if it happens to me	.008	.707	.102	-.189
21. I can protect myself from identity theft	.149	.659	-.007	-.129
6. I can recognize and avoid financial fraud	-.100	.579	.201	.024
20. I can get my Earned Income Tax Credit (EITC) if I am eligible	.080	.523	-.084	.109
17. I can arrange for health insurance coverage if I need	.212	.508	-.116	.047
5. I can find resources to help me solve a difficult financial problem	-.088	.374	.348	.186
III. Financial goals achievement				
8. I can develop a plan to achieve my financial goals	-.016	-.063	.978	.053
7. I can set financial goals for my future well being	.025	.000	.724	.155
IV. Cash Flow management & Credit basis				
4. I can reduce my use of credit by making good spending decision	.195	-.042	.076	.656
1. I can keep track of my spending to see where I need to make changes	.003	.086	.133	.627
2. I can pay my bills on time	.152	.072	-.009	.523
3. I can develop a plan to pay off my debt as early as possible	.150	-.125	.364	.452

Table 8

Four factors and items based on the EFA compared with the hypothesized factors

Actual Factors	Hypothesized Factors
<p>Factor 4: Cash flow management & Credit basis</p> <p>1. I can keep track of my spending to see where I need to make changes</p> <p>2. I can pay my bills on time.</p> <p>3. I can develop a plan to pay off my debt as early as possible.</p> <p>4. I can reduce my use of credit by making good spending decisions</p> <p>Factor 2: Knowledge about financial resources</p> <p>5. I can find resources to help me solve a difficult financial problem.</p> <p>6. I can recognize and avoid a financial fraud.</p> <p>17. I can arrange for health insurance coverage I need.</p> <p>19. I can find resources to help me with completing my tax forms if I need it.</p> <p>20. I can get my Earned Income Tax Credit (EITC) if I am eligible.</p> <p>21. I can protect myself from identity theft.</p> <p>22. I can find resources to help me solve an identity theft problem if it happens to me.</p> <p>Factor 3: Financial goals achievement</p> <p>7. I can set financial goals for my future wellbeing.</p> <p>8. I can develop a plan to achieve my financial goals.</p> <p>Factor 1: Saving and Investing</p> <p>9. I can stick to my financial plan</p>	<p>Factor 1: Cash flow & Debt management</p> <p>1. I can keep track of my spending to see where I need to make changes</p> <p>2. I can pay my bills on time.</p> <p>3. I can develop a plan to pay off my debt as early as possible</p> <p>Factor 2: Repair and building credit</p> <p>4. I can reduce my use of credit by making good spending decisions</p> <p>5. I can find resources to help me solve a difficult financial problem.</p> <p>6. I can recognize and avoid a financial fraud.</p> <p>Factor 5: Taxation and financial protection</p> <p>19. I can find resources to help me with completing my tax forms if I need it.</p> <p>17. I can arrange for health insurance coverage I need.</p> <p>20. I can get my Earned Income Tax Credit (EITC) if I am eligible.</p> <p>21. I can protect myself from identity theft.</p> <p>22. I can find resources to help me solve an identity theft problem if it happens to me.</p> <p>Factor 3: Financial goals achievement</p> <p>7. I can set financial goals for my future wellbeing.</p> <p>8. I can develop a plan to achieve my financial goals.</p> <p>9. I can stick to my financial plan</p> <p>Factor 4: Saving and Investing</p> <p>11. I can put aside some money for future</p>

<p>11. I can put aside some money for future unexpected expenses.</p> <p>12. I can put money into a savings account regularly for future goals.</p> <p>13. I can save for retirement.</p> <p>14. I can figure out how much money I can save per month.</p> <p>15. I can invest my savings appropriately to achieve my financial goals.</p> <p>16. I can be prepared to handle unexpected financial problems.</p>	<p>unexpected expenses.</p> <p>12. I can put money into a savings account regularly for future goals.</p> <p>13. I can save for retirement.</p> <p>14. I can figure out how much money I can save per month.</p> <p>15. I can invest my savings appropriately to achieve my financial goals.</p> <p>16. I can be prepared to handle unexpected financial problems.</p>
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Table 9

Confirmatory Factor Analysis for four extracted factors

Items	Factor loading
<u>Factor 1: Saving and Investing</u>	
9. I can stick to my financial plan	.767
11. I can put aside some money for future unexpected expenses.	.817
12. I can put money into a savings account regularly for future goals.	.820
13. I can save for retirement.	.682
14. I can figure out how much money I can save per month.	.762
15. I can invest my savings appropriately to achieve my financial goals.	.654
16. I can be prepared to handle unexpected financial problems.	.780
<u>Factor 2: Knowledge about financial resources</u>	
5. I can find resources to help me solve a difficult financial problem.	.611
6. I can recognize and avoid a financial fraud.	.657
17. I can arrange for health insurance coverage I need.	.584
19. I can find resources to help me with completing my tax forms if I need it.	.651
20. I can get my Earned Income Tax Credit (EITC) if I am eligible.	.586
21. I can protect myself from identity theft.	.651
22. I can find resources to help me solve an identity theft problem if it happens to me.	.660
<u>Factor 3: financial goals achievement</u>	
7. I can set financial goals for my future wellbeing.	.855
8. I can develop a plan to achieve my financial goals.	.971
10. I can achieve my financial goals if I try hard enough.	.615
<u>Factor 4: Cash flow management & Credit basis</u>	
1. I can keep track of my spending to see where I need to make changes	.777
2. I can pay my bills on time.	.642
3. I can develop a plan to pay off my debt as early as possible.	.762
4. I can reduce my use of credit by making good spending decisions	.846

Table 10

Factor Correlations and Factor Coefficient Alpha for the FSES scale (N=299)

Factor	M	SD	1	2	3	4
1. Savings (n=7)	24.87	5.90	(.87)			
2. Knowledge about financial resources (n=7)	26.74	5.05	.743	(.81)		
3. Financial goals achievement (n=3)	11.96	2.3	.548	.563	(.85)	
4. Cash flow management and credit basis (n=4)	16.46	3.20	.414	.474	.552	(.84)
Total scale (n=21)	80.16	14.28				(.93)