

THREE ESSAYS ON THE EFFECTIVENESS OF FINANCIAL EDUCATION IN THE
WORKPLACE

by

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B.B.A., University of Iowa, 1985
M.B.A., Creighton University, 2008

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Personal Financial Planning
College of Human Ecology

KANSAS STATE UNIVERSITY
Manhattan, Kansas

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Abstract

Retirement savings and income projections are among the most financially complex calculations individual Americans will encounter. The movement towards self-directed employer retirement plans has shifted the responsibility for securing an adequate retirement increasingly to the employee, who may lack the financial understanding needed for proper calculations and decisions. There is an expressed preference among employees for the delivery of financial education in the workplace, where a majority of their financial knowledge is obtained. However, adoption of workplace comprehensive financial education programs has been slow due to the cost, time commitment, and lack of empirical support for their value.

While there have been some mixed findings, literature has generally supported associations between financial education programs and improved literacy and behaviors. A great deal of these mixed results can be explained by the lack of consistency among definitional frameworks for financial literacy, the lack of consistent measures, and the variety of topics and methods used, all of which limit the ability to establish causal support for the educational program's effectiveness. However, the preference for financial education in the workplace among employees suggests both the need and desire for more comprehensive financial education offered by employers.

The purpose of this research was to investigate and test the links between the components in the framework for financial literacy by testing participation in a worksite comprehensive financial education program. In Essay One, the link between financial education and change in financial literacy was tested. Essay Two tested the link between the financial education program and financial well-being. In Essay Three, the link between financial literacy and financial behavior was explored. The results indicated associations between all three links in the financial

literacy model, utilizing both primary research employing quasi-experimental methods, and secondary research from a larger national data sample.

For financial educators who are interested in developing and facilitating comprehensive financial education programs for employee or other groups, this research can help provide support and guidance for those efforts. If comprehensive financial education programs can be better positioned to help improve the levels of financial literacy among Americans, fewer negative associated behavioral effects, such as lack of planning and under saving for retirement, may occur.

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Dedication

This dissertation is dedicated to my wife Chris and the memory of Bandit.

Chapter 1 - Introduction

Low levels of financial literacy cause Americans great difficulty in understanding basic economic concepts needed for proper budgeting, saving, and financial decision making (Lusardi, 2008). The likelihood of making poor financial decisions increases with the inability to understand and apply basic financial concepts such as compound interest, inflation, and diversification (Martin, 2007). Low levels of financial literacy are widespread across the American population, and those most at risk for economic hardship fall within the subgroups of low income, low education, minorities, and women (Lusardi & Mitchell, 2007b; Lusardi, 2008). These findings highlight a troubling social problem in America, and if not properly addressed, can threaten our economic social structures (Lusardi & Mitchell, 2011).

Why Financial Literacy is a Growing Concern

To better understand why low financial literacy is a growing concern, one need only look at the trends of employer pension plans. As employer pension plans have shifted from Defined Benefit (DB) to Defined Contribution (DC) plans, the need for financial literacy has become even more important to help achieve a comfortable retirement (Lusardi, 2008; Martin, 2007). DB plans typically guarantee a systematic pension payout at retirement age, thereby relieving the employee of the need to apply financial knowledge, investment management, and proper savings behavior to help secure needed retirement income. The management of the pension plan assets is handled by a plan administrator in coordination with the employer. Under a DC plan, employers only promise to contribute a specified amount or percentage of wages towards an employee's designated retirement account. However, unlike DB plans, DC plans shift the required investment related allocation decisions, and the determination of needed contribution amounts, from the employer to the employee (Martin, 2007).

Identification of the proper savings levels and projection of future retirement benefits now become the responsibility of the employee, who may lack the basic understanding of several important financial concepts required for making proper calculations (Lusardi, 2008). Retirement savings and income projection calculations are among the most financially complex decisions ordinary Americans will encounter (Bayer, Bernheim, & Scholz, 2008). Many pension plan and investment providers have tools to help project and simplify some of these calculations, but basic understanding of financial concepts is still needed for proper decision making. Employees will become increasingly more responsible for their own financial well-being, which places an increasingly greater importance on the need for financial literacy (van Rooij, Lusardi, & Alessie, 2011).

Negative Effects of Low Financial Literacy

One of the more widespread effects influenced by low financial literacy levels involves the lack of planning and saving that occurs earlier in life. Low levels of financial literacy have been associated with decreased levels of retirement savings (Lusardi, 1999, 2003). The effects of low financial literacy are manifest within many older Americans, who report not being at all confident about their retirement preparedness, with only one in three adults in their 50s having developed any kind of retirement saving plan (Lusardi, 1999, 2003). This represents a challenge difficult to overcome, because starting to plan and save for retirement at age 50 requires 2.6 times more monthly savings to generate the same amount in retirement than starting to save at age 30 (\$197.12 per month at age 30, versus \$513.20 per month at age 50 to accumulate \$100,000 at age 65, assuming a 5% rate of return).

A commonly used standard for estimating income needs in retirement is to plan on replacing 70% of preretirement income. The reality is that many low- to middle-income

households simply will not have enough disposable income to set aside each month to save for the needed amount in retirement, especially if they begin at age 50 or later. As a result, these households will become heavily dependent on government welfare and social security programs to provide for their income needs in retirement. The importance of starting to plan earlier in life is clear, and there can reach a point where time works against an individual's ability and resources to adequately prepare for retirement. Therefore, the need for education and awareness on the importance of planning and saving earlier in life becomes a critical element for financial education at all ages.

Low levels of financial literacy have also been associated with a variety of poor financial management outcomes. The inability to grasp basic financial concepts was found to be associated with the lack of accumulated wealth. Those with lower levels of financial literacy accumulated less wealth at retirement than those with higher levels of financial literacy (Lusardi & Mitchell, 2007b). Financial literacy affects financial decision making, whereby those with low literacy were less likely to invest in stocks, and were more likely to exhibit poor borrowing behavior (Yoong, 2010; van Rooij et al., 2011).

Effects of financial illiteracy can be seen in the negative behaviors related to poor credit management (Lusardi, 2008). Poor borrowing behavior, in the form of expensive credit use of payday loans, tax refund loans, pawn shop loans, and credit at rent-to-own stores, is associated with low levels of financial literacy (Seay & Robb, 2013; Lim, DeJohn, & Murray, 2012; Skiba, Bos, & Carter, 2012; Swagler & Wheeler, 1989). Low levels of financial literacy have resulted in high levels of consumer debt, low savings rates, and record levels of bankruptcies (Fox, Bartholomae, & Lee, 2005).

Low levels of financial literacy have also been associated with lack of stock market participation. A broad-based assessment of financial literacy among older Americans utilizing the RAND American Life Panel found that ignorance of stock market investment knowledge significantly reduced the likelihood of owning stocks (Yoong, 2010). Stock ownership and proper investment diversification help to provide reduced risk and needed inflation protection for longer term savings (van Rooij et al., 2011). In addition, the financial service products today, both in number of choices and in design features, represent an added level of complexity to understand and navigate (Lusardi, 2008). Households that lack basic financial knowledge tend to make repeated poor financial decisions and suffer long-term wealth accumulation effects (Yoong, 2010).

The effects of low levels of financial literacy can also manifest in financial stress extending beyond an individual's personal life (Joo & Garman, 1998). At work, employees routinely experience stress from poor financial behaviors in their personal lives, which negatively impacts their productivity at work (Garman, Leech, & Grable, 1996). These negative personal financial effects are seen throughout the workplace, and have negative financial consequences for employers as well. Employees use work-time to contact creditors, seek out additional credit sources, and talk with co-workers and their supervisors about financial problems (Garman, 1997). The associated costs incurred by employers from these negative work-time behaviors include lower productivity, increased absenteeism, frequent tardiness, accidents from increased risk taking, increased health care costs for financial stress-related illnesses, employee theft, time lost on the job dealing with personal finance matters, and increased employee turnover (Garman, 1997).

Financial Education and Financial Literacy

Historically, financial education has been the primary means for attempting to improve financial literacy. Much of the historical research on financial education and financial literacy was conducted through programs delivered in schools, and less in workplace settings. Overall, the associations and effectiveness of financial education programs at improving financial literacy and subsequent behaviors has been mixed (Martin, 2007). A great deal of these mixed results can be explained by lack of consistency among definitional frameworks for financial literacy, the lack of a consistent measure, and the variety of topics and methods of program delivery (Huston, 2010; Remund, 2010).

Research by Mandell (2008), who looked at the impact of financial education among high school students, represents an alternative finding within the literature. Very little evidence was found in support of full-time courses in personal finance actually increasing financial literacy. However, evidence was found that these education courses did improve financial decision making. On the opposing side, Garman, Kim, Kratzer, Brunson, and Joo (1999) conducted a representative research study on workplace financial education, exploring the differences and similarities between employee participants and non-participants. The participants overwhelmingly reported making more confident and better decisions, as well as higher levels of financial satisfaction. The participants attributed positive changes in their financial behavior to the workshops and highly valued the education they received. Additionally, Fletcher, Beebout, and Mendenhall (1997), found that participating in workplace financial education resulted in improved financial knowledge, attitudes, and behaviors.

Despite the lack of consistency among findings, research has generally concluded that many existing financial education programs and approaches have proved to be effective at increasing financial literacy and improving some associated financial behaviors (Martin, 2007).

Research is greatly needed to expand the testing of more comprehensive forms of financial education, specifically in a workplace setting, where a vast amount of financial education is delivered today.

Financial Education and Financial Well-Being

When it comes to understanding the effects of financial education on financial well-being, historical research is clearly mixed. Several historical studies have shown that greater financial knowledge improves financial behavior and decision making, which in turn have been associated with higher levels of financial well-being (Joo & Grable, 2004). Financial education confers decision-making skills, which can improve an individual's ability to weigh alternatives in order to achieve personal financial goals and objectives (Bayer et al., 2008).

However, other historical studies have found a negative relationship between financial literacy and financial well-being (Mugenda, Hira, & Fanslow, 1990). An explanation for this negative relationship is that the individual gains a clearer sense of their relative financial position through greater education and subsequently becomes less financially satisfied. In other words, those who are less financially literate are not aware of their poor financial position, and therefore perceive greater financial satisfaction than those who know better. In order to more clearly understand the relationship and implications between financial literacy and financial well-being, clarifying research is greatly needed.

Purpose

The purpose of this research is to test the three primary aspects of the framework for financial literacy (Huston, 2010). Specifically, this research will test the effects of financial education on financial literacy, financial literacy on financial behaviors, and financial education on financial well-being. The mixed historical research and inconsistent findings on financial

education's impact on financial literacy, and subsequent effects on behaviors and well-being, require expanded research to provide clarity. While literature has generally shown support for financial education programs and their associated improvements in literacy and positive behaviors, historical research falls short in establishing causal support for the effectiveness of the program itself (Martin, 2007; Garman et al., 1999).

These essays seek to provide important and specific research in the area of financial education using quasi-experimental research methods. This research seeks to better understand the associations between financial education, financial literacy, financial behaviors, and how financial well-being is perceived, thus adding to the greatly needed body of research in this area. Through a greater understanding of these associations, financial education programs can be better positioned to help improve the levels of financial literacy among Americans and address the negative associated behavioral effects, such as lack of planning and saving for retirement.

Description of Studies

This dissertation is comprised of three essays to help explore and better understand (a) the effectiveness of a financial education on changing financial literacy, (b) the association between financial literacy and retirement best practice behaviors, and (c) financial education's impact on changing financial well-being. Two of the essays in this dissertation utilize primary research data collected during 2013 and 2014. Pre and post surveys were created to help capture participant data prior to, and immediately following, the delivery of a financial education program.

In addition, the use of control groups is employed to measure the changes of the same variables during the same periods of time for a control group of non-participant employees. The surveys were designed to assess and measure beginning and ending scores of financial literacy

and financial well-being. Employee participants self-selected into the financial education program offered by their employer, while the control group was selected among current employees to be similar to the participant group. Data was collected from 102 surveys, of which 46 were participants and 56 were from the control groups.

The first study of this dissertation, “The Effectiveness of a Comprehensive Financial Education Program in the Workplace,” explores the changes in financial literacy after participation in a worksite comprehensive financial education program. Quasi-experimental research methods were employed as financial education programs were delivered to employee groups in a workplace environment. Measures for objective financial literacy were assessed, and statistical analysis was used to provide a better understanding of the relationships between the variables for both the control and participant groups. This essay seeks to answer the following research questions:

1. What is the association between participation in a comprehensive financial education program and changes in financial literacy scores?
2. What is the association between the number of classes attended in the program and changes in financial literacy scores?

The second essay, “The Effectiveness of a Comprehensive Financial Education program on changing Financial Well-Being,” is guided by historical literature, and seeks to better understand how changes in financial literacy affect changes in financial well-being. Using quasi-experimental research methods, a financial education program was conducted and delivered in a workplace environment. Measures for financial literacy and financial well-being were collected, and statistical analysis was assessed for both control and participant groups. The findings from

the research conducted for paper two is expected to provide much-needed insight into the impacts associated with a financial education program and perceived financial well-being.

The purpose of this research is to better understand the effects of financial education on changing financial well-being. To that end, the following research questions are posed:

1. What is the association between participation in a worksite comprehensive financial education program and change in savings satisfaction?
2. What is the association between participation in a worksite comprehensive financial education program and change in income worry?
3. What is the association between participation in a worksite comprehensive financial education program and change in expense worry?
4. What is the association between participation in a worksite comprehensive financial education program and change in debt worry?
5. What is the association between participation in a worksite comprehensive financial education program and change in retirement savings confidence?
6. What is the association between participation in a worksite comprehensive financial education program and change in comfortable retirement confidence?
7. What is the correlation between changes in financial literacy and changes in financial well-being among participants of a worksite comprehensive financial education program?

The third essay, “Financial Literacy and Retirement Preparedness Best Practice Behaviors,” utilizes data from the 2012 FINRA National Financial Capability Study, and explores the relationship between financial literacy and three best practice behaviors. The best practice behaviors are: (a) calculating retirement savings needs, (b) owning an individual

retirement savings products, and (c) owning stocks or securities. It is posited that individuals with higher levels of financial literacy are more likely to follow recommended financial practices and engage in these best practice behaviors. To better understand the relationship between financial literacy and retirement preparedness best practice behaviors, the following research questions were explored:

1. What is the association between financial knowledge and calculating retirement savings needs?
2. What is the association between financial knowledge and individual retirement product ownership behavior?
3. What is the association between financial knowledge and stock or securities ownership behavior?

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Chapter 2 - Paper One: The Effectiveness of a Comprehensive Financial Education Program in the Workplace

Introduction

Low levels of financial literacy cause many Americans to struggle with basic economic concepts needed for proper budgeting, saving, and financial decision making (Lusardi, 2008). Having knowledge of basic financial concepts, such as compound interest, the effects of inflation, and fundamental risk diversification, decreases the likelihood of making sub-optimal financial decisions (Martin, 2007). The subgroups of low income, low education, minorities, and women, are at the greatest risk from low levels of financial literacy (Lusardi & Mitchell, 2007a). There is a compelling need to identify effective financial education programs that can increase financial literacy and positively affect financial decision making (Lusardi, 2008).

A significant body of research has been dedicated to understanding financial literacy and its associations with financial decision making and behavior. The core of this research is based upon work assessing financial literacy and improvements associated with financial education. The roots of worksite financial education programs can be traced back to the early 1980s, when employers began offering programs to help increase financial literacy regarding retirement plans and to stimulate contributions to employer 401(k) plans (Bernheim & Garrett, 2003). Since the 1990s, there has been a rapid expansion of financial education programs, accounting for over three-quarters of the programs in existence today (Martin, 2007; Fox, Bartholomae, & Lee, 2005; Bernheim & Garrett, 2003). These recently-added financial education programs have been primarily offered to employees in the workplace, for both public and private organizations (Fox et al., 2005).

Financial education programs address knowledge, attitudes, and/or financial behaviors on various potential topics and concepts (Fox et al., 2005). Historically, financial education programs have been organized into the three primary themes or topics of (a) improving financial literacy through personal finance education, (b) educating on retirement savings and investing, and (c) addressing home buying, credit, and home ownership (Fox et al., 2005). Despite the fact that financial education programs are widespread, the research results on financial education have been mixed and are limited in specific areas of interest, such as the workplace environment. However, financial education is greatly needed, and there have been many programs and approaches which have proven to be effective at increasing financial literacy (Martin, 2007).

Several quasi-experimental research methods, including control groups and pre and post testing of participants, will be used to assess the effects and associations related to participation in a financial education program. Additionally, a more comprehensive form of financial education will be tested, with delivery of the program occurring over a longer period of time than typically used in historical literature. To that end, this essay seeks to answer the following research questions:

1. What is the association between participation in a comprehensive financial education program and changes in financial literacy scores?
2. What is the association between the number of classes attended in the program and changes in financial literacy scores?

Reliable, valid, and relevant research, using properly designed evaluation techniques, is greatly needed to provide effective recommendations for the direction of policy (Fox et al., 2005). The future financial well-being of millions of Americans may rest upon our ability to help increase overall financial literacy through effective financial education programs.

Literature Review

Theoretical Framework and Hypothesis

In this section, two theories are introduced: adult learning theory (ALT), which is used to guide our financial education program, and human capital theory, used in the definitional framework for financial literacy. ALT helps us better understand how people assimilate new information and acquire new skills, through a deeper understanding of how learning occurs. In order to measure and test the association between a financial education program and financial literacy, a conceptual framework for financial literacy will be utilized.

Adult Learning Theory

The roots of adult learning theory can be traced to Lindeman's *The Meaning of Adult Education*, published in 1926. The field of adult learning theory can be divided into behaviorist and constructivist lenses (Baumgartner, 2003). Behaviorists believe that learning can only occur through observation (Watson, 1930). Learned behavior can be followed by positive reinforcement to increase the likelihood of repeat behavior (Shaffer, 1994). Behaviorist educators view people as a collection of their individual learned habits, and use programmatic learning techniques for education and skill reinforcement, such as repeated drills and memorization (Watson, 1930). For example, a financial education program utilizing a behaviorist lens might focus heavily on memorizing terms and definitions, reinforced by exercises and quizzes on learned material.

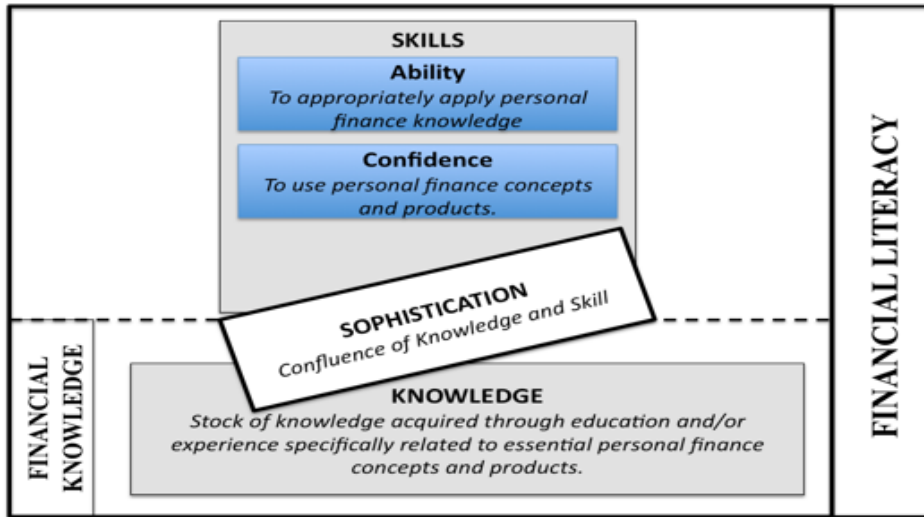
Other educators assert a constructivist lens, and believe learning is a search for meaning (Baumgartner, 2003). As opposed to the behaviorist, constructivists believe that knowledge must be obtained by the learner and not just absorbed through experiences all around us (Baumgartner, 2003). This means that individuals must take action to acquire knowledge and assimilate it

cognitively. For example, employees may choose to participate in a financial education program through their employer, purchase and read a personal money management book, or sign up for a personal finance course at a local community college. People form internal cognitive structures to manage, live, and optimize their surrounding world (Baumgartner, 2003). More specifically, new learning requires cognitive structures to be reorganized as we assimilate new knowledge, leading to accommodations in our held beliefs and ultimately a reformed cognitive structure (Miller, 1993). Constructivist educators believe the best opportunities for learning occur through factual analysis, discussion, and critical thought, in order to obtain new knowledge (Baumgartner, 2003). The financial education program utilized for this research is based upon a conceptualization of adult learning theory, viewed through a constructivist lens.

Framework for Financial Literacy

There has been an inconsistent and interchangeable use of the terms financial literacy, financial knowledge, and financial education in the body of historical research (Huston, 2010; Remund, 2010). Huston's (2010) framework for financial literacy helps to clear up the confusion among these terms and shows their relationships within a broader context. Huston's (2010) model of financial theory will be used to define financial literacy and the sub-components (see Figure 2.1). The purpose of financial literacy is to help the individual make financial decisions using attained financial knowledge, to optimally utilize resources over a lifetime of consumption (Huston, 2010). This definition is consistent with human capital theory (Becker, 1964) and is based in the lifetime consumption model of the lifecycle hypothesis (Modigliani & Brumberg, 1954).

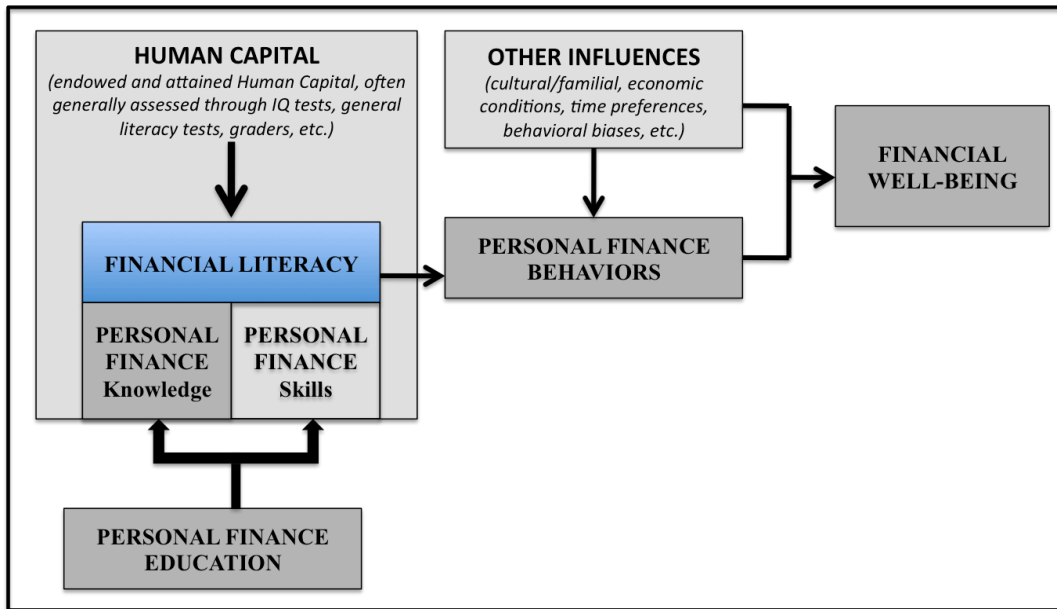
Figure 2.1 Concept of Financial Literacy



(Huston, 2010)

Within the broader context, personal financial education helps to build financial knowledge, increasing overall financial literacy (see Figure 2.2). In addition to financial literacy, financial behavior is also potentially affected by other influences such as cultural and familial characteristics, economic conditions, time preferences, and behavioral biases. Financial literacy, personal financial behaviors, and other personal influences ultimately contribute to overall financial well-being.

Figure 2.2 Relations among Financial Literacy, Knowledge, Education, Behavior, and Well-Being



Huston (2010)

Research Assessing Financial Literacy

Despite the amount of attention financial literacy has received, academic literature has focused little on proper measurement (Huston, 2010). In order to properly assess current levels of financial literacy and seek improvement, a standardized measure is needed (Huston, 2010). A consolidation of relevant research on financial literacy over the past decade revealed that various measures were employed, but most studies utilized a series of questions, collected in several national datasets (Remund, 2010). The following section will summarize the historical assessments of financial literacy.

The University of Michigan study (started in 2001) utilized a 28 true/false question measure to assess financial literacy among consumers ages 18 and older. This measure was utilized in research on financial literacy by Hilgert and Hogarth (2002), Lusardi and Mitchell (2007a, 2007b), and Emmons (2005). The Jump\$tart Coalition for Personal Financial Literacy

study (started in 1997) utilized a 33 multiple-choice question measure to assess the financial literacy of high school seniors. This measure was utilized in research on financial literacy by Fox et al. (2005) and Braunstein and Welch (2002). The National Council on Economic Education study (started in 2005) utilized a 24 question measure to assess the financial literacy of high school students and adults. The Test of Economic Literacy (1978-present) utilized 46 multiple-choice questions to assess financial literacy among the national population. Some consider this survey a standard worldwide measure for financial literacy (Williams, 2007; Remund, 2010).

Custom-designed surveys for primary research in financial literacy have been developed by Lusardi and Mitchell (2007a, 2007b) and Chen and Volpe (2002). Lusardi and Mitchell developed three questions (*compound interest, inflation, and diversification*) to measure understanding of basic financial concepts. In the HRS study, alarmingly low levels of financial literacy were found among Americans between the ages of 50 and 65 who were nearing or in early retirement (Lusardi & Mitchell, 2007a, 2007b, 2011). Only 50% of respondents were able to correctly answer the first two financial literacy questions, with only one-third being able to answer all three questions.

Lusardi and Mitchell (2009, 2011) expanded their initial set of three financial literacy questions to 13, and identified each question as either basic or sophisticated. Three additional basic knowledge and seven additional sophisticated questions were added to the HRS and used in the American Life Panel (ALP), and five questions were used in the 2009 and 2012 FINRA National Financial Capability Study. It should be noted that in the framework for financial literacy utilized in this research, Huston (2010) refers to sophistication as the confluence of knowledge and skills. The Lusardi and Mitchell (2007a, 2007b, 2009, 2011) financial literacy assessment questions differentiated sophisticated from basic questions based on a higher level of

difficulty rather than the application of knowledge and skills. This represents an example of inconsistent definitions within the historical literature related to the assessment of financial literacy.

Huston (2010) identified three main barriers to effectively measuring financial literacy. These barriers include (a) the lack of conceptualization and definition of the financial literacy construct, (b) the content of the instrument, and (c) interpretation of the instrument used to measure. Historically, only about 25% of the relevant research clearly identified and connected the framework for financial literacy that was used (Huston, 2010). Of the 25% that did identify and elaborate on the construct used, most of the research interchangeably applied the definition of financial knowledge to financial literacy. The lack of an identified construct for financial literacy and the inconsistent application of the term greatly limit both comparability and validity across the limited amount of existing research (Huston, 2010).

Literature on Financial Education

To better understand where and how financial education programs have been associated with increased levels of financial literacy, a review of the representative research is presented. There are several historical research articles that provide definitions and frameworks to help guide this research.

The definitional framework for categorizing different types of educational programs has yet to be established as uniform, with historical research sharing similar yet different components (Huston, 2010; Remund, 2010). Financial education has focused on the personal finance topics of (a) basics, (b) borrowing activity, (c) savings and investing related areas, and (d) insurance risk management (Huston, 2010). In a workplace setting, financial education varied among employers and could generally be categorized into the three primary dimensions of content,

media, and frequency (Bernheim & Garrett, 2003). Financial education has also been similarly classified by setting, audience, and subject (Todd, 2002; Braunstein & Welch, 2002). Content or subject topics related to savings include (a) retirement income sources and needs, (b) the establishment of goals, (c) pension participation, (d) retirement income planning, (e) time value of money concepts, (f) budgeting, and (g) debt reduction. Content topics related to asset allocation include (a) concepts of risk, (b) risk tolerance, (c) diversification, and (d) asset characteristics. The media classifications tended to be mostly face-to-face education in a workplace setting, but also included online and printed educational materials as supplemental. Frequency can range from single event content delivery workshops to scheduled intervals (e.g., quarterly) or even a series of classes.

Sources of survey data on household finance (i.e., Survey of Income and Program Participation, the Panel Study on Income Dynamics, and the Survey of Consumer Finances) contain nothing specific to employer-based financial education delivery (Bernheim & Garrett, 2003). The lack of specific workplace research limits the available information on financial education to a handful of relevant studies.

Bernheim and Garrett (1996) looked at how the financial education was valued by the employees. It was found that employer financial education was regarded among employees as the primary source of authority on financial advice and retirement planning. However, results were based on the assumption that the financial education was remedial in nature. The importance and value of employer-based financial education, as perceived by employees, is a key finding from this research. Bernheim and Garrett (2003) also investigated the effects of employer-based financial education on both retirement and personal savings. Bernheim started gathering and monitoring adequacy of personal savings rates using an annual household survey.

In 1994, the survey was expanded to include questions related to employer-based financial education programs. Data was collected on a national sample of respondents between the ages of 30 and 48, with a total of 2,055 surveys completed. Their research found that employer-based financial education significantly stimulated retirement savings among low and moderate savers (Bernheim & Garrett, 2003). Among respondents, 27% indicated that their employer was the most important source of advice and information on retirement planning, versus only 7.4% where employer-based financial education was not offered.

Prior research has also provided insight as to the potential benefits of workplace financial education programs and their ability to improve overall employee financial well-being. It was noted that an employer's best workers are typically people who are in control of their personal finances and contribute to their pension plans (Wissert, 1998). Employee financial education participants were shown to have higher levels of perceived financial well-being, and the effects were also visible in their work (Wissert, 1998). Workers with poor financial well-being were absent from work more frequently, received poor performance ratings, spent excessive time at work dealing with financial problems, and experienced a decline in job productivity (Joo, 1998). Employers might reduce employee absenteeism and improve organizational commitment by helping employees reduce financial stress through effective workplace financial education programs (Kim & Garman, 2003).

Review of Comprehensive Financial Education

A review of financial education programs indicate either a topical or comprehensive design, with topical defined as having a single focus or narrow perspective (Black, Ciccotello, & Skipper Jr., 2002). An example would be a financial workshop on investing, credit counseling, or retirement planning, with a focus on specific goals or actions related to these topics (Joo &

Garman, 1998). A more comprehensive planning perspective is optimal for individuals, and a limited view analysis can yield misleading results (Black et al., 2002).

Comprehensive financial education programs can be defined as multiple education sessions on a wide variety of topics and are consistent with broad personal finance categories (Huston, 2010). A more comprehensive form of financial education in the workplace can offer tremendous benefits to employees, their families, and their employers (Joo & Garman, 1998). However, financial education delivered in a scholastic setting over the course of a term/semester showed little association with increases in financial literacy but did show an association with improved financial behaviors (Mandell, 2008).

One of the most relevant representative research studies by Garman, Kim, Kratzer, Brunson, and Joo (1999) tested a comprehensive financial education program as a choice among a series of single-topic workshops offered in a workplace setting. The differences and similarities between employee participants and non-participants were explored. The research focused on understanding (a) why employees attended the workshops, (b) what they valued about the workshops, and (c) which topics of education were preferred. A variety of financial education workshop topics with varying lengths of duration were tested, and the effects on financial satisfaction and financial behavior were explored. A clearly identified desire and perceived value among employees for workplace financial education was found.

Data for the research was collected with a mail survey questionnaire sent to 300 employees, 100 of whom had attended at least one workshop. There were 181 responses received from participating and non-participating employees. Of the 178 usable questionnaires, 56% of responders were attendees of a workshop. Of the 100 attendees, 57 attended one workshop, 32 attended two, and only three attended all three workshops. Of the participants who returned the

questionnaire, 100% indicated their reason for attending a workshop was to learn more about financial topics, indicating a strong desire for financial education. The desire among participants to seek out financial education shows consistency with adult learning theory, viewed through the constructivist lens. The survey respondents were reported to be a representative sample of the company as a whole.

Among the key findings were that participants highly valued the financial education they received, and they attributed positive changes in their financial behavior to the workshops. Among participant responders, 75% reported improved financial decision making, improved confidence with investment decision making, and improved investment diversification through asset allocation. Since most participants attended the comprehensive Money Basics workshop, these results could be inferred to be coming mostly from those attending a comprehensive workshop. However, without specific separation of the results of participants by workshop type, these results may be viewed as anecdotal at best.

A limitation of the research by Garman et al. (1999) is the inability to attribute any results directly to the financial education program, since a pre-workshop survey was never conducted. Results of financial management changes were self-reported and could not be verified against prior workshop financial behavior, so any reported changes could not necessarily be attributed to the workshops. Since the workshops were delivered over a three-year period, early participants had the ability to attend multiple workshops, while recent attendees may have only attended one. Additionally, the variation of economic conditions during the three-year period may also have contributed to participation as well as the resulting changes in financial behavior. Unfortunately, only one of the three workshops could be considered comprehensive, and results specific to that workshop were not reported.

A recent and representative study by Prawitz and Cohart (2014) employed quasi-experimental methods to study the effects of a worksite financial education program. The purpose of the research was to examine if financial education would facilitate changes in financial well-being and financial behaviors. Several measures were used including perceived financial wellness, savings ratios, frequency of negative behaviors, and the likelihood of taking positive financial action. The quasi-experimental methods used included pre and post testing, participant and non-participant groups, measuring variables over time, and the use of multiple test groups. Employees were offered wellness points as compensation for completing one or more financial education modules of interest over approximately a one-year time period.

Class topics were based on employee expressed interest and offered in a classroom setting or online. Three education programs covered money basics in four 90-minute classes, and two retirement based programs for either two or three hours, depending on the selected topic. Employee participants ($n=339$) were pre-surveyed as a part of two separate groups beginning one month apart. At the end of the one-year period, participants and non-participants ($n=656$) were asked to complete a post survey, and changes in key variables were measured. A personal financial wellness scale (Prawitz et al., 2014) was used to measure change in perceived financial wellness, and a series of questions were used to determine behaviors and actions taken.

The results were partially supported in that financial wellness did improve over time. However, there was no significance found between the participant group and the non-participant group, which also showed similar improvement. Additionally, there was support found for increases in some positive financial behaviors.

In summary, an effective assessment of financial literacy and the components of a well-designed financial education program should address both the knowledge and application of

skills components (Huston, 2010). A constructivist view of adult learning theory proposes that the best opportunities for learning involve factual analysis, discussion, and critical thought, in order to obtain new knowledge (Baumgartner, 2003). The historical delivery of workplace financial education showed an overwhelming number of remedial, one-time workshops as the dominant means of education. Research is limited and greatly needed on financial education programs of extended length, broad range of content, and those delivered in the workplace setting. Much of the research on historical financial education was focused on addressing specific behavior, such as increasing pension contributions among employees, or was focused on investment choices among plan offerings. Mixed results for increasing financial literacy through financial education can be explained by the difficulty of trying to accomplish the learning, application, and synthesis of new financial knowledge, all in a single workshop. Lastly, recent literature shows support for the use of quasi-experimental research methods to assess worksite financial education programs and their impacts on several financial perception and behavioral measures.

Methodology

Overview

In order to better understand the association of financial education and financial literacy, quasi-experimental research methods were used. Specifically, a time series, non-equivalent, control group design, utilizing pre and post program testing, was employed in order to address nearly all threats to internal validity (Posavac, 2011). To that end, a financial education program was conducted in a workplace environment, with the participant sample coming from employees of a Midwestern city of approximately 500,000 people. A pen and paper survey was utilized both

pre and post education program delivery, to measure the change in financial literacy. The data collected from these surveys was used as the source for research analysis.

Sample

The specific makeup of the participants came from two participating employers. The first group of participants self-selected into the educational program offered to all local employees of a benefit company in the fall of 2013. Classes were offered once a week over the lunch hour, for a ten-week period. Prior to the commencement of the program, the employer's program administrator identified a control group of non-participant employees that represented a makeup similar to that of the participant group. The second participant group also self-selected into the program offered to all local employees of a regional bank in the fall of 2014. The employer's program administrator also identified a control group of non-participant employees prior to the start of the program. Two class times were offered both before work and after work, once a week for a ten-week period. Employees could attend either the morning or evening class during the week depending on their schedule. Participants of both education program groups were asked to pay a nominal fee for attending the program as a sign of commitment. The final sample size was 102, of which 46 were participants and 56 were from the control groups.

Overview of Financial Education Program

The financial education program was a ten-module program, designed for weekly periods of delivery. Each module included content presentation, class discussion, and weekly assignments. One hour of classroom interaction, plus an additional 30 to 60 minutes of assignments, were contained in each module. The weekly assignments involved combinations of reading financial information articles, considering personal financial reflection questions, and completing personal finance planning exercises.

Through classroom facilitation of program materials, participants were encouraged to consider, explore, and reconsider their thoughts and beliefs on key financial topics. Facilitation and program material components incorporated and represented the constructivist view of adult learning theory. Participants were thereby enabled to gain new knowledge and understanding through the class dialogue and critical thought facilitation of the program. The classroom setting was an important element in that it provided for a consistent and controlled environment for the program delivery.

The module topics for the program included: budgeting basics, understanding personal net worth, managing debt, savings, investing, understanding basic financial numeracy, Medicare and Social Security, retirement planning, personal insurance risk management, and money scripts and financial relationships. This financial education program design can be considered comprehensive in nature due to both the length and breadth of the content covered (Huston, 2010; Black et al., 2002).

Research Design

The education facilitator administered the surveys for the participants of the financial education program. Participants were informed that completion of the surveys was a requirement of attending the financial education program, resulting in a 100% response rate. Using a blind matching technique, participants' pre and post individual surveys were matched. All information was kept confidential and no personally identifiable information was captured in the surveys.

The pre survey (Appendix A) had 53 questions relating to demographic characteristics and the assessment of financial literacy, financial satisfaction, marital satisfaction, money beliefs, and money behaviors. The post survey had 50 questions similar to those of the pre survey, relating to the assessment of financial literacy, financial satisfaction, marital satisfaction,

money beliefs, and money behaviors. The use of a calculator should have had no bearing on the results as the ten financial literacy assessment questions did not require the use of one. Surveys were distributed with white blank envelopes with self-adhesive strips to help seal and ensure confidentiality and privacy.

In addition, a control group was utilized to help isolate the effects of financial education among program participants. The participants and control group each received the pre and post surveys at the same time. With the pre survey, the control group also received two financial education booklets covering similar topics to those of the financial education program. The participant and control groups were provided the survey for completion within a 72-hour period.

The addition of a second participant group surveyed a year apart helped to address potential maturation threats to internal validity. Also, participant groups attended classes in the morning, afternoon, and evening to help address the potential validity threats related to delivering the educational program at a specific time of day. Lastly, there were no restrictions on the number of employees who could self-select and participate when these programs were offered, creating the largest possible participant sample groups.

Some additional data was collected approximately 90 days after the conclusion of the second financial education program to provide employees the time to follow through on desired financial management changes, and implement desired changes in financial beliefs. The 90-day follow up time period is similar to that of research by Danes (2004) and Danes, Casas, and Boyce (1999) who looked at financial education, literacy, and subsequent behaviors among high school students.

Assessment of Financial Literacy

In order to properly assess financial literacy according to the framework, measurement of financial knowledge and skills is required. Huston (2010) clearly identifies the need for a properly designed instrument for measuring financial literacy to contain a component measure that assesses financial knowledge as well as the ability to apply that knowledge for the improvement of human capital and financial well-being. This definition is consistent with standardized literacy constructs and does not contradict existing financial literacy definitions (Huston, 2010).

Variables

Dependent Variable

Financial literacy measures were chosen from scales established by Lusardi and Mitchell (2007a, 2007b, 2009, 2011). A variable was created to identify the changes in financial literacy over the measured time period using a total of ten objective financial knowledge and skills questions. Questions and coding can be found in the table of measurements (Appendix B.2). Three multiple-choice answers were provided along with “don’t know” and “refuse to answer.” Correct answers were coded as 1, and all other responses were coded as 0. A scale was created to capture correct answers to the ten questions, resulting in a variable range from 0 to 10. Financial literacy was assessed both pre and post delivery of the financial education program, and a raw change in literacy score was calculated by subtracting the pre score from the post test score.

When viewed within the financial literacy framework, with basic questions representing knowledge and sophisticated questions representing the application of knowledge through skills, the ten questions used for the assessment of financial literacy consist of seven basic questions and three sophisticated. The questions used to assess financial literacy and their classification as

either basic or sophisticated, according to the framework used for financial literacy, are shown in Appendix B.2.

The independent, or treatment, variable is participation in a comprehensive financial education program. Participants in the educational program and the control group were identified on the survey and coded as such. The number of classes attended was a self-reported measure for the participants, ranging from 1 to 10.

Demographically based control variables were included in the analysis and separated into three groups: demographic characteristics, familial characteristics, and household financial characteristics. The demographic characteristics of participants included *age*, *ethnicity*, and *education level*. The familial characteristics included *marital status* and *gender*. Household financial characteristics included *income* and *net worth*. Surveys gathered data to measure the three independent variable groups before program delivery only, because changes in these other variables were not expected nor considered relevant to measure post program for the purposes of this research.

Research Hypotheses

The effectiveness of participating in a comprehensive financial education program delivered with a constructivist learning approach will be associated with positive change in financial literacy scores. Specifically, a comprehensive financial education program, utilizing discussion and critical thought about covered topics, will be associated with positive changes in levels of financial literacy. The hypotheses are as follows:

H1_A: There is a positive association between participation in a comprehensive financial education program and changes in financial literacy scores.

H2_A: There is a positive association between changes in financial literacy scores and the number of classes attended.

Empirical Model

An assessment of financial literacy (FL), pre and post educational program delivery, was conducted to understand the association between variables. The empirical model for the research is expressed as follows:

$$\Delta FL = F(DC+FA+FC+PE(n)+C)$$

Demographic characteristics (DC), familial characteristics (FA), and financial characteristics (FC) were used and expressed in the model.

The dependent variable, change from the pretest to posttest financial literacy scores, was assessed by a composite measure (FL). The sub-components of financial literacy, basic financial knowledge (BFK), and sophisticated application of knowledge (SAK), are shown in the following model.

$$\Delta FL = (FL_{t1}) - (FL_{t0})$$

$$FL_{t1} = [(BFK_{t1}) + (SAK_{t1})]$$

$$FL_{t0} = [(BFK_{t0}) + (SAK_{t0})]$$

The sub-components of financial literacy, basic financial knowledge (BFK) and sophisticated application of knowledge (SAK), were assessed using two groups of questions as follows:

$$BFK = (BFK_1) + (BFK_2) + (BFK_3) + (BFK_4) + (BFK_5) + (BFK_6) + (BFK_7)$$

$$SAK = (SAK_1) + (SAK_2) + (SAK_3)$$

The variable for participation in the financial education program (PE) was used in the model to represent those who have participated in the financial education program. The number of classes attended in the PE will be represented in the model as (*n*).

Data Analysis

To address the first research question, a t-test was used to see if the average change in financial literacy scores was significantly greater among the participant group versus the control group. The second research question also used a t-test to determine if the average change in financial literacy scores among participants who attended a higher number of classes was significantly greater than participants who attended a fewer number of classes. Research question three focuses on participation in the education program and changes in financial literacy scores, taking into consideration the characteristic differences between the participant and control groups. The research seeks to more clearly understand if participation in the education program really matters, controlling for the age, ethnicity, education level, marital status, gender, income, and net worth differences between the two groups. This analysis will provide better understanding of the effectiveness of the financial education program by controlling for the differences in makeup of the participant group as compared to the control group, helping to further clarify the results of the t-tests performed in question one.

Consistent with the financial literacy framework, a series of subjective questions were asked pertaining to changes in behaviors and beliefs since the beginning of the educational program. The data collected 90 days following the program conclusion will provide a self-reported measure of changed behaviors and beliefs among participant responders.

Sample Characteristics

The descriptives for the final sample are shown in Table 2.1. The two groups consisted of 46 financial education program participants and 56 non-participating employees in the control group. The control group was similar to the participant group; however, there were some differences to note. There were fewer females in the participant group at 62.5% (versus 76.1%), a higher number of married individuals in the participant group at 71.4% (versus 56.5%), and a higher percentage of homeownership among the control group at 80.4% (versus 67.4%). The control group also had a higher average level of education with 62.5% indicating at least a bachelor's degree (versus 48% among participants). Notable similarities between groups include the same average age level of 35 to 44 years old, similar average income levels (\$82,009 to \$101,582) and average net worth levels (\$50,000 to \$149,999), and the same average of two people living in the household.

Table 2.1 Sample Demographics (N=102)

Variable	<u>Control Group (N=56)</u>		<u>Participant Group (N=46)</u>	
	N	%	N	%
Age				
Less than 25	4	7.1%	9	19.6%
25 to 34	22	39.3%	10	21.7%
35 to 44	7	12.5%	10	21.7%
45 to 54	15	26.8%	5	10.9%
55 and over	8	14.3%	12	26.1%
Gender				
Male	21	37.5%	11	23.9%
Female	35	62.5%	35	76.1%
Race				
White	56	100.0%	45	97.8%
Non-White	0	0.0%	1	2.2%
Ethnicity				
Hispanic	4	7.1%	0	0.0%
Non-Hispanic	52	92.9%	46	100.0%
Education				
High school graduate or less	7	12.4%	3	6.5%
Assoc. and Some college	14	25.0%	21	45.6%
Bachelor degree and post-grad	35	62.6%	22	47.9%
Marital status				
Single	16	28.6%	20	43.5%
Married	40	71.4%	26	56.5%
Homeownership status				
Homeowner	45	80.4%	31	67.4%
Not a homeowner	11	19.6%	15	32.6%
Income				
Lower: Less than \$38,521	5	9.0%	5	10.8%
Moderate: \$38,521 to \$101,582	29	51.7%	22	47.8%

Higher: Over \$101,582	22	39.3%	19	41.4%
Net Worth				
Below 0	7	12.5%	7	15.2%
\$1 to \$49,999	16	28.6%	14	30.4%
\$50,000 to \$149,999	12	21.4%	10	21.7%
\$150,000 and over	21	37.5%	15	32.6%
Household size				
One	3	5.4%	3	6.5%
Two	28	50.0%	23	50.0%
Three	9	16.1%	10	21.7%
Four or more	16	28.6%	10	21.8%

Results

A series of t-tests were run to compare the average pre and post financial literacy scores among and between the participant ($N = 46$) and the control group ($N = 56$). The results of the paired sample t-tests among the participant and control groups are shown in Table 2.2. The participants had a pre survey mean of $M = 7.84$ ($SD = 1.46$) and a post survey mean of $M = 8.34$ ($SD = 1.56$). The control group had a pre survey mean of $M = 8.23$ ($SD = 1.53$) and a post survey mean of $M = 8.03$ ($SD = 1.54$). A significant difference was only found among the participant group average scores, $t(45) = 1.84, p = .071$.

Table 2.2 Financial Literacy in Relation to Participation in Workplace Financial Education Program ($N = 102$)

	Pre Survey	Post Survey	t
Participant Group	7.84	8.34	1.84*
Control Group	8.23	8.03	-1.18

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: Financial literacy was assessed using a 10-question scale where correct answers = 1, and incorrect answers or “do not know” = 0.

Additionally, there were two participants who received a perfect score of 10 on the pre survey compared to 14 control group individuals. However, on the post survey, there were 12 participants who achieved a perfect score (21.8% increase), while the control group number fell to 9 (-8.9%). Additionally, on the pre survey there were 71.7% of participants who scored 8 out of 10 or higher, while 66.1% of the control group scored 8 or higher. On the post survey, the participant group grew to 78.3% (6.6% increase), and the control group grew to 68% (1.9% increase).

To test the hypothesis that the average change in financial literacy would be positive and significantly greater among the participant group versus the control group, independent *t*-tests were performed. The results of the analysis are shown in Table 2.3. The participant group was associated with an average change in financial literacy score of $M = 0.50$ ($SD = 1.83$). By comparison, the control group was associated with a numerically smaller average change in financial literacy score of $M = -.196$ ($SD = 1.24$). The distributions for the participant and control groups were sufficiently normal for the purposes of conducting a *t*-test (i.e., skew < |2.0| and kurtosis < |9.0|; Schmider, Ziegler, Dannay, Beyer, & Buhner, 2010). The result of the Levene's *F* test for homogeneity indicated the variances were assumed to be not equal ($F(76) = 4.45$, $p = .037$), so the *t*-tests were performed assuming unequal variances. The results indicated a statistically significant effect, $t(76) = 2.19$, $p = .031$, only for the change in financial literacy scores between the groups. The results of these tests support Hypothesis 1, indicating that participation in the financial education program does in fact matter. Cohen's *d* was estimated at .45, which is considered a medium effect (Cohen, 1992).

Table 2.3 Financial Literacy in Relation to Participation in Workplace Financial Education Program (N = 102)

Financial Literacy Variables	Participants	Control	T
Pre Financial Literacy	7.84	8.23	-1.28
Post Financial Literacy	8.34	8.03	1.00
Change in Financial Literacy	.50	-.196	2.19**

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: Financial literacy was assessed using a 10-question scale where correct answers = 1, and incorrect answers or “do not know” = 0.

Nonparametric tests were performed to provide a more robust analysis of the financial literacy scores between the groups. The Mann-Whitney test was used since there were an unequal number in the participant and control groups. The results of this test indicated a significant difference in the distribution and medians in the change of financial literacy scores between the groups ($p < .01$). The results of these additional tests provide further support for Hypothesis 1.

To test the hypothesis that the average change in financial literacy scores would be greater among participants who attended more classes, an independent t -test was performed. Due to the lack of variation in distribution for the number of classes attended, with over 90% of participants attending eight classes or more, transformation to a dichotomous variable was performed to indicate those who attend all classes, or less than all classes. The result of the Levene’s F test for homogeneity indicated the variances were assumed to be equal, $F(44) = .47$, $p = .494$, so the t -tests were performed assuming equal variances. The results failed to support Hypothesis 2 indicating that participation in all of the classes was not significant in producing higher levels of change in financial literacy scores among participants, as compared to those attending fewer classes.

Given observed differences in the participant and control group, a further analysis was conducted to investigate if participation in the financial education program was associated with an increase in financial literacy after controlling for these variations. An OLS regression model estimating change in financial literacy was created. The key variable of interest was program participation, with control variables related to age, gender, marital status, children in household, education, income, and net worth also included. Results of this analysis can be found in Table 2.4. The model produced an $R^2 = .186$ $F(10, 101) = 2.08$, $p = .034$, indicating that 18.6% of the variance among the change in financial literacy scores were explained by the model. The results indicated that participation was positively associated with changes in financial literacy scores in the model using a two-tailed t-value ($p < .10$), after controlling for sample characteristics. However, given that Hypothesis 1 was directional, it may be appropriate to use the one-tailed t test, which provides a p value of .049. These results provide further support for the effectiveness of the financial education program on producing positive changes in financial literacy.

Table 2.4 Multiple Regression Results (N=102)

Variable	Unstandardized		Standardized Coefficients		
	<i>b</i>	<i>SE</i>	B	<i>t</i>	<i>p value</i> (2-tailed)
Intercept	.228	.577		.395	.694
Participation	.538	.323	.171	1.665	.099*
Age					
Less than 25	-	-	-	-	-
25 to 34	.537	.617	.160	.871	.386
35 to 54	.278	.598	.086	.465	.643
55 and over	.207	.729	.053	.284	.777
Gender					
Male	-	-	-	-	-
Female	.266	.357	.079	.745	.458
Marital Status					
Single	-	-	-	-	-
Married	-.757	.452	-.232	-1.675	.097*
Household					
Children	-	-	-	-	-
No Children	.279	.361	.089	.773	.442
Education					
Less than Bachelor degree	-	-	-	-	-
Bachelor degree/Post grad	-.345	.354	-.110	-.974	.333
Income					
Low/Moderate: Less than \$101,582	-	-	-	-	-
High: Over \$101,582	.356	.371	.112	.959	.340
Net Worth					
Low: 0 to \$49,999	-	-	-	-	-
Higher: \$50,000 and Over	-.812	.361	-.258	-2.247	.027**

$R^2 = .186$ $F = 2.08$ (Sig. = .034)

* $p < 0.10$., ** $p < 0.05$., *** $p < 0.01$

Outcomes of the Financial Education Program

Lastly, consistent with the financial literacy framework, some additional data was collected approximately 90 days after the conclusion of the second financial education program. Of the 46 participants in the second educational program, there were 22 responders to the follow up survey resulting in a 48% response rate. Two forms of additional post-program follow up were conducted: (a) analysis of actual pension contribution changes for the period following the start of the education program, and (b) a follow up survey related to self-reported changes in other financial beliefs and behaviors.

To explore pension contribution change behavior, the employer plan administrator was contacted at the conclusion of the open enrollment period to identify changes in 401(k) plan contributions for employees since the start of the program. It was determined that only one of the 46 participants from the second educational program group made actual changes to plan contribution rates, and that participant increased contributions by 1%. The number of participants that increased their contributions to their employer pension plan after the program had concluded was expected to be greater.

The second part of the follow up survey data explored self-reported behaviors and beliefs among participants. Of the responders to the follow up survey, 95.2% indicated that since starting the education program, they “*have greater overall financial well-being*” and 100% indicated they “*have improved financial decision making.*” Additionally, 95.2% of the responders indicated they now have a “*greater overall understanding of financial matters,*” and 100% indicated they now have “*greater confidence to address future financial challenges.*” Lastly, 85% of the participant responders indicated that they have an “*improved confidence with investment decision making.*”

Discussion

The first research question sought to understand if participation in a financial education workshop was associated with increased financial literacy. The average financial literacy score for participants in the financial education workshop increased from a pretest score of 7.84 (SD=1.46) to a posttest score of 8.34 (SD=1.56), a statistically significant increase. Meanwhile, the control group had a slightly higher pretest mean of 8.23 (SD=1.53), but this fell slightly (but not significantly) to 8.03 (SD=1.54) in post testing. To better investigate the effectiveness of the program, a paired t-test was conducted to compare the average change in financial literacy between the participant and control group. Results of this test indicate that the participant group showed a significantly greater numerical mean change in financial literacy scores than the control group (.500 versus -.196).

In evaluating these results, some concern was noted related to differences between the participant and control group. While random assignment would have been preferable, given the nature of the workshop, self-selection was required to participate. While the results of the paired t-test are strong, an additional analysis was conducted to attempt to isolate for observable differences between these groups. Results of this analysis aligned with previous results, suggesting that participation in the program was associated with increases in financial literacy.

Additional comparisons of these results can be made to historical literature assessing financial literacy. Prior to the education program beginning, 82.6% of the participant group and 85.7% of the control group correctly answered all three of Lusardi and Mitchell's (2007a, 2007b, 2011) financial literacy assessment questions, compared to 31% reported for an average in historical research within the Boomer population. Evidence of an overall higher level of financial literacy, both pre and post education program treatment, was found among the sample when compared to the results reported in the literature for the Boomer generation study (Lusardi and

Mitchell, 2007a, 2007b, 2011). Comparison of the education levels of the early wave boomers (ages 51-56 in 2004) indicated that 40% had a high school degree or less, compared to those of our sample, with 12.5% among participants and 6.5% among the control group. Additionally, the boomer sample indicated 31% as having a college degree or higher, compared to our sample of 40% among participants. However, it should be noted that the Boomer sample might be overstated since it includes those with associate degrees within the college graduate group, whereas those with associate degrees were not included within the college graduate category for this research. Comparisons of income and net worth were not possible due to the reporting from the boomer study. The higher level of education compared with the boomer study, and the sample being comprised of employees in the financial industry, can partially explain the higher levels of financial literacy found.

The second research question sought to investigate if, among participants, greater class attendance was associated with greater improvements in financial literacy. While originally designed to be a continuous measure of attendance, participants did an excellent job of regularly attending class, attending an average of 8.9 ($SD=2.3$) out of 10 classes. Consequently, attendance was transformed into a dichotomous measure splitting respondents into those who attended all classes and those that missed at least one. Given this limitation, no significant association was found between class attendance and increases in financial literacy. However, the insignificant findings do not mean that the number of classes did not matter, only that there is little difference between attending all the classes and missing at least one class (Posavac, 2011). Therefore, the results do not imply that attending one or two classes would have the same impact as attending all ten classes in the program. Results may have been different given increased variation in class attendance.

Additional comparisons of the results can be made to representative and relevant historical literature, by examining the financial education delivery and research methods used. The work of Prawitz and Cohart (2014) shares many similar quasi-experimental research methods employed in this study, but there are examples where methods differ. When delivering the financial education program, each participant received the same weekly lesson, in the same setting, and at the same period in time. While the Prawitz and Cohart (2014) study made the same education available, participants potentially received different types and amounts of education, as well as education delivered in different settings and possibly at different times throughout the year. The inconsistent delivery and amount of the education program among the participants, creates additional variability and is a clear departure from the methods used in this research.

Lastly, financial education delivered in a scholastic setting over the course of a term/semester showed little effect on positive changes in financial literacy (Mandell, 2008). These inconsistent findings could be explained by the sample consisting of students rather than working professionals, as well as the average age and lower levels of attained education. The timeframe of delivery seemed to be similar, although the number of classes was most likely greater with the students. There were different measures used to assess financial literacy, which also makes comparisons difficult. If quasi-experimental research methods and similar questions were used to assess financial literacy, more meaningful comparisons of results could be explored.

Outcomes of the Financial Education Program

Additional data was collected approximately 90 days after the conclusion of the second financial education program. Two forms of additional post-program follow up were gathered—

actual pension contribution changes following the start of the education program, and self-reported changes in financial beliefs and behaviors.

Change in Pension Contributions

It was determined that only one of the 46 participants from the second educational program group made actual changes to plan contribution rates, after filtering out automatic increases due to annual cost of living increases in participant compensation. However, 48% of responders from the follow up survey indicated they had increased their 401(k) contributions since beginning the program. The inconsistent results from these two data sources can be caused by errors made by the plan administrator in properly assessing the participant contribution changes, or responders providing inaccurate information. In either case, a higher number of participants were expected to have increased their pension savings rates in light of the information presented in the educational program.

Changes in Financial Behaviors and Beliefs

The second part of the follow up survey collected data on self-reported behaviors and beliefs among participants. Responders indicated that 95.2% had *greater overall financial well-being*, 100% indicated *improved financial decision making*, 95.2% indicated *greater overall understanding of financial matters*, 100% indicated *greater confidence to address future financial challenges*, and 85% indicated *improved confidence with investment decision making*. It should be noted that with a 48% response rate, responder bias is a valid concern. However, the overwhelming positive indications of improved self-reported financial confidence, changes in financial management behaviors, improved understanding of financial matters, and greater overall financial well-being clearly supports, at a minimum, the perceived effectiveness of the comprehensive education program on nearly half of the employee participants.

Another relevant comparison can be made with the historical literature of Garman et al. (1999), pertaining to decision making, confidence, and behaviors attributed to participation in the program. Among responding participants, 75% indicated (a) improved financial decision making, (b) improved confidence with investment decision making, and (c) improved investment diversification. These same questions were included in this research so that comparisons could be made. The worksite comprehensive financial education participants in this research indicated that 93.5% had (a) improved financial decision making, and 95% reported both (b) improved confidence with investment decision making and (c) improved investment diversification. These results confirm the findings from Garman et al., where higher levels of self-reported financial confidence and abilities were found following participation in the education program.

Implications

Given the methodology employed and the education strategy used, this research provides meaningful insight into effective financial education. First, the use of quasi-experimental research methods to isolate the effectiveness of a comprehensive financial education program represents a much-needed addition to the body of research on financial education. The use of control groups helped to clearly show the significant and positive effectiveness on financial literacy following the delivery of a workplace comprehensive financial education program. Collectively, these methods stand in contrast to some historical research that did not assess pre-testing levels (Garman, et al., 1999), measured inconsistent applications of the financial education received as the treatment variable (Garman, et al., 1999; Prawitz & Cohart, 2014), or used a less comprehensive form of financial education program only focused on a single topic, such as retirement investing (Martin, 2010).

Secondly, historical workplace financial education research has overwhelmingly focused on retirement planning primarily targeted at employees nearing retirement (Bernheim & Garrett, 2003). This study represents a unique perspective into a younger, higher educated, and higher income group representing the next generation of future retirees, with 63% of the participant group under the age of 45, 47.9% having at least a bachelor's degree, 39.3% having an annual household income over \$101,582, and 85% having a positive net worth.

When considering the implications of the research findings, it is important to note the critical program elements, which contributed to producing these results. First, the comprehensive educational program was design based on key financial topics identified in historical literature. It was important to make sure that all topics of importance were included while being mindful not to overload the program so that the amount and complexity of information would overwhelm participants.

Second, the program incorporated multiple class sessions for delivery over an extended period (10-weeks) of time, versus a one-time retirement workshop. The financial education delivered in a module-based lesson format, provided the opportunity for participants to assimilate new knowledge through reflective thinking, reasoning, and discussion of current beliefs and behaviors. Additional reference reading materials were provided in each module so that all participants could assimilate information at the rate and depth they desired.

Lastly, an objective academic and financial industry professional, skilled in program delivery consistent with a constructivist learning approach, performed the facilitation of the education program. Based on the feedback from participants of the program, the objectivity and credibility of the facilitator was a key component for the programs value. Participants expressed their lack of trust and credibility of advice from prior educational presenters who were employed

by investment advisors, pension plan company representatives, or other wealth management firms. Additionally, the employers who participated in this research also expressed the criteria that the program facilitator not be a licensed representative with any financial services firm or insurance company.

The implications of this effective combination of program elements include providing guidance for future development of comprehensive financial education programs. In addition, these results can help to guide employers and employee benefit managers looking to provide employee financial education in the workplace. The opportunity exists for employers to create real value in the eyes of their employees through comprehensive financial education programs in the workplace. The results of this research can help to provide a list of important elements to consider as potential programs are evaluated for use within the employer's organization.

Limitations

Despite the fact that quasi-experimental research methods were used in the research, several limitations and concerns are present. First, although appropriate for the testing use, the participant group sample was small. Additionally, the sample of employees used was taken from two financial industry employers, which could potentially represent a limitation of this study. The makeup of the sample indicated higher levels of initial financial knowledge of both participant and control groups, which could be a function of the knowledge needed for their specific industry. The use of the control group helped to isolate the effects of the program itself, despite the makeup of the participant group in the study. Therefore, the actual change resulting from the program treatment could be isolated, regardless of the higher initial financial knowledge level of participants. However, valid concerns can still be raised as to the effectiveness of the

educational program on participants who have a higher level of initial financial literacy, and whether the outcomes would be similar for less educated and literate participants.

There is a potential self-selection bias among participants. While the financial education program opportunity was open to all employees who were able to attend weekly, those who ultimately chose to participate did self-select into the program. Adult learning theory supports the search for knowledge as a part of the constructivist view of learning, which is consistent with the theoretical framework for this research. Additionally, the lower average education level and lower initial financial literacy scores among the participant group could have been a motivating factor in the decision to seek increased financial education when offered by their employer. Therefore, the fact the participant group self-selected is consistent with the knowledge-seeking desire contained within the framework of adult learning theory. The resulting positive and significant increases in financial literacy, as compared to the control group, can provide additional support for the effectiveness of the program development and delivery using the constructivist approach. Further research is needed to properly assess if the desire of self-selected participants to seek financial education is a factor for change in financial literacy, versus that of those who may be mandated to participate.

There could also be concerns related to the selection of the control group. The employer financial program administrators at each company attempted to select control group members who resembled participants, based on their knowledge of employees within the company. There was also a consideration of those who would be trustworthy and return both pre and post surveys. Random selection and assignment of employees into both groups would have been clearly preferred. However, since the delivery of the financial education program associated with this research was offered as an employee benefit requiring a small fee for participation, random

selection and assignment was not possible. More importantly, the OLS regression performed helped to address the demographic differences between the groups, providing further support for participation having a significant effect on positive changes in financial literacy.

The delivery of the financial education program by the research lead represents a potential concern to address, in that the influence of the program facilitator may have been a contributing factor in the results. A bias may have existed to focus more on certain key topics of assessment interest, potentially impacting the results. However, there must also be consideration of the consistency of program delivery and the special skills needed for proper facilitation that was provided. Facilitation of program delivery required special skills, knowledge, and understanding of critical cognitive learning assimilation of the constructivist view of adult learning theory. Therefore, the facilitator played a positive role in the content and consistency of program delivery, but those impacts may also have been a contributing factor in the increases seen among some participants.

Conclusion

Positive and significant increases in financial literacy scores were observed for participants in the education program. However, the smaller effect size of these results does limit the broad applicability of these findings. No association was found between the number of classes attended and increased financial literacy score among participants, potentially due to a lack of variability in this measure.

Based on the use of pre and post testing, control groups, consistency of program delivery, and the longitudinal timing of multiple groups, these results indicate clear support for the positive effects of participating in the financial education program on improving financial literacy. With this methodology, this work represents a well-designed investigation of the

effectiveness of financial education, providing a clear contribution to the body of literature. However, even though more rigorous quasi-experimental research methods were employed to isolate as much of the effects of the financial education program on the participants as possible, it does not eliminate all possible non-programmatic alternative interpretations (Posavac, 2011). The methodology and results of this study should provide a meaningful contribution to the body of research in the field of financial education and literacy.

A higher level of financial literacy is needed to handle the growing number and complexity of financial decisions Americans will face. The study has provided evidence that participation in a comprehensive financial education program, which covers key financial components, can significantly improve financial literacy. The facilitation and delivery of the comprehensive financial education program utilized a constructivist view of adult learning theory and included weekly modules designed to evoke reflective consideration of new knowledge. Employees highly value and prefer to receive financial education at the workplace (Bernheim and Garrett, 2003). The use of a worksite comprehensive financial education program by employers can provide much needed and valued benefit to employees, which in turn has been shown to make them more productive and happier at their work (Joo, 1998; Joo & Garman, 1998).

However, due to the time commitment required to deliver a worksite comprehensive financial education programs, it is expected that employers would seek proof of the program's effectiveness. The results of this research can be used to provide empirical support for comprehensive financial education programs developed and delivered using the tools and techniques described in the study. It is the desire of this research to provide a path, both

academically and professionally, towards addressing the low levels of financial literacy that are pervasive in our society today.

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Chapter 3 - Paper Two: The Effectiveness of a Comprehensive Financial Education Program on Changing Financial Well-Being

Introduction

Millions of Americans suffer from low levels of financial literacy, making it difficult to understand basic economic concepts required for budgeting, saving, and financial decision making (Lusardi, 2008). The inability to understand and apply financial concepts increases the likelihood of making poor financial decisions (Martin, 2007). Representative historical research has well documented the associations between financial literacy and various related financial behaviors (Chen & Volpe, 2002; Hilgert, Hogarth, & Beverly, 2003; Lusardi & Mitchell, 2007a, 2007b; Robb & Woodyard, 2011; Yoong, 2010, Martin, 2007). However, far less attention has been given to how financial education and financial literacy impact our financial well-being.

An individual's level of financial literacy comes from their human capital level consisting of financial knowledge, confidence, and ability to understand and make financial planning decisions, leading to an overall higher level of financial well-being (Huston, 2010). Other influences, such as behavioral biases and beliefs, can also directly affect financial behavior as well as financial well-being. Positive financial behaviors contribute to financial satisfaction, which in turn contributes to overall life satisfaction (Xiao, Tang, & Shim, 2009). Therefore, an individual who is more likely to make better financial decisions and engage in positive financial behavior is also more likely to have higher financial well-being, and be happier in general. Historical research suggests that individuals with higher levels of financial literacy have a greater likelihood of engaging in positive financial behaviors and make fewer sub-optimal financial decisions (Robb & Woodyard, 2011; Martin, 2007).

Guided by historical research, it is posited that increasing financial literacy by utilizing financial education will be associated with increased overall human capital and ultimately affect financial well-being (Huston, 2010). Literature generally views financial satisfaction as a sub-construct of overall well-being, and is posited to also include financial well-being (Campbell, 1981). The purpose of this research is to better understand the effectiveness of financial education on changing financial well-being. To that end, the following research questions are posed:

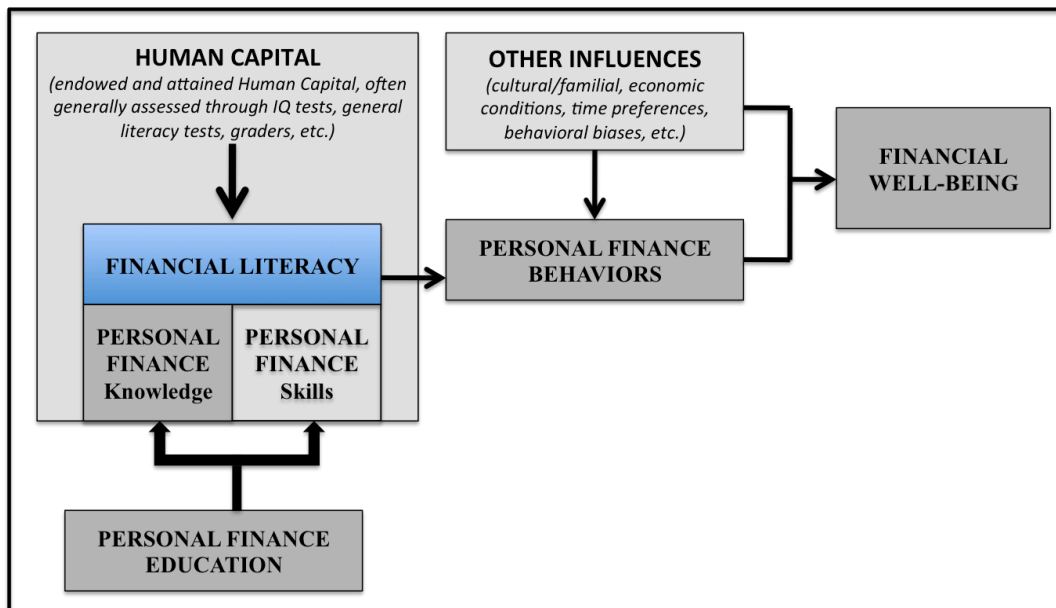
1. What is the association between participation in a worksite comprehensive financial education program and change in savings satisfaction?
2. What is the association between participation in a worksite comprehensive financial education program and change in income worry?
3. What is the association between participation in a worksite comprehensive financial education program and change in expense worry?
4. What is the association between participation in a worksite comprehensive financial education program and change in debt worry?
5. What is the association between participation in a worksite comprehensive financial education program and change in retirement savings confidence?
6. What is the association between participation in a worksite comprehensive financial education program and change in comfortable retirement confidence?
7. What is the correlation between changes in financial literacy and changes in financial well-being among participants of a worksite comprehensive financial education program?

Literature Review

Theoretical Framework and Hypothesis

The framework utilized for financial well-being is represented by Huston's (2010) model (Figure 3.1). Huston (2010) conceptualizes financial literacy as having the two distinct dimensions of *understanding* and *use*. Understanding is represented within the model as financial knowledge of personal finance, and use is represented by personal financial skills. Financial literacy is therefore defined within the model by measuring how well an individual can understand and apply personal financial knowledge. These constructs are seen within the model as part of an individual's human capital (Becker, 1964). Higher levels of financial literacy lead to improved financial behavior and decisions, ultimately leading to higher levels of financial well-being.

Figure 3.1 Relations among Financial Literacy, Knowledge, Education, Behavior, and Well-Being



Huston (2010)

Viewed from an economic utility perspective, individuals will seek to apply their human capital to financial activities to optimize expected utility from consumption (Huston, 2010). Frameworks to explain and predict financial well-being have historically put forth the recognition that financial decisions fall within the realm of consumer and family economic utility (Porter & Garman, 1993; Wilhelm & Varcoe, 1991; Huston, 2010). For example, an individual may engage in specific financial behaviors, such as regular retirement savings, with the expectation of increased financial well-being through the attainment of their defined goals. To the extent that individuals are able to optimize their resources in line with financial desires and goal achievement, they are hypothesized to experience increased levels of financial well-being. Based on review of historical literature and informed by the application of the framework, it is posited that greater financial knowledge, obtained through financial education, will lead to improved financial decision making and provide a sense of increased financial well-being (Huston, 2010; Bayer, Berheim, and Scholz, 2008).

Literature on Financial Education

A review of the representative financial education research is presented to better understand what types of programs were used to impact financial literacy and what behaviors and attitudes were measured. Historically, research shares similar yet different components for categorizing types of educational programs used within definitional frameworks, and these have yet to be established as uniform (Huston, 2010; Remund, 2010). Financial education programs have been delivered using either a limited topical or comprehensive approach (Black, Ciccotello, & Skipper Jr., 2002). A comprehensive financial education program can be defined as providing multiple education sessions covering a wide variety of finance categories (Huston, 2010).

A summary of financial education indicates focus on the personal finance topics of (a) basics, (b) borrowing activity, (c) savings and investing related areas, and (d) insurance risk management (Huston, 2010). Historical studies have also similarly classified financial education by setting, audience, and subject (Todd, 2002; Braunstein & Welch, 2002). Workplace financial education has been varied among employers, and can generally be categorized into the three primary dimensions of content, media, and frequency (Bernheim & Garrett, 2003). Content of subject topics related to savings include (a) retirement income sources and needs, (b) the establishment of goals, (c) pension participation, (d) retirement income planning, (e) time value of money concepts, (f) budgeting, and (g) debt reduction. Topics related to asset allocation include (a) concepts of risk, (b) risk tolerance, (c) diversification, and (d) asset characteristics. The classifications for different types of media are mostly face-to-face education in a workplace setting, and include online and printed educational materials. The frequency of education program delivery ranges from single meetings or workshops to regularly scheduled classes that meet consistently until program completion (e.g., weekly). Online education programs have also been utilized whereby participants have access, for a specified period of time (e.g., calendar quarter), to education modules which are viewable when time permits.

The assessment of financial education has met with mixed results. Financial education delivered in a scholastic setting, over the course of a term/semester, has shown little effect on improving financial literacy among college students (Mandell, 2008). However, the students did show association with improvements in several financial behaviors. Historical literature has also found support for improving financial behaviors through financial education, as well as support for increasing financial literacy (Chen & Volpe, 2002; Hilgert et al., 2003; Lusardi & Mitchell, 2007a, 2007b; Robb & Woodyard, 2011; Yoong, 2010, Martin, 2007). A summary of the limited

historical research shows that financial education provided specifically by employers can improve financial behaviors (Loibl & Hira, 2005). However, lack of uniformity among educational programs, as well as the research methods employed, has made it difficult to draw meaningful conclusions among the literature. Establishing causation for change in various financial measures and outcomes has also been difficult due to the lack of quasi-experimental research methods utilized in historical literature.

Financial Well-Being

A review of the relevant literature indicated that financial satisfaction, financial well-being, quality of life, and individual financial wellness have often been represented in a broader context, and as a result, uniformity of definitions and measures lacks consistency (Huston, 2010; Remund, 2010; Funk & Rogge, 2007, Parrotta & Johnson, 1998). Financial well-being has been conceptualized to come from personal empowerment and a belief that goals can be achieved through knowledge, application of resources, and other factors, which can either help or hinder the individual's ability to reach his/her goals (Zimmerman, 1995). Similarly, Gerson (1976) defined quality of life as the degree to which an individual succeeds in accomplishing his/her desires, despite the constraints that may have been put on him/her by nature or social order. The literature reviewed indicates that quality of life, satisfaction, and well-being have been measured in two primary ways. The first is subjective assessment of satisfaction and confidence measures, and the second uses an aggregation of social indicators (Mugenda, Hira & Fanslow, 1990). Several factors appear to influence financial well-being, including the demographic and socio-economic characteristics of gender, marital status, education, ethnicity, age, and income (Ackerman & Paolucci, 1983; Hira & Mugenda, 1999a, 1999b; Joo, 1998; O'Neill, 1995; Porter, 1990).

Financial Literacy and Financial Well-Being

The subjective nature of the measures used for financial well-being, along with the inconsistent application of a definitional construct, has produced mixed results among historical literature. While the relationship between literacy and well-being has been documented, it has not always been positive. Mugenda et al. (1990) found that a negative relationship between knowledge and perception of financial status might exist, and that increased knowledge potentially impacts individuals differently. For example, an individual who is more aware of finances may conclude a less favorable level of personal well-being, versus a less financially-literate individual who may not perceive their weaker relative personal financial state, thereby supporting the adage that ignorance is bliss (Mugenda et al., 1990). However, it is unclear in the historical literature if the effects of reduced levels of financial well-being as a result of greater overall financial awareness and knowledge will have a temporary or long-term effect. This is primarily due to the lack of longitudinal historical research using quasi-experimental methods in this area.

Financial education has also been found to confer decision-making skills, which can improve an individual's ability to weigh alternatives in order to achieve personal financial goals and objectives (Bayer et al., 2008). Financial education, which is delivered in the workplace, has been shown to create a strong influence on personal financial management decisions (Bayer et al., 2009; Bernheim & Garrett, 1996). Self-directed financial education was found to be significantly associated with better financial management practices, worker satisfaction, and financial well-being (Loibl & Hira, 2005). However, financial behaviors have also been found to influence individual well-being in both positive and negative ways (Mugenda et al., 1990; Joo, 1998).

Among the most relevant representative research studies on financial well-being in the workplace, was a study conducted by Garman, Kim, Kratzer, Brunson, and Joo (1999).

Employees of a Southeastern chemical company were offered a series of financial education workshops of varying number and duration of classes, ranging from a two-hour single-topic program to a six-hour program focused on comprehensive financial planning topics. The differences and similarities between employee participants and non-participants were explored.

A key finding of this research was that higher levels of financial well-being were found among participants versus non-participants on four of the six questions asked. Additionally, participants attributed positive changes in their financial behavior to the workshops they attended, with approximately 75% reporting improved financial decision making, improved confidence with investment decision making, and improved investment diversification through asset allocation. Since the comprehensive Money Basics workshop had the highest reported attendance, the results could be inferred to be mostly attributed to those attending a comprehensive education workshop.

Another relevant and recent study was conducted by Prawitz and Cohart (2014) to better understand effects of worksite financial education on changes in financial behaviors and other related measures. Perceived financial wellness, savings ratios, frequency of negative behaviors, and the likelihood of taking positive financial action were measured. Quasi-experimental methods were used including pre and post testing, participant and non-participant groups, measuring variables over time, and the use of multiple test groups. Employees were incented to participate by offering wellness points for completing one or more financial education modules of interest over a one-year time period. While results of the financial education program delivery did indicate improved financial well-being over time, no significance was found between the

participant group and the non-participant group. However, significance was found in increases of several positive financial behaviors among participants as compared to the control group of employees. The results suggest that comprehensive financial education programs educate participants on how all parts of the financial aspects of their lives work together to provide well-being through living in comfort, both now and in retirement (Prawitz & Cohart, 2014).

Methodology

Overview

To explore the effects of a financial education program on financial well-being, quasi-experimental research methods were employed. More specifically, a time series, non-equivalent, control group design utilizing pre and post program testing was used to address threats to internal validity (Posavac, 2011). A workplace financial education program was conducted in a Midwestern city of approximately 500,000 people. To measure the change in financial well-being, a pen and paper survey was utilized both pre and post education program delivery. The data collected from these surveys was used as the source for research analysis.

Sample

The participant sample came from two separate employers who offered the financial education program as an employee benefit. The first financial education program was held in the fall of 2013 for the employees of a benefit company. The educational program was offered to all employees, and participants self-selected. The financial education classes were held once a week, over the lunch hour, for a ten-week period. Prior to commencement, the employer's program administrator identified a control group of non-participant employees. The control group was selected to represent a makeup similar to that of the participant group.

The second participant group offered the financial education program to all local

employees of a regional bank, who self-selected into the program held in the fall of 2014. Similar to the first group, a control group of non-participant employees was selected by the employer's program administrator prior to the start of the program. For the second group, two class times were offered both before work and after work, once a week for a ten-week period. Employees were offered a choice each week to attend either the morning or evening class depending on their schedule. A nominal fee for attending the program was required for the participants as a sign of commitment. The final sample size of the two employer groups combined was 102, of which 46 were participants and 56 were from the control groups.

Overview of Financial Education Program

The financial education program used for this study was comprised of ten-modules, delivered weekly. Each module was designed for one hour of classroom interaction, plus an additional 30 to 60 minutes of homework assignments. The weekly assignments included readings related to the weekly financial topic, completing personal finance planning exercises, and the consideration of personal financial reflection questions.

The facilitation of program materials within the classroom encouraged participants to consider, explore, and reconsider their thoughts and beliefs on the weekly financial topics. The facilitation and delivery of program components were designed to incorporate and represent the constructivist view of adult learning theory. As a result, the participants were enabled to acquire knowledge and gain new understanding through class dialogue and critical thought. An important element was the classroom setting, which provided a consistent and controlled environment for the program delivery.

The topics for each of the program modules included: budgeting basics, understanding personal net worth, managing debt, savings, investing, understanding basic financial numeracy,

Medicare and Social Security, retirement planning, personal insurance risk management, estate planning, money scripts and financial relationships. The financial education program utilized in this research is considered comprehensive in nature due to both the length and breadth of the content covered (Huston, 2010; Black et al., 2002).

Research Design

The facilitator of the education classes administered the surveys for the participants of the education program. Completion of the survey by participants was a requirement of attending the financial education program, and a 100 percent response rate was received. Participants' pre and post individual surveys were matched using a blind matching technique. All information was kept confidential and no personally identifiable information was collected in the surveys.

The pre survey (Appendix A) had 53 questions relating to financial knowledge, demographic characteristics, and the assessment of financial satisfaction. The post survey consisted of 50 questions relating to the assessment of financial literacy and satisfaction, similar to those of the pre survey. Since the demographic characteristics are assumed not to have changed, they were not assessed in the post survey. In order to help ensure confidentiality and privacy during collection, blank white envelopes with self-adhesive strips were distributed with the surveys.

A control group was also utilized to help isolate the effects of financial education among program participants. The participants and control group each received the surveys at the same time. Financial education booklets covering similar topics to those of the financial education program were distributed to the control group after completion of the pre survey. The participant and control groups had up to 72 hours for completion of the surveys.

To help address the historical effect related to the economic times for which the

education program occurred, two separate participant groups were surveyed a year apart. Additionally, the class times were held in the mornings, afternoons, and evenings, which should help address concerns as to the time of day the programs were delivered. In order to create the largest participant sample groups, there were no restrictions on the number of employees who could participate when these programs were offered.

Variables

Dependent Variables

Zimmerman (1995) suggested that financial well-being comes from a state of being free from financial worry. Therefore, indications of increased well-being can be seen in decreased financial worry and increased financial satisfaction and confidence. As such, financial well-being is highly subjective and most appropriately measured by the perception of the individual. The financial well-being measures were chosen from questions utilized by Garman et al. (1999) and Joo (1998). A total of six subjective questions were used to assess financial well-being. The following questions were asked, using a four-point Likert scale where 1=strongly agree, 2=agree, 3=disagree, and 4=strongly disagree. The six financial well-being measures were reverse coded so that higher scores indicate increased levels of financial satisfaction, confidence, or worry.

1. *Savings Satisfaction: I am satisfied with the amount of money that I am able to save.*
2. *Income Worry: I have difficulty living on my income.*
3. *Expense Worry: I worry about being able to pay monthly living expenses.*
4. *Debt Worry: I worry about how much money I owe.*
5. *Retirement Savings Confidence: I feel confident about saving for a comfortable retirement.*

6. *Comfortable Retirement Confidence: I think I will have enough income to live comfortably throughout retirement.*

Other Variables

The treatment variable is participation in a worksite comprehensive financial education program. Participants and the control group employees were identified on the survey booklet and coded as such.

Demographic information was collected to understand any difference that might exist between the participant and control groups. These variables were separated into three groups: demographic characteristics, familial characteristics, and household financial characteristics. The demographic characteristics included *age*, *ethnicity*, and *education level*, while the familial characteristics included *marital status* and *gender*. Lastly, household financial characteristics included *income* and *net worth*. For the purposes of this research, data on the three independent variable groups were gathered before program delivery only, since changes in these other variables were neither expected nor considered relevant in the post program survey. Given differences between the control and participant group, analyses are conducted to better isolate the effects of the financial education program.

Research Hypotheses

Based on the review of prior literature, participants of a comprehensive financial education program were expected to be associated with positive changes in measures of financial well-being. The following was hypothesized:

H1_A: Participation in a worksite comprehensive financial education program is associated with increased savings satisfaction.

H2_A: Participation in a worksite comprehensive financial education program is associated with decreased income worry.

H3_A: Participation in a worksite comprehensive financial education program is associated with decreased expense worry.

H4_A: Participation in a worksite comprehensive financial education program is associated with decreased debt worry.

H5_A: Participation in a worksite comprehensive financial education program is associated with increased retirement savings confidence.

H6_A: Participation in a worksite comprehensive financial education program is associated with increased comfortable retirement confidence.

H7_A: A positive correlation exists between changes in financial literacy and changes in financial well-being among participants of a worksite comprehensive financial education program.

Data Analysis

The research seeks to more clearly understand how participation in a financial education program is associated with changes in financial well-being. First, a series of t-tests were performed to see if there were differences in the mean scores among and between the participant and control groups for six financial well-being measures. A regression analysis was also performed to test if participation is associated with increased financial well-being, controlling for any socio-demographic differences that exist between the participant and control groups. Lastly, a correlation analysis was performed to test if changes in financial literacy were associated with changes in financial well-being. These analyses will provide better understanding of whether or not participation is associated with improved financial well-being.

Sample Characteristics

The final sample used for analysis was comprised of 46 financial education program employee participants and 56 employees in the control group. Participant and control group descriptive statistics can be found in Table 3.1. The control group was similar to the participant group in many ways; however, there were some differences to note. While both groups had a similar mean age of 35 to 44 years old, there were fewer females at 62.5% (versus 76.1%) in the participant group. The control group had 7% Hispanics and all were white, very similar to the participant group. The control group had a higher amount of married individuals at 71.4% (versus 56.5%), with only 23% being single and never married (compared to 37%). The control group had 62.5% with at least a bachelor's degree, which was a higher level of average education than the participant group at 48%. The control group had an average income level of \$82,009 to \$101,582 and an average net worth level of \$50,000 to \$149,999, both similar to the participant group. There was a higher percentage of homeownership among the control group at 80.4% (versus 67.4%), and the same average of two people living in the household as the participant group.

Table 3.1 Sample Demographics (N=102)

Variable	Control Group (N=56)		Participant Group (N=46)	
	N	%	N	%
Age				
Less than 25	4	7.1%	9	19.6%
25 to 34	22	39.3%	10	21.7%
35 to 44	7	12.5%	10	21.7%
45 to 54	15	26.8%	5	10.9%
55 and over	8	14.3%	12	26.1%
Gender				
Male	21	37.5%	11	23.9%
Female	35	62.5%	35	76.1%
Race				
White	56	100.0%	45	97.8%
Non-White	0	0.0%	1	2.2%
Ethnicity				
Hispanic	4	7.1%	0	0.0%
Non-Hispanic	52	92.9%	46	100.0%
Education				
High school graduate or less	7	12.5%	3	6.5%
Assoc and Some college	14	25.0%	21	45.6%
Bachelor degree and post-grad	35	62.6%	22	47.9%
Marital status				
Single	16	28.6%	20	43.5%
Married	40	71.4%	26	56.5%
Homeownership status				
Homeowner	45	80.4%	31	67.4%
Not a homeowner	11	19.6%	15	32.6%
Income				
Lower: Less than \$38,521	5	9.0%	5	10.8%
Moderate: \$38,521 to \$101,582	29	51.7%	22	47.8%

Higher: Over \$101,582	22	39.3%	19	41.3%
Net Worth				
Below 0	7	12.5%	7	15.2%
\$1 to \$49,999	16	28.6%	14	30.4%
\$50,000 to \$149,999	12	21.4%	10	21.7%
\$150,000 and over	21	37.5%	15	32.6%
Household size				
One	3	5.4%	3	6.5%
Two	28	50.0%	23	50.0%
Three	9	16.1%	10	21.7%
Four or more	16	28.6%	10	21.8%

Results

Financial Education and Change in Well-Being

A series of t-tests were run to compare the pre and post six financial well-being measures among and between the participant ($N = 46$) and the control group ($N = 56$). The mean reported scores among the participant and control groups, as well as the results of t-tests investigating changes in scores between the pre and post survey, are shown in Table 3.2. Results of the t-tests were interpreted using a one-tailed t-value that aligned with the hypotheses.

Table 3.2 Well-Being in Relation to Participation in Workplace Financial Education Program (N=102)

Financial Well-Being Measures	Pre Survey	Post Survey	t
Q1: Savings Satisfaction			
Participant	1.93	2.87	7.42***
Control	2.20	2.88	5.66***
Q2: Income Worry			
Participant	2.48	3.02	3.93***
Control	1.98	2.80	7.57***
Q3: Expense Worry			
Participant	2.17	2.96	5.14***
Control	1.86	2.77	7.57***
Q4: Debt Worry			
Participant	2.50	2.72	1.34*
Control	2.29	2.84	4.75***
Q5: Retirement Saving Satisfaction			
Participant	2.41	2.87	4.02***
Control	2.48	2.96	4.23***
Q6: Retirement Confidence			
Participant	2.24	2.93	5.29***
Control	2.52	2.98	4.29***

* p<0.10, ** p<0.05, *** p<0.01

Note: Financial satisfaction was assessed using a scale where 1=strongly disagree, 2=disagree, 3= agree, and 4=strongly agree.

Differences among Participant and Control Groups

For the savings satisfaction question, a significant increase in the average satisfaction scores was found among both the participant group, $t(45) = 7.24, p = .001$, and the control group, $t(55) = 5.66, p = .001$. For the income worry question, a significant increase in worry was found among both the participant group, $t(45) = -3.93, p = .001$, and the control group, $t(55) = -7.57, p = .001$, thereby decreasing well-being. The results for the expense worry question showed

significant increases in worry for both the participant group, $t(45) = -5.14, p = .001$, and the control group, $t(55) = -7.57, p = .001$, which decreases well-being. The debt worry question results indicated a significant increase in the average worry scores among the control group, $t(55) = -4.75, p = .001$, and the participant group, $t(45) = 1.34, p = .092$, negatively impacting well-being. The retirement savings confidence question indicated a significant increase in the average confidence scores among both the participant group, $t(45) = 4.02, p = .001$, and the control group, $t(55) = 4.23, p = .001$, which increases financial well-being. The results for the comfortable retirement confidence question showed a significant increase in the average confidence scores among both the participant group, $t(45) = 5.29, p = .001$, and the control group, $t(55) = 4.29, p = .001$, indicating increased well-being.

Differences between Participant and Control Groups

To test the hypotheses that participation in a worksite financial education program would significantly improve well-being for the participant group as compared to the control group, a series of six independent t -tests were performed. The results of these analyses are shown in Table 3.3. Results of the t -tests were interpreted using a one-tailed t -value that aligned with the hypotheses. The financial well-being variable distributions for the participant and control groups were sufficiently normal for the purposes of conducting the t -tests (i.e., skew $< |2.0|$ and kurtosis $< |9.0|$; Schmider, Ziegler, Dannay, Beyer, & Buhner, 2010). A series of Levene's F tests for homogeneity were performed for the pre survey, post survey, and change in scores for the six financial well-being measures. Where Levene's F test indicated significance, the variances were assumed to be unequal and the t -tests was performed assuming unequal variances. When the results of the Levene's F test indicated insignificance, the variances were assumed to be equal and the t -tests was performed assuming equal variances. Nonparametric tests were also

performed to provide a more robust analysis of the financial well-being scores between the groups. The Mann-Whitney test was used since there were an unequal number in the participant and control groups.

Table 3.3 Financial Well-Being in Relation to Participation in Workplace Financial Education Program (N=102)

Financial Well-Being Measures	Participants	Control	T
Q1: Savings Satisfaction			
Pre Survey	1.93	2.20	1.73**
Post Survey	2.87	2.88	0.06
Change in Savings Satisfaction	0.94	0.68	1.46*
Q2: Income Worry			
Pre Survey	2.48	1.98	-2.92***
Post Survey	3.02	2.80	-2.28**
Change in Income Worry	0.54	0.82	1.60*
Q3: Expense Worry			
Pre Survey	2.17	1.86	-1.83**
Post Survey	2.96	2.77	-1.73**
Change in Expense Worry	0.79	0.91	0.67
Q4: Debt Worry			
Pre Survey	2.50	2.29	-1.12
Post Survey	2.72	2.84	1.03
Change in Debt Worry	0.22	0.55	1.72**
Q5: Retirement Savings Confidence			
Pre Survey	2.41	2.48	0.41
Post Survey	2.87	2.96	0.91
Change in Retirement Savings Confidence	0.46	0.48	0.14
Q6: Comfortable Retirement Confidence			
Pre Survey	2.24	2.52	1.62*
Post Survey	2.93	2.98	0.51
Change in Comfortable Retirement Confidence	0.69	0.46	-1.37*

* p<0.10, ** p<0.05, *** p<0.01

Note: Financial satisfaction was assessed using a scale where 1=strongly disagree, 2=disagree, 3= agree, and 4=strongly agree.

The results of the t-tests for savings satisfaction indicated the participant group was associated with a significantly higher average level of pre survey satisfaction compared to the control group ($t(99) = 1.73, p = .043$). The results of the nonparametric tests also indicated a significant difference in the pre survey median scores between the groups ($p < .05$). Additionally, a significant difference in means was also found between the groups for change in savings satisfaction, ($t(97) = 1.46, p = .072$). These results support Hypothesis 1, with participation having an improved effect on the saving satisfaction measure, thereby increasing financial well-being.

The results of the t-tests for income worry indicated differences in the increased average worry levels of pre survey means, $t(100) = -2.92, p = .002$, post survey means, $t(99) = -2.28, p = .012$, and change in means, $t(89) = 1.60, p = .055$, between the groups. The results of the nonparametric tests indicated a significant difference in the medians for the pre and post survey for income ($p < .01$), but not for change in income worry. While these results indicated that participation had a significant effect on income worry, the change was an increase in worry for both groups. These results fail to support Hypothesis 2, and financial well-being was not improved.

Similarly, the results for expense worry also indicated a difference in the increased average worry levels of pre survey means, $t(100) = -1.83, p = .035$, and for the post survey means, $t(100) = -1.73, p = .043$, between the groups. The nonparametric tests also indicated a significant difference among the pre survey means ($p < .05$), and no significant differences were found between the groups for the post survey scores. These results fail to support Hypothesis 3, with participation increasing expense worry and thereby decreasing well-being.

The results of the tests for debt worry indicated insignificant differences between the groups for both pre and post survey scores. However, the scores for change in debt worry indicated a significantly better effect, $t(100) = 1.72, p = .043$, for the participant group. The results of the nonparametric tests also indicated a significant difference in the medians for the change in debt worry scores ($p < 0.1$) between the groups. These results partially support Hypothesis 4 in that participation had a significantly greater effect on the debt worry measure. However, well-being decreased for both groups as indicated by an overall mean increase in debt worry scores, thereby failing to fully support the hypothesis.

The results of the retirement savings confidence measure indicated insignificant difference in means of the pre survey, post survey, or changes in scores between the groups. Additionally, the Mann-Whitney nonparametric tests indicated a similar result of insignificance. These results fail to support Hypothesis 5, with participation not improving retirement savings confidence and financial well-being.

The results of the comfortable retirement confidence measure indicated a significant difference in means of the pre survey, $t(100) = 1.62, p = .053$, and change in scores, $t(100) = 1.37, p = .086$, between the groups. Additionally, the Mann-Whitney nonparametric tests indicated a similar result of significant differences for the median scores between groups. These results support Hypothesis 6, indicating that participation had an improved effect on the retirement confidence measure of financial well-being.

Regression Analysis

Further analysis was conducted to test if participation would show a significant effect when controlling for variations in the demographic makeup between the groups. A series of OLS regression analyses were performed using the change in each of the six financial well-being

measures as dependent variables and program participation, age, gender, marital status, children in household, education, income, and net worth, as independent variables. Results of these analyses are shown in Table 3.4.

Table 3.4 Regression Results (N=102)

Variable	Q1: Saving Satisfaction			Q2: Income Worry			Q3: Expense Worry		
	B	t	Sig.	B	t	Sig.	B	t	Sig.
Intercept	.374	1.16	.249	-.298	-.92	.358	-.919	-2.54	.013**
Participation	.314	1.74	.085*	.226	1.24	.215	.193	0.95	.343
Age									
Less than 25	-	-	-	-	-	-	-	-	-
25 to 34	-.096	-0.27	.781	.093	0.27	.788	.528	1.36	.175
35 to 54	.309	0.92	.356	.089	0.26	.791	.128	0.34	.734
55 and over	-.184	-0.45	.652	.402	0.98	.327	.403	0.88	.380
Gender									
Male	-	-	-	-	-	-	-	-	-
Female	.301	1.50	.135	.129	0.64	.522	.145	0.64	.520
Marital Status									
Single	-	-	-	-	-	-	-	-	-
Married	.252	0.99	.321	-.128	-0.50	.615	.022	0.07	.937
Household									
Children at home	-	-	-	-	-	-	-	-	-
No Children at home	.086	0.42	.669	-.626	-3.09	.003***	-.488	-2.15	.033**
Education									
Less than Bachelor degree	-	-	-	-	-	-	-	-	-
Bachelor degree or more	.204	1.03	.306	.041	0.20	.835	.040	0.18	.858
Income									
Low: less than \$101,582	-	-	-	-	-	-	-	-	-
Higher: Over \$101,582	-.592	-2.85	.005***	-.412	-1.98	.050**	-.569	-2.44	.016**
Net Worth									
Lower: Below \$49,999	-	-	-	-	-	-	-	-	-
\$150,000 and over	-.106	-0.52	.599	-.270	-1.33	.185	.094	0.41	.678

Q1: $R^2 = .198$ $F(10, 101) = 2.25$, $p = .021^{**}$ Q2: $R^2 = .184$ $F(10, 101) = 2.04$, $p = .037^{**}$ Q3: $R^2 = .144$ $F(10, 101) = 1.53$, $p = .141$

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Variable	Q4: Debt Worry			Q5: Retirement Savings			Q6: Comfortable		
	B	t	Sig.	B	t	Sig.	B	t	Sig.
Intercept	-.317	0.85	.396	-.309	-0.95	.341	-.257	-0.87	.382
Participation	.294	1.41	.160	.045	0.24	.806	.304	1.85	.067*
Age									
Less than 25	-	-	-	-	-	-	-	-	-
25 to 34	-.494	-1.24	.217	.415	1.20	.232	.668	2.13	.035**
35 to 54	-.321	-0.83	.407	.969	2.89	.005***	1.04	3.45	.001***
55 and over	-.511	-1.08	.279	.541	1.32	.188	.636	1.72	.089*
Gender									
Male	-	-	-	-	-	-	-	-	-
Female	.307	1.33	.186	.207	1.03	.302	.271	1.49	.138
Marital Status									
Single	-	-	-	-	-	-	-	-	-
Married	.254	0.87	.385	.097	0.38	.703	.030	0.131	.896
Household									
Children at home	-	-	-	-	-	-	-	-	-
No Children at home	-.042	-0.18	.857	.340	1.68	.095*	.154	0.84	.401
Education									
Less than Bachelor degree	-	-	-	-	-	-	-	-	-
Bachelor degree or more	.237	1.04	.300	.109	0.55	.582	-.014	-0.076	.939
Income									
Low: less than \$101,582	-	-	-	-	-	-	-	-	-
Higher: Over \$101,582	-.018	-0.07	.940	-.401	-1.9	.056*	-.405	-2.15	.034**
Net Worth									
Lower: Below \$49,999	-	-	-	-	-	-	-	-	-
\$150,000 and over	-.568	-2.44	.016**	-.217	-1.07	.287	-.259	-1.41	.160

Q4: $R^2 = .150$ $F(10, 101) = 1.60$, $p = .118$ Q5: $R^2 = .222$ $F(10, 101) = 2.59$, $p = .008***$ Q6: $R^2 = .287$ $F(101) = 3.67$, $p = .001***$

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The model for savings satisfaction produced an $R^2 = .198$, $F(10, 101) = 2.25$, $p = .021$, indicating that 19.8% of the variance among the change in savings satisfaction scores were explained by the variables in the model. The results for Hypothesis 1 indicated that the average

change in savings satisfaction scores were significantly improved among participants, with the one-tailed p value that aligned with the hypothesis of $p = .042$. These results provide further support for Hypothesis 1, indicating that participation improved the savings satisfaction measure of financial well-being, holding all else equal.

The regression model results for income worry produced an $R^2 = .184$, $F(10, 101) = 2.04$, $p = .037$, indicating that 18.4% of the variance among the change in income worry scores were explained by the variables in the model. The results indicated that participation was insignificant in the model using a one-tailed t -value that aligned with the hypothesis, and thereby failing to support Hypothesis 2.

The regression model results for expense worry produced a significant model, $R^2 = .144$, $F(10, 101) = 1.53$, $p = .070$, using the one-tailed p -value that aligned with the hypothesis, indicating that 14.4% of the variance among the change in expense worry scores were explained by the variables in the model. Participation was found to be insignificant in the model, thereby failing to support Hypothesis 3.

The regression model for debt worry produced a significant model, $R^2 = .150$, $F(10, 101) = 1.53$, $p = .070$, using the one-tailed p -value that aligned with the hypothesis, indicating that 15% of the variance among the change in debt worry scores were explained by the variables in the model. Although participation was found to be significant in the model ($p = .08$), these results fail to support Hypothesis 4 since participation increased worry, thereby decreasing financial well-being.

The regression model results for retirement savings confidence produced an $R^2 = .222$, $F(10, 101) = 2.59$, $p = .008$, indicating that 22.2% of the variance among the change in retirement savings confidence scores were explained by the variables in the model. The results indicated

that participation was insignificant in the model, and failed to support Hypothesis 5, since participation did not significantly improve retirement savings confidence.

The regression model results for comfortable retirement confidence produced an $R^2 = .287$, $F(10, 101) = 3.67$, $p = .001$, indicating that 28.7% of the variance among the change in comfortable retirement confidence scores were explained by the variables in the model. The results indicated that participation was significant in the model ($p = .033$) using the one-tailed p value that aligned with the hypothesis. These results provide further support for Hypothesis 6, as participation produced a positive change in comfortable retirement confidence, thereby improving well-being.

In summary, the regression analysis results indicated mixed support for participation being effective for increasing financial well-being. Five of the six measures indicated that the change in well-being for participants was numerically more positive than that of the control group. However, only the savings satisfaction, debt worry, and comfortable retirement confidence measures were significantly greater after controlling for demographic characteristic differences between the groups. Additionally, only the savings satisfaction and comfortable retirement confidence measures were shown to have a positive effect on financial well-being, with debt worry indicating a negative impact, albeit less than the control group.

Change in Financial Literacy and Well-Being

The next analysis produced a series of Pearson correlation coefficients to assess the relationship between changes in financial well-being and changes in financial literacy. The correlation analyses was performed at three levels of testing, among the participant group, among the control group, and for both groups combined. For the purpose of interpreting these

results, the one-tailed p value that aligned with the hypothesis was used with a level of significance of $p < .10$, based on the sample size tested.

For the participant group, the results indicated a positive correlation only between the change in financial literacy and the change in the savings satisfaction measure of financial well-being ($r = .248$, $n = 45$, $p = .048$). For the control group, results indicated negative correlations between change in financial literacy and the savings satisfaction ($r = -.417$, $n = 56$, $p = .001$), income worry ($r = -.256$, $n = 56$, $p = .028$), expense worry ($r = -.467$, $n = 56$, $p = .001$), retirement savings confidence ($r = -.608$, $n = 56$, $p = .001$), and comfortable retirement confidence ($r = -.414$, $n = 56$, $p = .001$) measures of financial well-being. For the groups combined, positive correlations were found between change in financial literacy and savings satisfaction ($r = .261$, $n = 102$, $p = .008$), retirement savings confidence ($r = .129$, $n = 102$, $p = .098$), and the comfortable retirement confidence ($r = .165$, $n = 102$, $p = .049$) measures, and a negative correlation with the debt worry ($r = -.165$, $n = 102$, $p = .048$) measure of financial well-being.

Combined, the results of these correlation tests indicate that, overall, participants showed little relationship between the change in financial literacy and change among the financial well-being measures, thereby failing to support Hypothesis 7. These findings indicate that the worksite comprehensive financial education program impacted change in financial literacy differently than change in financial well-being among the participant group.

Discussion

Financial Education and Change in Well-Being

The purpose of the study was to better understand the relationship of participating in a worksite comprehensive financial education program to changes in financial well-being, thereby testing the framework used for financial literacy. To that end, a comprehensive financial

education program was conducted, and a pre and post program assessment for financial well-being was gathered from survey data. Mixed results were found in support of the hypotheses related to the six financial well-being measures.

In order to test each of the financial well-being measures, three tests were performed for each hypothesis. A paired sample t-test and an independent sample t-test were each used to assess the difference in mean scores both among and between the participant and control groups. A regression analysis was performed to see if participation was significant in the model after controlling for the socio-demographic differences between the groups. A summary of the results for the changes in the six financial well-being measures are shown in Table 3.5.

Table 3.5 Summary of Change in Average Financial Well-Being Scores in Relation to Participation in Workplace Financial Education

Change in Financial Well-Being Measures	Participants	Control	t
Q1: I am satisfied with the amount of money that I am able to save.	0.94	0.66	-1.46*
Q2: I have difficulty living on my income.	0.54	0.82	1.60*
Q3: I worry about being able to pay monthly living expenses.	0.79	0.91	0.67
Q4: I worry about how much money I owe.	0.22	0.55	1.72**
Q5: I feel confident about saving for a comfortable retirement.	0.45	0.48	0.14
Q6: I think I will have enough income to live comfortably throughout retirement.	0.69	0.46	-1.37*

One-tailed p-values: *p < 0.10, **p < 0.05, ***p < 0.01

Notes: Means are coded with a 4-point Likert type scale of 1 for “strongly disagree,” 2 for “tend to disagree,” 3 for “tend to agree,” and 4 for “strongly agree.”

Hypothesis 1 tested the savings satisfaction measure for financial well-being, whereby an increase in savings satisfaction would produce an increase in financial well-being. The results indicated significant differences in the mean scores between the groups before the delivery of the

financial education program, and also significant differences between the pre and post scores among both groups. Both groups saw a numerical increase in the change of savings satisfaction scores from pre to post measurement, with that of the participant group being significantly greater as compared to the control group. The results of the regression analysis confirmed that participation was still significant for positive changes in savings satisfaction, after holding the socio-demographic differences between the groups equal. The results of these findings support Hypothesis 1 in that the savings satisfaction measure produced an increased result in financial well-being scores among participants.

Hypothesis 2 tested the income worry measure for financial well-being, whereby a decrease for income worry would produce an increase in financial well-being. The results indicated significant differences in the mean scores between the groups both before and after the delivery of the financial education program, and also significant differences between the pre and post scores among both groups. Both groups saw a numerical increase in income worry scores from pre to post measurement, thereby reducing financial well-being; however, the participant group showed a significantly lower increase as compared to the control group. The results of the regression analysis indicated that participation was actually insignificant for changes in income worry, after holding the socio-demographic differences between the groups equal. The results of these findings failed to support Hypothesis 2 in that the change in the income worry scores among participants indicated a decreased result in financial well-being scores.

Hypothesis 3 tested the expense worry measure for financial well-being, whereby a decrease for expense worry would produce an increase in financial well-being. The results indicated significant differences in the mean scores between the groups both before and after the delivery of the financial education program, and also significant differences between the pre and

post scores among the groups. Both groups saw a numerical increase in expense worry scores from pre to post measurement, thereby reducing financial well-being. The change in expense worry scores between participant and control groups failed to indicate a significance difference. The results of the regression analysis indicated that participation was indeed insignificant for changes in expense worry, after holding the socio-demographic differences between the groups equal. The results of these findings failed to support Hypothesis 3 in that the change in expense worry scores among the participants produced a decreased result in financial well-being scores.

Hypothesis 4 tested the debt worry measure for financial well-being, whereby a decrease for debt worry would produce an increase in financial well-being. The results indicated insignificant differences in the mean scores between the groups both before and after the delivery of the financial education program, but significant differences between the pre and post scores among the groups. Both groups saw a numerical increase in income worry scores from pre to post measurement, thereby reducing financial well-being; however, the participant group showed a significantly lower increase as compared to the control group. The results of the regression analysis indicated that participation was significant for changes in debt worry, after holding the socio-demographic differences between the groups equal. Even though participation was found to be significant in the model, these results failed to support Hypothesis 4 in that financial well-being scores among participants were still reduced overall due to the increase in debt worry.

Hypothesis 5 tested the retirement savings confidence measure for financial well-being, whereby an increase for retirement savings confidence would produce an increase in financial well-being. The results indicated insignificant differences in the mean scores between the groups both before and after the delivery of the financial education program, but significant differences between the pre and post scores among the groups. Both groups saw a numerical increase in

retirement savings confidence scores from pre to post measurement, thereby increasing financial well-being; however, the participant group showed an insignificant difference compared to the control group for the changes in retirement savings confidence. The results of the regression analysis indicated that participation was insignificant for changes in retirement savings confidence, after holding the socio-demographic differences between the groups equal. These results failed to support Hypothesis 5 in that increases in financial well-being scores among participants were not significantly different as compared to that of the control group.

Hypothesis 6 tested the comfortable retirement confidence measure for financial well-being, whereby an increase in comfortable retirement confidence would produce an increase in financial well-being. The results indicated significant differences in the mean scores between the groups before the delivery of the financial education program, and also significant differences between the pre and post scores among both groups. Both groups saw a numerical increase in comfortable retirement confidence scores from pre to post measurement, with those of the participant group being significantly greater as compared to those of the control group. The results of the regression analysis confirmed that participation was still significant for positive changes in comfortable retirement confidence, after holding the socio-demographic differences between the groups equal. The results of these findings support Hypothesis 6 in that the comfortable retirement confidence measure produced a significant increase in financial well-being scores among participants.

Based on the discussion of the results detailed above, only Hypothesis 1 for savings satisfaction and Hypothesis 6 for comfortable retirement confidence were supported through the testing results. While Hypothesis 2 for income worry, Hypothesis 3 for expense worry, and Hypothesis 4 for debt worry postulated that participation would be associated with decreased

levels of income, expense, and debt worry, the level of worry increased for both groups, thus reducing financial well-being. Additionally, Hypothesis 5 for retirement savings confidence failed to show any significant difference for changes in confidence among participants as compared to the control group. The results of the hypothesis testing for the financial well-being measures suggest that participation in the worksite comprehensive financial education program had a mixed effect on increasing financial well-being.

The directional change in financial well-being following financial education has met with mixed results in the historical literature, indicating both positive and negative impacts. These mixed results tend to confirm the historical findings of Mugenda et al. (1990), where reduced financial well-being was thought to be the result of greater awareness of perceived financial inadequacy. The participant group has greater knowledge and can use their skills and abilities to act, but are also burdened by the knowledge of their current relative financial position. It remains unclear if these negative satisfaction results are a short-term or long-term effect. Additional research is needed to see if reduced levels of financial well-being persist over time following the educational program, and if future behaviors influence well-being.

The results from this research are also partially supported by earlier findings by Garman et al. (1999), whereby significant differences in post financial education scores between the participant and control groups were found in four of the six financial well-being measures. In comparison, the results of this research indicated differences between the groups post education scores for five of the six financial well-being measures. Only the retirement savings confidence was found insignificant in this research, while Garman et al. failed to find significant differences in the comfortable retirement confidence measure as well.

However, when comparing results it is important to understand that the Garman et al. (1999) study only measured differences in scores post educational program, and did not assess change in scores as the dependent variable. As a result, the historical study cannot validly address if participation matters, only that participants were different in post program measures, and therefore direct comparisons of similarities in findings can only be made among the difference in post education program scores between the groups.

Change in Financial Literacy and Well-Being

Another set of tests were performed to explore the correlation between the change in financial literacy and the six financial well-being measures for Hypothesis 7. Pearson correlation coefficients were used to assess the relationship between changes in financial well-being and changes in financial literacy among the participant group, among the control group, and for both groups combined. The hypothesis was that the change in financial literacy among participants would be highly correlated with the changes in financial well-being. However, the results indicated that five of the six financial well-being measures were not correlated with the change in financial literacy for the participant group. These results failed to support Hypothesis 7 and indicated that the changes participants experienced in financial literacy were not similar to the changes in financial well-being, except in the case of the savings satisfaction measure ($p=.048$).

The comparison of these results illustrates the need for the use of quasi-experimental methods to draw meaningful conclusions as to the effects associated with the financial education program itself. While the Garman et al. (1999) study helps to support some findings with the measures used, it cannot fully support the hypothesis that participation matters for changing financial satisfaction. However, both studies support the findings in historical literature which found that financial education that is delivered in the workplace increases perceived financial

management and decision-making confidence, enabling an individual's ability to weigh alternatives in order to achieve personal financial goals and objectives (Bayer et al., 2009; Bernheim & Garrett, 1996).

Limitations

Even though quasi-experimental research methods were employed in this research, several limitations and concerns are still present. A limiting factor of these results is the younger and higher income makeup of this sample. The generalizability of these findings are therefore reduced and not as broad as some historical literature, which has utilized a larger, more representative dataset of the population. However, the combined sample of 102 was adequate to provide the needed data for statistically valid analysis and is comparable to several smaller studies of financial education.

Another limitation is that the sample of employees was from two financial industry employers. The skills, experience, and education levels required for their specific industry resulted in the higher levels of initial financial knowledge of both participant and control groups. These concerns were addressed through use of the control group, which allowed the actual change resulting from the program treatment to be isolated. However, valid concerns can still be raised as to the effectiveness of the educational program for less educated and financially literate participants.

The financial education program was available to all employees and those who self-selected into the program were similar to the control group. However, there is still a self-selection bias concern among the participant group. Consistent with the theoretical framework for this research, adult learning theory supports the search for knowledge as a part of the constructivist view of learning, therefore the participant's self-selecting behavior can be

explained as the desire to seek knowledge. The resulting significant changes in financial satisfaction of the participant group as compared to those of the control group provide additional support for the effectiveness of the educational program and the delivery using the constructivist approach. However, a study by Meier and Sprenger (2013) suggested that time perspective and an individual's time preference may explain who will or will not decide to become financially literate through financial education programs. Further research is needed to properly assess if the desire to seek financial education is a factor for change in financial satisfaction, versus mandatory participation.

There may also be concerns about the selection of the control group. Attempts were made by the employer program administrators to select control group members who resembled participants. A randomly selected assignment of both participant and control groups would have been preferred. However, the educational program was offered as an employee benefit requiring a small fee for participation, and therefore random selection and assignment was not possible.

Lastly, the influence of the program facilitator as a contributing factor in the results exists as a possible concern. Facilitator bias to focus on certain key topics of assessment interest, which could potentially impact the results, is a valid concern. However, there must also be recognition of the consistency of program delivery. Critical cognitive learning assimilation of the constructivist view of adult learning theory required special skills, knowledge, and understanding for program facilitation. Therefore, concerns related to the influence of the facilitator should be taken into account as both potentially positive and negative factors. The alternative of having more than one instructor adds potential variability of delivery and concerns as to consistency of content covered. Testing several instructors as an added variable would have provided greater

validity. However, the resources and number of employer groups necessary to accomplish this was beyond the scope of this study.

Implications

The implications of the results of this study include setting proper expectations that a comprehensive financial education program may reduce financial well-being across several measures in the short term. The implications also call for additional research to better understand the length of the impact on well-being and whether subsequent behavior, resulting from higher levels of financial literacy, can increase well-being over time.

In addition, the implications of these results provide support for historical findings such as those of Mugenda et al. (1990), where reduced financial well-being was thought to be the result of greater awareness of perceived financial inadequacy. Since there have been mixed results in historical literature as to the effectiveness of a financial education program on financial well-being, these results provide support for a reduced impact in financial well-being across several worry-related measures including income, expenses, and debt. This is a critical point when educators are discussing the potential benefits and effectiveness of a comprehensive financial education programs to employers, association groups, or other financial educators.

In addition, the implications of financial literacy and financial well-being not being widely correlated among program participants is also an important finding about which to communicate. This means that participants may gain improved financial literacy, skills, and abilities, but at least in the short term, may experience feelings of negative financial well-being as a result of greater awareness of their current financial position and behaviors. The implications of this messaging to help position these programs may be integral in setting proper expectations and gaining favorable program value results.

Historical workplace financial education research has overwhelmingly focused on retirement planning primarily targeted at employees nearing retirement (Bernheim & Garrett, 2003). This study provides a unique perspective into a younger, higher educated, and higher income group representing the next generation of future retirees, with 63% of the participant group under the age of 45, 47.9% having at least a bachelor's degree, 39.3% having an annual household income over \$101,582, and 85% having a positive net worth. As generations younger than the boomers begin to plan for retirement, the implications of this study can lend insight for those who develop worksite financial education and pension plan education programs.

As employer-sponsored financial education begins to evolve as an employee benefit, the potential costs and benefits of offering these programs can be better supported. Historical literature clearly shows the preference for financial education in the workplace among employees and the value they place upon the education they receive. However, further research is clearly needed to better understand if the increased financial literacy from the comprehensive financial education program can be applied to improve well-being over time through better financial management and financial decision making.

Conclusion

Participation in a worksite comprehensive financial education program was found to produce a significant difference for improving financial well-being for two of the six measures used, after accounting for the demographic differences that existed between the participant and control groups. These results support historical findings of decreased financial well-being from increased worry about financial management behaviors and current financial position among participants. In all but the one measure, the participant group had change levels numerically

more positive than the control group, two of which were significantly greater for improving financial well-being.

As noted previously, with the exception of a handful of studies, there has been little testing of financial education programs using quasi-experimental methods. The methodology and results of this study should provide a meaningful contribution to the body of research in the field of financial education, literacy, and well-being. As subsequent generations of retirees follow the boomers, it will be noteworthy to explore how the greater challenges of higher medical costs, increased longevity through medical advances, a shifting emphasis towards employee savings responsibility, and concern over the future viability of government social retirement programs impact the financial well-being and subsequent behaviors across the financial literacy spectrum.

Comprehensive financial education programs will likely grow in popularity among employers looking for new forms of employee benefits that will both be valued and have a meaningful impact on improving the personal and work lives of employees. The results of this study can help support that effort by helping educators explain the value of the program to increase financial education and literacy, as well as setting the expectation for the possibility of reduced financial well-being as a result of increased awareness of current financial position. If employees are going to be able to effectively manage the increased responsibility for retirement planning amidst the added complexity from the proliferation of financial products and markets, then comprehensive financial education delivered in the workplace will most likely play a significant role in the future financial knowledge and satisfaction of millions of Americans.

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Chapter 4 - Paper Three: The Effects of Financial Literacy on Retirement Preparedness Best Practice Behaviors

Introduction

Responsibility for securing an adequate retirement is clearly shifting to individuals, as a result of changing employer retirement plans (Lusardi, 2008; Martin, 2007; van Rooij, Lusardi, & Alessie, 2011). As Americans are being asked to manage more of their personal and retirement finances, the need for financial literacy is becoming even greater (Lusardi, 2008; Martin, 2007). A vast amount of empirical research has focused on understanding the relationship between financial literacy and financial decision making (Hogarth, Beverly, & Hilgert, 2003; Huston, 2010; Martin, 2007; Remund, 2010). Much of this previous research has explored the associations between literacy and behavior by assessing knowledge and actions. The research in this study will investigate how financial literacy is related to positive financial behaviors, specifically retirement preparedness best practice behaviors, using nationally collected data from the U.S.

Statement of Purpose

Arriving at retirement fully prepared typically requires some basic form of planning and associated action towards savings. An examination of individuals prior to reaching a successfully planned retirement is posited to contain several common best practice behaviors. Research suggests that individuals who are more informed and have higher levels of financial literacy will be associated with better financial behaviors (Huston, 2010; Lusardi & Mitchell, 2007b). This research seeks to better understand the relationship between financial literacy and three retirement preparedness best practice behaviors.

Retirement Preparedness Best Practices

The three proposed retirement preparedness best practice behaviors for examination are:

(a) calculating retirement savings needs, (b) owning an individual retirement plan, and (c) owning stocks or other securities outside an employer retirement plan. Each of these best practice behaviors are supported in historical literature as to their associations with positive outcomes for retirement, and are posited to result from higher levels of financial literacy. Those with higher levels of financial literacy are found more likely to follow recommended financial practices (Kotlikoff & Bernheim, 2001; Hogarth & Hilgert, 2002; Robb & Woodyard, 2011).

Retirement planning is an important part of arriving at retirement prepared. Effective retirement planning requires the consumer to make calculations regarding their savings needs for retirement while considering future longevity, apply discount rates, estimate investment returns, diversify portfolios, project future earnings, account for inflation, calculate estimated pension values, and consider Social Security benefits, in order to formulate and execute optimal savings and consumption plans (Lusardi & Mitchell, 2007a, 2007b). Higher levels of financial literacy are needed to navigate the many complex financial decisions and to plan effectively for adequate retirement savings (Lusardi & Mitchell, 2009). Financial literacy has been found to be a key determinant of planning, making retirement calculations, and accumulating greater wealth (Lusardi, 2003; Lusardi & Beeler, 2007; Lusardi, 2008; Lusardi & Mitchell, 2007a; Lusardi & Mitchell, 2009). Lack of retirement planning has historical results similar to lack of retirement saving; therefore, failure to do either has been associated with lower levels of wealth accumulation (Lusardi & Mitchell, 2011; Lusardi, 1999).

Owning the financial products associated with effective retirement savings and wealth accumulation could clearly be considered a best practice behavior (Hilgert, Hogarth, & Beverly, 2003). Higher levels of wealth have been associated with higher levels of financial literacy,

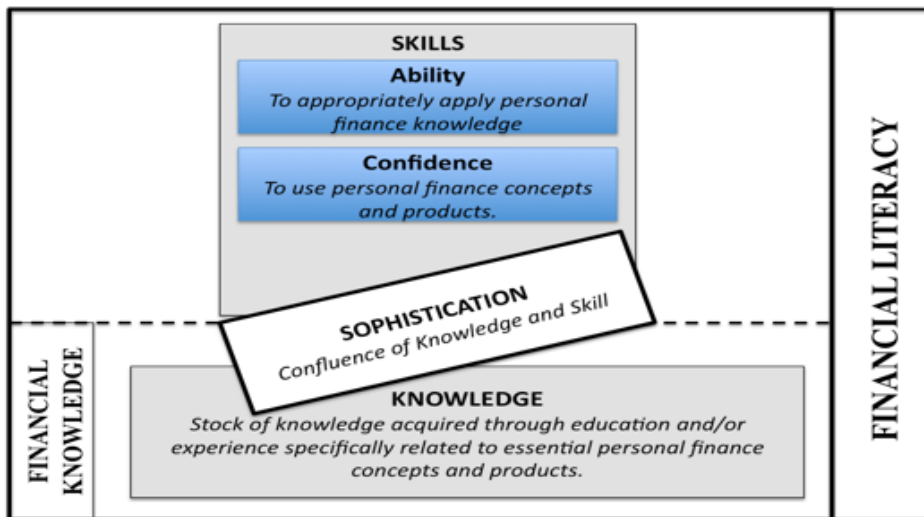
where wealth was defined as the sum of several financial savings products, including certificates of deposit, bonds, stocks, IRAs, and Keoghs (Lusardi, 2008). An individual with higher levels of financial literacy should understand the need to own the products designed for long-term savings and for providing inflation protection in order to achieve greater wealth accumulation. In addition to employer-based retirement plans such as a 401(k), those who are more financially literate understand the importance of supplementing long-term savings. Therefore, it is a personal choice and behavior of the individual to look outside employer retirement plans in order to accumulate more wealth for retirement needs.

Literature Review

Conceptual Framework

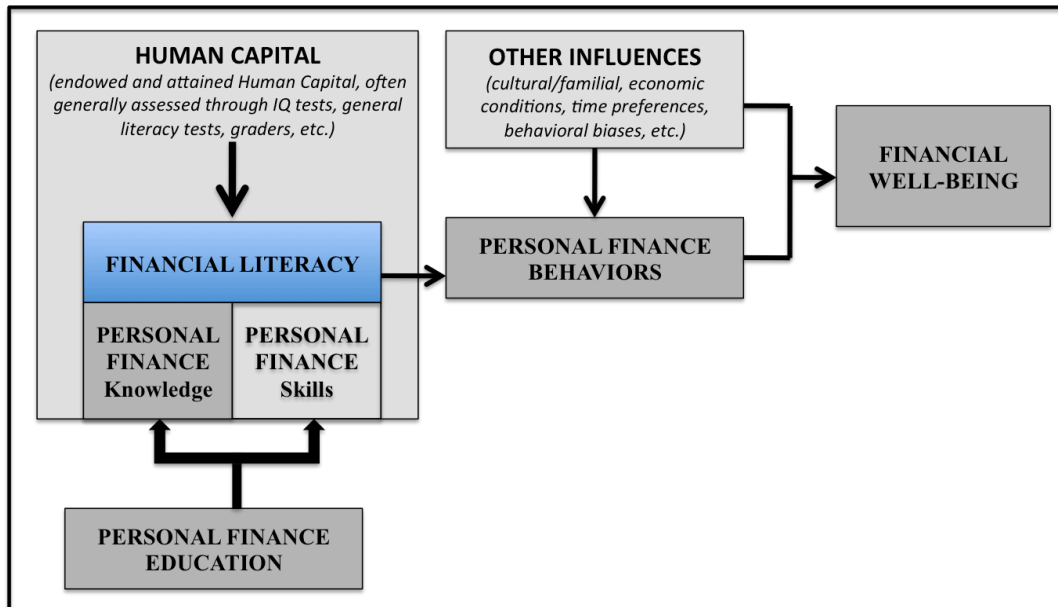
This research utilizes Huston’s (2010) concept of financial literacy (Figure 4.1) and the model of financial literacy (Figure 4.2), which shows the relationship of financial literacy within the broader context of how it serves to impact personal financial behaviors.

Figure 4.1 Concept of Financial Literacy



(Huston, 2010)

Figure 4.2 Relations among Financial Literacy, Knowledge, Education, Behavior, and Well-Being



Huston (2010)

This paper will test the link in the financial literacy relationship model between financial literacy and financial behaviors. Financial literacy is shown to influence financial behaviors using attained personal financial knowledge and skills, to optimally utilize resources over a lifetime of consumption (Huston, 2010). This definition is consistent with human capital theory (Becker, 1964) and is based in the lifetime consumption model of the lifecycle hypothesis (Modigliani & Brumberg, 1954). Historical literature supports associations between financial literacy and various types of financial behaviors (Chen & Volpe, 2002; Hilgert, Hogarth, & Beverly, 2003; Lusardi & Mitchell, 2007a, 2007b; Martin, 2007; Robb & Woodyard, 2011; Yoong, 2010).

Financial Literacy

A great amount of research has been conducted to better understand how to measure and assess levels of financial literacy. Huston (2010) identifies financial literacy as having two components, financial knowledge and financial skills. The general findings from the work of Lusardi and Mitchell (2007a, 2007b, 2007c, 2008, 2009, 2011) indicate that low financial literacy is widespread among adults in America, especially within the Baby Boomer cohort. Their ongoing research from 2006 continues to find evidence of low levels of literacy and the associated negative effects, especially within the sub-groups of low income, low education, minorities and women (Lusardi & Mitchell, 2011).

Financial Knowledge

Within the existing research, several measures for financial literacy have been employed, the terms *financial literacy* and *financial knowledge* have been used interchangeably, and various forms of reported behaviors have been examined (Remund, 2010; Huston, 2010). To help quantify levels of financial literacy in their research, Lusardi and Mitchell (2007a, 2007c) developed a purpose-built module for the 2004 Health and Retirement Survey (HRS). A series of three questions, created for the HRS, were used to measure understanding of basic and sophisticated financial concepts. In subsequent research, Lusardi and Mitchell (2007b, 2009) developed three additional basic knowledge and seven additional sophisticated knowledge questions used in the American Life Panel (ALP), and five were used in the 2009 and 2012 FINRA National Financial Capability Study. These questions have been used to assess financial literacy among many representative works of literature, providing a well-tested source for subsequent researchers to study financial literacy across many variables associated with financial behaviors and decision making.

Financial Skills

The need for financial skills to provide effective money management has been well established within the historical literature (Collins, 2007; Carswell, 2009, Robb & Woodyard, 2012). The financial literacy framework indicates that financial skills, which are represented by a combination of confidence and ability, are needed to improve financial literacy and affect behavior. Using the NCFS dataset, recent and relevant research by Robb and Woodyard (2011) found that financial confidence had a positive association with best practice behaviors. Financial confidence was a composite measure of subjective financial knowledge and financial skills. The Robb and Woodyard study tested current financial condition and financial management best practice behaviors, which did include the individual retirement plan ownership question, although it was a smaller representation within the composite measure of six best practice behaviors.

Financial Knowledge, Behaviors, and Beliefs

Relevant research on financial behaviors by Hilgert, Hogarth, and Beverly (2003) examined 18 different recommended financial management practices, from basic money management skills to sophisticated applications and behaviors. Consumers were asked about different types of financial product ownership and savings behaviors. In terms of retirement products, only 43% reported owning an IRA, about 25% owned stocks, and less than 25% reported owning any other retirement savings products. This research demonstrates that retirement product ownership behavior is an important and basic financial best practice behavior that is not well understood or demonstrated among consumers.

Similar research by Hilgert, Hogarth, and Beverly (2003) also connected financial knowledge and behavior. Associations between financial knowledge and behavior were explored based on the four categories of (a) cash-flow management, (b) credit management, (c) savings,

and (d) investing. Positive and significant correlations between financial knowledge were found across several personal finance behaviors. Despite these results, the authors also found that an individual's personal experience was the most frequently cited source of financial knowledge. Financial education programs were attributed less as sources for financial knowledge and had lower scores on all financial best practices and skill levels. Since financial education is a key component of financial literacy, an ineffective financial education program could be influencing the resulting behavior in this study.

The combined representative research by Hilgert, Hogarth, and Beverly (2003) provides somewhat mixed findings. Evidence is found to support the connection between financial knowledge and some of the financial behaviors, but personal beliefs were found to impact behaviors as well. These findings, while mixed, do support a relationship between financial knowledge and behavior and the impacts of personal beliefs, as represented in the financial literacy model. Unfortunately, due to the methods used, the research falls short of producing conclusive evidence demonstrating that higher levels of financial knowledge lead to application of proper financial decision making (Martin, 2007).

Best Practice Behaviors

The associations between financial literacy and planning for retirement have been well studied. Those with higher levels of financial knowledge are more likely to be ready for retirement (Lusardi & Mitchell, 2009). Therefore, higher levels of financial literacy are posited to be associated with several retirement planning best practice behaviors. A summary of literature on representative best practice behaviors helps establish the content, definitions, and measures for use.

Calculating Retirement Savings Needs

For the purpose of measuring the best practice behaviors of retirement planning, Lusardi and Mitchell (2007a, 2007c, 2011) developed three modular questions for the HRS survey. Of these three questions, one of them was also used in the 2008 and 2012 NFCS and is similar to a question used previously in the TIA-CREF surveys and by the EBRI in the Retirement Confidence Survey (Ameriks, Caplin, & Leahy, 2003; Lusardi & Mitchell, 2007a, 2011). The HRS studies showed that less than one-third (31%) of the respondents indicated that they had attempted to calculate how much they would need to save for retirement (Lusardi & Mitchell, 2011). These findings support earlier research by Lusardi and Mitchell from previous HRS waves, which indicated that people gave very little thought to retirement, even when they were within just a few years of it (Lusardi, 1999, 2003, 2008). The low levels of retirement planning were also found among higher levels of attained education (Ameriks et al., 2003). The behavior of calculating retirement savings needs is a critical aspect of overall retirement planning, commensurate with wealth accumulation outcomes, and is considered to be a retirement preparedness best practice behavior (Lusardi & Mitchell, 2011).

Retirement Product Ownership

Research has supported the assumption that the decision to own a financial product, in and of itself, constitutes a best practice behavior (Hilgert, Hogarth, & Beverly, 2003). Research on financial literacy and retirement well-being explored the associations among several variables including retirement planning and accumulation of wealth (Lusardi & Mitchell, 2011). The definition of wealth included the sum of certificates of deposit, savings accounts, bonds, stocks, IRAs, and Keoghs. Financial literacy has been linked to retirement savings using individual and employer retirement plans. Individual retirement accounts are used as primary retirement savings vehicles by individuals and small business owners who must provide their own plans.

Additionally, individual plans are also used by those who seek to supplement retirement savings outside of traditional employer plans and have tax advantages associated with qualified plans. While tax deductible contributions may not be available to those households eligible for employer plans or at higher levels of income, tax-deferred growth and distribution rules still represent important retirement planning benefits for those who have the financial knowledge to utilize individual plans. Therefore, the ownership of individual retirement plans has been associated with higher financial literacy, greater wealth accumulation for retirement, and behaviors commensurate with retirement preparedness best practice behaviors (Lusardi & Mitchell, 2011).

Stocks and Securities Ownership

It has been well established in historical literature that those with lower levels of financial literacy tend to avoid the stock market and stock ownership (Christelis, Jappelli, & Padula, 2006; Kimball & Shumway, 2006; Lusardi & Mitchell, 2009; van Rooij et al., 2011). Ignorance of basic financial concepts, such as compound interest, the impacts of inflation, and risk diversification, has been linked to the lack of stock ownership and stock market participation (van Rooij et al., 2011; Lusardi, 2008). Investment in the stock market has historically provided long-term growth that helps keep pace with inflation and the ability to diversify risk through portfolio investing or mutual funds. For these reasons noted in the historical literature, those with greater financial knowledge have been associated with stock market participation and higher levels of accumulated wealth. The ownership of stock or securities embodies higher levels of knowledge important in understanding the benefits of diversification, inflation protection, long-term growth, and greater wealth accumulation, and is thereby considered a best practice behavior for retirement preparedness.

Financial Influences

Financial Confidence and Skills

The framework for financial literacy (Figure 4.2) identifies the subcomponents of financial skills and financial knowledge separately, with skills being the combination of both confidence and ability. Having the confidence and ability to apply relevant financial knowledge is necessary to increase financial literacy and ultimately the resulting behavior. The need for financial skills to provide effective financial management behavior has been well established within the historical literature (Carswell, 2009; Collins, 2007; Scott, 2010; Robb & Woodyard, 2012).

Financial confidence has been explored in several historical research studies. Recent and relevant examples are studies by Robb and Woodyard (2011) and Seay and Robb (2013), both utilizing the NCFS dataset. Best practice financial behaviors and high-cost borrowing behaviors were explored along with several other financial measures, including financial knowledge. Seay and Robb (2013) used a four-question composite measure to assess subjective financial knowledge consisting of both self-reported financial knowledge, financial awareness, and financial skills questions. The results found that subjective financial knowledge was negatively associated with two of the four high-cost debt borrowing behaviors tested. Similarly, Robb and Woodyard (2011) used the same composite measure for self-assessed financial confidence, combining questions for financial knowledge and skills. Their research found that financial confidence was positively associated with the performance of best practice behaviors.

Financial Condition

Before an individual can focus on preparing for retirement needs, the basic financial needs of the present are addressed. Managing monthly income and expenses, properly managing

debt, establishing a baseline emergency fund, and purchasing a home are examples of important present needs that typically get addressed before attention turns towards future retirement planning. Keeping track of spending and proper budget management have been associated with retirement savings (Lusardi & Mitchell, 2011). Additionally, historical research has well documented the associations between higher levels of financial knowledge, proper debt management, the presence of emergency savings, and proper money management skills (Lusardi, 2008; Martin, 2007; Robb & Woodyard, 2011; Seay & Robb, 2013).

Research Questions

To better understand the relationship between financial literacy and retirement preparedness best practice behaviors, the following research questions were explored:

1. What is the association between financial literacy and calculating retirement savings needs?
2. What is the association between financial literacy and individual retirement product ownership behavior?
3. What is the association between financial literacy and stock or securities ownership behavior?

Methodology

Data for this research was taken from the 2012 National Financial Capability Study (NCFS). The Financial Industry Regulatory Authority (FINRA) commissioned this study to investigate the financial capability among adults in the U.S. The NCFS data was made up of three separate surveys containing varying sample sizes and population generalizability: a 1,500 respondent national sample, a state-by-state survey with 500 respondents per state, and a 1,000 respondent military sample. The interests of this research suggested the use of the state-by-state

survey data in order to obtain a large enough number of respondents and still make use of a national sample. The state-by-state survey data was classified into nine categories of questions: demographics, current financials, financial professionals, banking products, retirement products, home ownership, credit card debt, consumer loan debt, and insurance products. This research was specifically interested in the retirement products and financial professionals sections along with the assessment of financial literacy.

Dependent Variables

Retirement Preparedness Best Practice Behaviors

A listing of the variables used is shown in the table of measures in Table B.5 – B.7 (Appendix B). The three best practice behaviors to be tested were: calculating retirement savings needs, owning an individual retirement plan, and stock or securities ownership. A series of questions from the survey helped to identify indications of best practice behaviors for each of these areas related to retirement preparedness.

Calculating retirement savings needs was measured by a single question from the survey asking,

Have you ever tried to figure out how much you need to save for retirement?

This question has been used extensively in prior research to measure retirement preparedness behavior and was used for the HRS (Lusardi, 1999, 2003; Lusardi & Mitchell, 2007a, 2011; Lusardi & Beeler, 2007).

Measures established by Lusardi and Mitchell (2011) were used to define retirement product ownership within the survey data. There were four specific questions in the NCFCS asking individuals to identify household ownership of financial products. Of these four product

ownership questions, one dealt specifically with individual retirement products. The question asked,

Do you (or your spouse/partner) have any other retirement accounts NOT through an employer, like an IRA, Keogh, SEP, or any other type of retirement that you have set up yourself?

This question identified individual retirement savings products separate and distinct from employer retirement plans and typically requiring action to set up and fund.

The variable for stock or securities ownership behavior was measured using a single question item from the survey. This question was asked to responders who indicated the ownership of basic financial vehicles like a checking or savings account. The question asked,

Not including your retirement accounts, does your household have any investments in stocks, bonds, mutual funds, or other securities?

This question helped to identify excess retirement savings beyond any other retirement accounts owned by responders.

All three best practice behaviors were coded so that an affirmative answer of *yes* on the survey question would connote indication of the best practice behavior. Yes or no responses were dummy coded to create three unique dependent variables representing these best practice behaviors

Independent Variables

Objective Financial Knowledge

Financial knowledge is represented in the framework as a subcomponent of financial literacy (Figure 4.1). Financial knowledge measures in the data set were chosen from scales established by Lusardi and Mitchell (2007a, 2007b, 2007c, 2009, 2011). A total of five objective

questions were used to assess financial knowledge and were referred to as compound interest, inflation, bond pricing, mortgages, and diversification. The compound interest, inflation, and diversification questions were developed for the 2004 HRS, and the mortgages question was subsequently added to the ALP survey. Three multiple-choice answers were provided along with *don't know* and *refuse to answer*. A scale was created to capture correct answers to the five questions, resulting in a variable range from 0 to 5. This composite measure for objective financial knowledge has been historically used for research on best practice behaviors that has also utilized the NCFS dataset (Robb & Woodyard, 2011, Seay & Robb, 2013). The mean objective financial knowledge score was 3.48 with a standard deviation of 1.26. Reliability analysis indicated a Cronbach's coefficient alpha of .600 for this measure. The strength of the Cronbach's alpha coefficient is considered questionable, although this composite measure has been used in prior literature utilizing the NFCS data, and the questions have been used extensively in prior financial education and literacy research (Lusardi & Mitchell, 2007a, 2007b, 2007c, 2009, 2011; Lusardi 2008; Lusardi, Mitchell, & Curto, 2010; Allgood, & Walstad, 2012; Robb & Woodyard, 2011; Seay & Robb, 2013). The survey questions were as follows:

1. *Compound Interest: Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?*
2. *Inflation: Imagine that the interest rate on your savings account was 1% per year, and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?*
3. *Bond Pricing: If interest rates rise, what will typically happen to bond prices?*

4. *Mortgages: A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.*
5. *Diversification: Buying a single company's stock usually provides a safer return than a stock mutual fund.*

Subjective Financial Knowledge

Self-assessed financial knowledge has been found to be one of the most significant factors in determining financial behavior (Courchane, 2005; Robb & Woodyard, 2011; Seay & Robb, 2013). One question was included in the survey related to self-reported financial knowledge. Respondents were asked to agree or disagree according to a seven-point Likert-type scale where 1=very low and 7=very high. Answers of *don't know* or *refuse to answer* were coded with values of zero. The mean subjective financial knowledge score was 5.40 with a standard deviation of 1.08. The survey question was as follows:

1. *On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?*

Self-Assessed Financial Skills

Financial skills are represented in the financial literacy model (Figure 4.2) as a combination of confidence and ability. Two questions were asked related to self-reported financial skills, daily financial skills, and math skills. Respondents agreed or disagreed according to a seven-point Likert-type scale where 1=strongly disagree, 4=neither agree nor disagree, and 7=strongly agree. The mean daily financial skills score was 5.95 with a standard deviation of 1.36, and the mean math skills score was also 5.95 but with a standard deviation of 1.43. The survey questions were as follows:

1. *Daily Financial Skills: I am good at dealing with day-to-day financial matters, such as checking accounts, credit and debit cards, and tracking expenses.*
2. *Math Skills: I am pretty good at math.*

The question on daily financial skills asked about financial confidence by agreement or disagreement with the characterization of “good” and financial ability when asking about the action of “dealing with” financial matters. The math skills question measured self-reported financial numeracy skills, and has been used in prior literature (Seay & Robb, 2013).

Historically, these two questions were combined with self-reported financial knowledge and used within a composite measure of self-assessed financial confidence. In this study, these questions were separated from the self-reported financial knowledge question because the financial literacy framework identified financial knowledge and financial skills as two separate components.

Financial Condition

Financial condition is represented in the financial literacy model (Figure 4.2) as a component of other influences. Before individuals engage in retirement planning behaviors, their present financial needs are typically addressed. Additionally, keeping track of spending and proper budget management has been associated with retirement savings (Lusardi & Mitchell, 2011). There were several financial condition questions used from the survey that were found to influence financial behaviors in historical literature (Seay & Robb, 2013; Lusardi & Mitchell, 2011). Questions were selected to control for financial economic condition and money management factors related to retirement preparedness behaviors. A total of eight questions were included for analysis and were asked as follows:

1. *Income: What is your household's approximate annual income, including wages, tips, investment income, public assistance, and income from retirement plans, etc.?*
2. *Work Status: Which of the following best describes your current employment or work status?*
3. *Spending Compared to Income: Over the past year, would you say your household's spending was less than, more than, or about equal to your household's income? Please do not include the purchase of a new house or car, or other big investments you may have made.*
4. *Difficulty Covering Expenses: In a typical month, how difficult is it for you to cover your expenses and pay all of your bills?*
5. *Emergency Fund: Have you set aside emergency or rainy day funds that would cover your expenses for 3 months, in case of sickness, job loss, economic downturn, or other emergencies?*
6. *Income Shock: In the past 12 months, have you (or your household) experienced a large drop in income which you did not expect?*
7. *Checking Account: Does your household have a checking account?*
8. *Homeownership status: Do you or your spouse/partner currently own your home?*

Financial Beliefs

Financial beliefs are represented in the financial literacy model (Figure 4.2) as a component of other influences. Financial beliefs that influence behavior are developed through education, personal experience, information passed down from our parents, and acquired information (Klontz, Britt, Mentzer, & Klontz, 2011; Hilgert, Hogarth, & Beverly, 2003). Higher

perceived levels of risk tolerance have been associated with stock ownership and market participation (van Rooij et al., 2011).

The perceived level of debt was assessed by respondents' agreement or disagreement according to a seven-point Likert-type scale where 1=strongly disagree, 4=neither agree nor disagree, and 7=strongly agree. Perceived level of debt had a mean score of 4.24 with a standard deviation of 2.17. Risk tolerance was assessed on a ten-point Likert-type scale for which respondents indicated their willingness to take financial investment risk where 1=not at all willing and 10=very willing to take risk. The mean risk tolerance score was 5.55 with a standard deviation of 2.46. Two questions were included for analysis and were asked as follows:

1. *Risk Tolerance: When thinking of your financial investments, how willing are you to take risks?*
2. *Perceived Level of Debt: How strongly do you agree or disagree with the following statement? I have too much debt right now.*

Socio-Economic Variables

Socio-economic variables were used to control for various individual characteristics. These variables were split into two groups, demographic characteristics and familial characteristics, and are represented in the financial literacy model (Figure 4.2) within the other influences component. The demographic characteristics included age, ethnicity, and education level, and the familial characteristics include marital status, gender, and number of dependent children. The variables selected have been used in historical literature assessing best practice behaviors within the NCFS data (Seay & Robb, 2013; Robb & Woodyard, 2011).

Research Hypotheses

There are specific actions and behaviors individuals engage in to adequately prepare and save for retirement. Specifically, individuals who have higher levels of financial literacy and skills are expected to indicate associations with the best practice behaviors of making retirement savings needs calculations, own an individual retirement plan aside from any employer-sponsored plan, and own stocks or other securities outside of any retirement plan. The hypotheses are as follows:

H1_A: There is a positive association between financial knowledge and retirement preparedness best practice behaviors.

H2_A: There is a positive association between financial skills and retirement preparedness best practice behaviors.

Analysis

The three retirement preparedness best practice behaviors were investigated using a series of binary logistic regression analyses. These analyses predicted the best practice behaviors based upon an individual's financial knowledge and skills while controlling for relevant socio-economic characteristics. The investigation of the relationship between financial literacy and each best practice behavior separately provides a more in-depth understanding of how financial literacy affects retirement preparedness behavior. The analytical sample for the analyses was 6,280 observations. The question for stock or securities ownership was only asked to those who indicated having a checking account, savings account, or money market savings. As a result of the high correlation between these variables, the checking account ownership variable was removed from the regression analysis for the stock and securities ownership best practice.

Sample Characteristics

The characteristics for the sample of non-retired and most knowledgeable responders can be seen in Table 4.1. The sample was made up of responders from the dataset who were between the ages of 25 to 64, currently employed at least part-time, currently not retired, and who indicated they were the most knowledgeable financial decision maker in the household. There were slightly more males in the sample than the total survey responder group (56.1% versus 48.5%), a higher percentage of whites (73.8% versus 66.4%), and a higher percentage of married responders (88.6% versus 54%). Education at the college graduate and postgraduate levels and employment among full-time work status were both higher than the sample as well. Income brackets also showed greater percentages at the higher levels, as well as homeownership.

Table 4.1 Sample Demographics: Non-Retired and Most Knowledgeable (N=6,280)

Variable	N	%
Age		
25 to 34	1365	21.7%
35 to 44	1689	26.9%
45 to 54	1895	30.2%
55 to 64	1331	21.2%
Gender		
Female	2758	43.9%
Male	3522	56.1%
Race		
Non-White	1648	26.2%
White	4632	73.8%
Education		
Less than college	1324	21.1%
Some College	1907	30.4%
College Graduate	1861	29.6%
Post-graduate degree	1188	18.9%
Married		
Married	5562	88.6%
Not Married	718	11.4%
Employment Status		
Self-employed	794	12.6%
Full-time employed	4753	75.7%
Part-time employed	733	11.7%
Income		
Less than \$50,000	1445	23.0%
\$50,000 to \$75,000	1504	23.9%
\$75,000 to \$100,000	1261	20.1%
\$100,000 and Over	2070	33.0%
Homeowner		
Homeowner	4870	77.5%
Number of dependent children		
One child	1465	23.3%
Two children	1419	22.6%
Three or More children	859	13.7%
No Children	2537	40.4%

Results

Financial Literacy and Best Practices

The results of the binary logistic regression analyses can be found in Table 4.2. The results showed that, holding all else equal, objective financial knowledge was positively associated with the three best practice behaviors of calculating retirement savings needs, ownership of an individual retirement savings plan, and ownership of stocks or securities. Results indicated that, holding all else equal, a unit increase in objective financial knowledge was associated with a 19.9%, 19.6%, and 14.1% likelihood of having calculated retirement savings needs, owning an individual retirement plan, and owning stocks or securities, respectively. The results also indicated that, holding all else equal, a unit increase in subjective financial knowledge was associated with a 27.7%, 12.4%, and 19.3% likelihood of calculating retirement savings needs, owning an individual retirement plan, and owning stocks or securities, respectively.

Table 4.2 Binary Logistic Regression Results

Variable	Calculated Retirement			Individual			Stock or Securities		
	Savings Needs			Retirement Plan			Ownership		
	<i>b</i>	<i>p</i>	Odds-Ratio	<i>B</i>	<i>p</i>	Odds-Ratio	<i>b</i>	<i>p</i>	Odds-Ratio
Intercept	-6.25	.001**		-9.388	.001**		-6.116	.001**	
Age									
25 to 34	-	-	-	-	-	-	-	-	-
35 to 44	-.105	.206	.900	.103	.273	1.108	.066	.468	1.068
45 to 54	.090	.281	1.094	.325	.001**	1.385	.249	.006**	1.283
55 to 64	.292	.002**	1.340	.651	.001**	1.918	.384	.001**	1.468
Gender									
Female	-	-	-	-	-	-	-	-	-
Male	.005	.929	1.005	-.107	.104	.899	-.046	.480	.955
Education									
Less than college	-	-	-	-	-	-	-	-	-
Some college	.431	.001**	1.539	.401	.001**	1.494	.205	.021*	1.228
College graduate	.478	.001**	1.612	.891	.001**	2.437	.623	.001**	1.865
Post-grad degree	.597	.001**	1.816	1.057	.001**	2.879	.677	.001**	1.968
Married	.150	.102	1.162	.028	.793	1.028	-.065	.516	.937
Number of Children									
No children	-	-	-	-	-	-	-	-	-
One child	-.056	.461	.946	-.154	.062	.857	-.092	.255	.912
Two children	-.150	.059	.861	.015	.861	1.015	.025	.769	1.025
Three or more children	-.022	.813	.978	-.185	.078	.831	.046	.652	1.047
Employment Status									
Full-time employed	-	-	-	-	-	-	-	-	-
Self-employed	-.144	.101	.866	.359	.001**	1.430	.219	.019*	1.245
Part-time employed	.067	.472	1.069	.390	.001**	1.477	.300	.003**	1.350
Race									
Non-white	-	-	-	-	-	-	-	-	-
White	.229	.001**	1.257	-.107	.104	.899	.078	.274	1.081
Income									
Below \$50,000	-	-	-	-	-	-	-	-	-
\$50,000 - \$75,000	.372	.001**	1.451	.445	.001**	1.560	.464	.001**	1.591
\$75,000 - \$100,000	.478	.001**	1.613	.580	.001**	1.785	.740	.001**	2.095

\$100,000 Or More	.782	.000**	2.186	.814	.001**	2.258	.893	.001**	2.441
Homeowner	.120	.102	1.127	.865	.001**	2.376	.534	.001**	1.705
Subjective daily financial skills	.300	.039*	1.350	.456	.006**	1.578	.157	.322	1.170
Subjective math skills	-.004	.975	.996	.533	.001**	1.705	.488	.001**	1.630
Subjective financial knowledge	.245	.001**	1.277	.117	.001**	1.124	.176	.001**	1.193
Objective financial knowledge	.182	.001**	1.199	.179	.001**	1.196	.132	.001**	1.141
Risk tolerance	.109	.001**	1.116	.157	.001**	1.169	.219	.001**	1.244
Bills compared to income									
Spending less	-	-	-	-	-	-	-	-	-
Spending more	-.172	.052	.842	.098	.325	1.103	.011	.911	1.011
Spending equal	-.157	.021*	.859	-.209	.003**	.811	-.262	.001**	.770
Difficulty covering expenses									
Not difficult	-	-	-	-	-	-	-	-	-
Somewhat difficult	.019	.795	1.019	-.112	.148	.894	-.007	.923	.993
Very difficult	-.003	.977	.997	-.529	.001**	.589	-.264	.052	.768
Emergency fund	.524	.001**	1.688	.857	.001**	2.356	.900	.001**	2.460
Income shock	.393	.001**	1.481	.212	.007**	1.236	.012	.875	1.012
Perceived level of debt	-.011	.474	.989	-.051	.003**	.951	-.072	.001**	.931
Checking Account	.160	.549	1.173	.779	.034*	2.180	-	-	-
Pseudo R ²			.175			.270			.269
Concordance Ratio			68.6%			74.0%			73.4%

*p.<.05 **p.<.01

Financial Skills

Two self-reported measures were utilized to assess financial skills, which represents the confidence and ability to increase financial literacy (Figure 4.2). Self-reported daily financial skills was shown to have a positive association with calculating retirement savings needs and owning an individual retirement plan. Math skills was found to have a positive association with

the best practices of owning an individual retirement plan and stock or securities ownership. These results indicate mixed support for the self-reported financial skills measures. However, individual retirement product ownership indicated positive associations with both financial skills measures. While the financial skills measures of daily financial skills and math skills were not supported with all three best practices, support of the link between financial skills and financial behaviors in the conception model was found.

Financial Condition

Financial condition variables were used to indicate those who had the economic means to engage in best practice behaviors. The results indicated patterns in the relationships between several financial condition variables and the use of retirement preparedness best practice behaviors. Income was found to be positively related to all three of the retirement best practice behaviors. Specifically, individuals with higher levels of household income were more likely to engage in the retirement preparedness best practices, as compared to those with incomes below \$50,000, holding all else equal. Additionally, part-time and self-employed responders were more likely to own an individual retirement plan and stocks, as compared to those who work full time, holding all else equal.

Having an emergency fund was positively associated with all three best practices, while the presence of an income shock in the last 12 months was revealed to have a positive association with the best practice behaviors of calculating retirement needs and ownership of an individual retirement savings plan. Conflicting evidence was found related to spending relative to income. While no difference was found between those who spent more and those who spent less than their income, those who spent equal to monthly income were less likely to engage in the three best practices. Lastly, respondents who reported having a very difficult time paying

monthly bills were less likely to perform the best practice behaviors of ownership of an individual retirement savings plan and stocks, as compared to those who had no difficulty. These results provide support for addressing basic financial economic needs and having financial management ability before focusing on future retirement behaviors.

Financial Beliefs

Respondents with higher risk tolerances and lower perceived levels of debt showed associations with several of the best practice behaviors. Higher levels of risk tolerance were positively associated with all three best practice behaviors. These results support the findings of historical literature in which higher levels of risk tolerance were associated with investing in stocks, retirement planning calculations, retirement product ownership, and higher wealth accumulation (Lusardi, 1999, 2003; van Rooij et al., 2011; Lusardi & Beeler, 2007; Lusardi, 2008; Lusardi & Mitchell, 2007a, 2011). Also, lower perceived levels of debt were associated with owning an individual retirement plan and owning stocks or securities. These results suggest that in order to fund these retirement products and proactively save for retirement, discretionary spending ability is needed. Those who perceive having lower levels of debt may have the needed funds to save, as compared to those with perceived higher levels of debt.

Socio-Economic Characteristics

The results also indicated patterns in the relationships between socio-economic characteristics and the use of retirement preparedness best practice behaviors. Age and education were found to have a positive association with all three of the best practices. Specifically, respondents of older ages and higher levels of attained education were more likely to engage in the retirement preparedness best practices, as compared to those ages 25 to 34 and those not attaining at least a bachelor's degree, holding all else equal. Marital status, gender, and the

number of children in the household was not found to be associated with the performance of the retirement preparedness best practice behaviors.

Discussion

The conceptual framework for financial literacy indicates that financial knowledge, when combined with financial skills, affects financial behavior (Huston, 2010; Lusardi & Mitchell, 2007b). Economic theory suggests that more effective decision-making behavior results from greater information (Liebermann & Flint-Goor, 1996), yet greater information alone does not necessarily lead to better behavior (Martin, 2007). Consistent with the model of financial literacy relationships, other influences also play a role in behavioral outcomes. Current economic financial condition and financial beliefs are both factors in predicting financial behavior. Therefore, it was anticipated that the three best practice behaviors would be predicted by financial knowledge, financial skills, and other influences, consistent with Huston's (2010) framework for financial literacy.

Best Practices and Financial Literacy

Calculating Retirement Savings Needs

Both objective and subjective financial knowledge were found to have a positive association with all three best practice behaviors. Historical literature has noted that retirement projections are among the most complex calculations Americans will have to make in their lifetime (Bayer, Bernheim, & Scholz, 2008). Making these calculations requires specific action towards retirement preparation and leads to greater understanding of future anticipated needs (Lusardi & Mitchell, 2007a, 2007c, 2011). Calculating retirement savings needs as a part of retirement planning was shown to be a strong predictor of wealth in retirement, with those who have planned for retirement accumulating double the wealth compared to those who have done

no retirement planning (Lusardi, 2008). The HRS studies showed that less than one-third (31%) of the respondents indicated that they had attempted to calculate how much they would need to save for retirement (Lusardi & Mitchell, 2011). Based on the representative literature on financial literacy by Lusardi and Mitchell (2007a, 2007b, 2007c, 2009, 2011), making retirement savings calculations was expected to be supported as a best practice behavior. The results of Research Question 1 support the finding that higher levels of financial knowledge are positively associated with making retirement savings calculations.

Individual Retirement Plan Ownership

Research has long supported the claim that the decision to own financial products, especially those designed for long-term savings accumulation, constitutes a best practice behavior (Hilgert, Hogarth, & Beverly, 2003). Results indicated that both objective and subjective financial knowledge were positively associated with owning an individual retirement plan. These results are consistent with the relationship model for financial literacy in that greater financial knowledge illuminates the need and value of supplementing retirement savings, and thus action is taken to establish an individual plan. The specific actions and knowledge required to both acquire and fund individual plans demonstrate an application of both knowledge and skills, since ownership is not mandated or automated, and the associated benefits of plan ownership are not readily apparent to those with lower levels of financial knowledge. The results for Question 2 provide strong support for the model of financial literacy as well as the historical literature, where higher levels of financial knowledge were associated with ownership of retirement savings plans, as compared to lower levels of knowledge.

Stocks or Securities Ownership

It has been well established in historical literature that households with lower levels of financial literacy avoid the stock market and stock ownership (van Rooij et al., 2011; Kimball & Shumway, 2006; Christelis et al., 2006; Lusardi & Mitchell, 2009). Those who fail to understand basic financial concepts, such as diversification and inflation, are less likely to have stock ownership (van Rooij et al., 2011). As a result, lack of stock ownership and stock market participation has been associated with lower levels of wealth accumulation and lack of retirement planning activities (Lusardi & Mitchell, 2011).

The behavior of stock and securities ownership extends beyond the knowledge of potentially greater accumulation for retirement. Higher levels of financial knowledge and skills are needed to understand the concepts of compound returns through reinvested dividends, and the positive effects of lowering risk through diversification. The results related to Question 3 clearly support the findings that higher levels of both objective and subjective financial knowledge are positively associated with the best practice of stock ownership. It should be noted that this best practice question was only asked to those responders who indicated they had a checking account or savings account. However, a foundational base of financial economic condition is typically present before considering retirement planning vehicles. Therefore, only asking this question to responders who have indicated ownership of fundamental financial products is consistent with best practice behaviors.

Other Financial Variables

Financial Condition

Before engaging in retirement planning behaviors, present financial needs are typically addressed, such as keeping track of spending and proper budget management. Consistent with

historical research, it was therefore expected that several financial condition variables would be associated with looking ahead and following retirement preparedness best practice behaviors. The results of the associations among several of the financial condition variables tend to support historical findings.

Income had a positive association with all the best practice behaviors, meaning those with higher income levels were more likely to engage in the best practice behaviors than those with annual incomes below \$50,000, holding all else equal. Historical research has linked higher incomes to retirement savings calculations and stock ownership (Lusardi, 2008; van Rooij et al., 2011). The results also indicated that both self-employed and part-time workers had a positive association with the best practices of individual retirement plan ownership and stocks or securities ownership, compared to full-time workers. It is typical that full-time workers are covered under some form of employer pension plan, whereas part-time and self-employed individuals bear the responsibility for their own retirement savings. Hastings and Mitchell's (2011) research reported positive findings and validation of an association between financial literacy and retirement savings behavior.

The best practice of individual retirement plan ownership is important for several reasons. First, for those who are self-employed, attaining individual retirement products requires specific action for purchase and set up. Conversely, full-time employees are typically offered to participate in the employer-sponsored plan after a period of initial waiting from 30 days to one year. The addition of mandatory participation makes it easy to participate with little or no outside action required of the full-time employee. Secondly, the recognition of the need for establishing an individual plan, and the associated tax advantages that exist, would require a higher level of financial knowledge as well. The results of the analysis for Question 2 suggested that higher

levels of financial knowledge illuminated the need for retirement savings, and were associated with the best practice behavior of establishing an individual retirement plan.

The results for the financial condition variables also indicated a positive association between having an emergency fund and all three best practice behaviors, consistent with findings by Robb and Woodyard (2012). Individuals are expected to address basic needs of present living concerns before focusing on long-term financial needs. Having experienced an income shock during the past 12 months was positively associated with making retirement calculations and owning an individual retirement plan. Since being self-employed and employed part time are associated with owning individual retirement products, income fluctuations may occur more frequently than those employed full time.

Spending amounts equal to monthly income was found to have a negative association with all of the best practice behaviors. Having a lot of difficulty paying monthly expenses was also negatively associated with owning an individual retirement plan and stock ownership. Spending more than income was negatively associated with making retirement savings calculations, which further supports the importance of being able to control spending. Similarly, the financial condition variable of home ownership was found to have a positive association with individual retirement plan ownership and stock ownership, providing further evidence that basic financial needs must first be satisfied before addressing future retirement planning.

Financial Beliefs

The financial belief variables of risk tolerance and perceived level of debt were also found to be associated with the performance of the best practices. Risk tolerance indicated a positive association with all three best practices, while perceived higher levels of debt was negatively associated with the best practices of owning individual retirement plans and stock

ownership. Historical literature supports the finding that higher levels of risk tolerance are linked to stock ownership and stocks being held within individual retirement plans, so these results are somewhat anticipated.

A negative association between perceived higher levels of debt and individual retirement plan and stock ownership was found. These results tend to support historical findings of associations between credit card debt levels, objective and subjective financial knowledge, and engaging in best practice behaviors (Robb & Woodyard, 2012). Therefore, the findings of negative associations between perceived higher levels of debt and the retirement preparedness best practice behaviors of owning individual retirement plans and stocks or securities demonstrate that personal beliefs influence behavior, consistent with the model of financial literacy.

Implications

The results of this research provide evidence for the link between financial literacy and financial behaviors. The financial literacy subcomponents of financial knowledge and financial skills were generally associated with the best practice behaviors, helping to provide support for their representation within the model as well. The implications can include helping to establish the validity of the model and a more consistent use of the different definitions of financial knowledge and financial literacy.

It has been established that individuals need to care for their immediate financial needs (i.e., emergency fund) and have a base level of financial products (i.e., checking account) before turning their focus towards longer-term retirement needs. These outside influences, represented in the conceptual model of financial literacy, are illustrated as having an effect on financial behavior. Therefore, the testing of the three retirement preparedness best practice behaviors,

while controlling for financial condition and demographic influences, helped to provide added support for the associations found. These results support evidence of the critical link between financial literacy and financial behaviors.

Raising literacy is an important goal in and of itself, but ultimately, without leading to behavioral change utilizing accepted best practice behaviors, this pursuit can be viewed by some as an exercise in futility. The findings of this paper help to provide support for the critical need for effective financial education program development and expanded information delivery.

Conclusion

Overall, the results indicate those with higher levels of financial knowledge and financial skills are more likely to engage in the retirement preparedness best practice behaviors, holding all else equal. Based on the framework for financial literacy (Huston, 2010), financial knowledge and financial skills were expected to be associated with best practice behaviors. The analysis indicated higher levels of financial knowledge and financial skills, along with several measures for financial conditions and beliefs, were found to be associated with making retirement calculations, owning an individual retirement plan, and owning stocks and securities. Additionally, the link between financial knowledge and behavior was found to be more consistent than the link between financial skills and financial behavior. These results support historical literature which also found that higher levels of financial literacy, as measured by both financial knowledge and skills, were associated with better financial behaviors, such as making retirement planning calculations, investing in the stock market, and accumulating higher levels of wealth (Huston, 2010, Lusardi & Mitchell, 2007b; Lusardi & Mitchell, 2009; Lusardi, 2008; van Rooij et al., 2011; Seay & Robb, 2013; Robb & Woodyard, 2012).

The implications of this research point towards the need for effective financial education

programs to improve financial literacy. These results support the findings within the financial literacy framework showing associations between financial literacy and retirement preparedness best practice behaviors. Therefore, by focusing on improvement of financial literacy through more effective financial education programs, more Americans will follow retirement best practice behaviors and arrive at retirement more prepared, having accumulated more assets. Additional research is needed to more clearly identify which financial education programs are most effective for improving different types of financial behavior. However, this research and prior literature support the links in the framework of financial literacy and effective forms of financial education programs for improving financial literacy, leading to best practice behaviors.

The financial future of the United States is pointing towards a growing social storm, where low levels of financial literacy, mostly impacting women, minorities, less educated, and lower-income households, will collide with the increased trend of individual financial decision-making responsibility (Martin, 2007; Lusardi, 2008; Lusardi & Mitchell, 2007a, 2007b; Lusardi & Mitchell, 2009, 2011). If the need for increased financial literacy is not effectively addressed soon, millions of Americans will continue to arrive at retirement unprepared and lacking adequate savings to provide for a comfortable retirement. As a result, the dependence on government Social Security income programs will likely continue to increase. While Social Security benefits help to provide needed income to millions of Americans, the system was never intended as the sole source of income for retirees. Even worse, the dream of retirement for many may actually never occur, but rather be replaced by a lifetime of working in some capacity to provide desperately needed income for daily living expenses. Financial educators and financial education program developers are greatly needed to deliver a wide range of new programs from basic financial management education to worksite comprehensive financial education.

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Chapter 5 - Conclusion

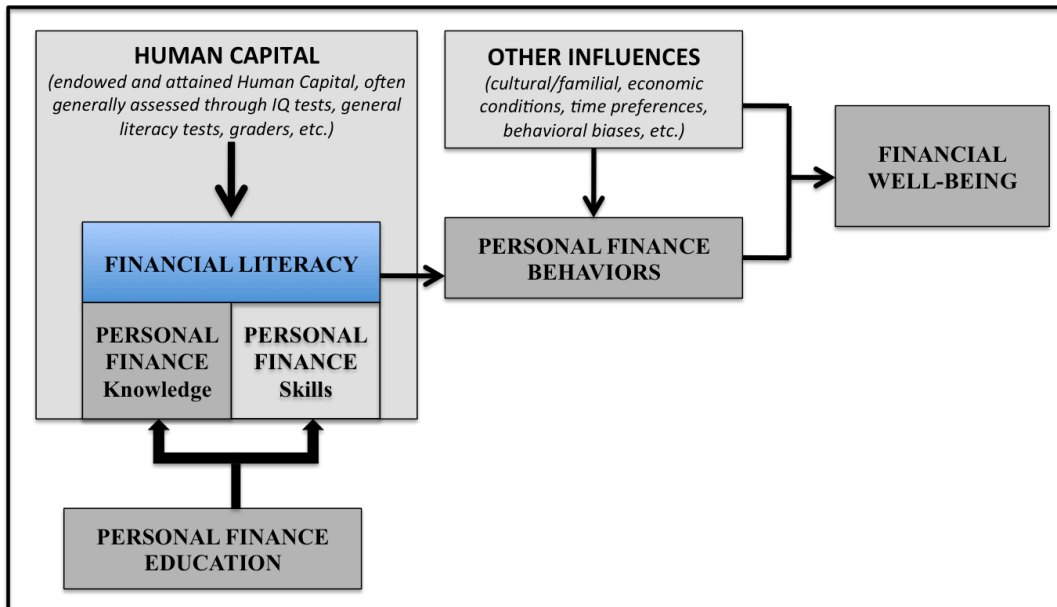
Overview

The purpose of this dissertation was to investigate the links between the components in the framework for financial literacy (Figure 5.1). Specifically, the three essays combined to explore the effect of a worksite comprehensive financial education program on financial literacy and financial well-being, and the link between financial literacy and retirement preparedness best practice behaviors.

Historical research has found mixed support for the associations and effectiveness of financial education programs at improving financial literacy, subsequent behaviors, and financial well-being (Martin, 2007; Willis, 2008). While literature has generally supported associations between financial education programs and improved literacy and behaviors, the methods used limit the ability to draw conclusions establishing causal support for the programs' actual effectiveness (Martin, 2007; Garman, Kim, Kratzer, Brunson, & Joo, 1999; Willis, 2008). A great deal of these mixed results can also be explained by the lack of consistency among definitional frameworks for financial literacy, the lack of consistent measures, and the variety of topics and methods used for program delivery (Willis, 2008; Huston, 2010; Remund, 2010).

Quasi-experimental research methods were employed, including control groups, pre and post program data collection, multiple groups, and longitudinal program testing. The use of these methodologies is a notable contribution to the literature, as historical research and testing of financial education programs has mostly relied on less rigorous methods. Overall, this research sought to (a) test the fundamental component links in the financial literacy model, (b) test the emerging model of a worksite comprehensive financial education program, and (c) help provide meaningful clarity to historically mixed results on financial education programs.

Figure 5.1 Relations among Financial Literacy, Knowledge, Education, Behavior, and Well-Being



Huston (2010)

Essay One: “The Effectiveness of a Comprehensive Financial Education Program in the Workplace”

The first essay of this dissertation, “The Effectiveness of a Comprehensive Financial Education Program in the Workplace,” explored the changes in financial literacy after participation in a worksite comprehensive financial education program.

This essay asked the following research questions:

1. What is the association between participation in a comprehensive financial education program and changes in financial literacy scores?
2. What is the association between the number of classes attended in the program and changes in financial literacy scores?

3. What is the association between the demographic, familial, and household financial characteristics of program participants and changes in financial literacy scores?

The results of this essay found that participation in a worksite comprehensive financial education program significantly increased financial literacy scores as compared to the control group, holding all else equal. However, due to the high number of class modules attended by the participants, testing was unsuccessful in determining if attending more class modules was associated with a greater increase in financial literacy. These results, utilizing quasi-experimental research methods, provide strong support for the effectiveness of a worksite comprehensive financial education program in significantly increasing financial literacy among participants, thereby supporting the positive link within the framework of financial literacy.

The 90-day follow up indicated less than expected increases in pension plan contributions. One possible explanation is that many of the participants suffered from higher perceived levels of excessive personal credit card debt, which they had indicated was a priority to address in the classroom discussion. Since savings, budgeting, and debt management were key topics of the comprehensive financial educational program, participants may have decided to address reducing their debt levels before making increases to their retirement plan contribution levels. Eighty percent of responders to the follow up survey indicated they had implemented a plan to reduce their credit card debt since starting the financial education program.

The lack of added pension contributions could also be explained by the indication of higher levels of current retirement savings confidence and expected comfortable retirement confidence. If participants were currently taking full advantage of employer matching contributions and were on target with retirement savings levels, addressing debt concerns first

would be consistent with their learned financial knowledge. It would also stand to reason that knowledge of adequate retirement savings and plan contribution levels wouldn't be exclusive to the participant group, and the employees of a financial services company would have greater awareness of adequate retirement savings levels. This explanation is supported by the results of the financial well-being t-tests, which indicated that changes in retirement savings confidence scores were similar between the participant and control groups. However, following the education program, participants gained significantly more confidence about having a comfortable retirement than the control group. Together, the t-test results and follow up survey provide support for preference to address debt issues first, and a perception of currently adequate pension savings rates, and indicate evidence of applied financial knowledge leading to informed specific action.

Essay Two: “The Effectiveness of a Comprehensive Financial Education Program on Changing Financial Well-Being”

The second essay, “The Effectiveness of a Comprehensive Financial Education Program on Changing Financial Well-Being,” sought to better understand how participation in a comprehensive financial education program is associated with changes in financial well-being. This essay posed the following research questions:

1. What is the association between participation in a worksite comprehensive financial education program and change in savings satisfaction?
2. What is the association between participation in a worksite comprehensive financial education program and change in income worry?
3. What is the association between participation in a worksite comprehensive financial education program and change in expense worry?

4. What is the association between participation in a worksite comprehensive financial education program and change in debt worry?
5. What is the association between participation in a worksite comprehensive financial education program and change in retirement savings confidence?
6. What is the association between participation in a worksite comprehensive financial education program and change in comfortable retirement confidence?
7. What is the correlation between changes in financial literacy and changes in financial well-being among participants of a worksite comprehensive financial education program?

The results of this essay found that participation in a worksite comprehensive financial education program increased savings satisfaction and comfortable retirement confidence, increased income and debt worry, and found no change for retirement savings satisfaction and expense worry. These results suggest that participation in a financial education program affects financial well-being and financial literacy in different ways. However, decreases in financial well-being may not be considered bad for the individual if the decrease was associated with greater awareness of current financial situation as a part of an overall comprehensive financial education program and leads to improved financial behavior. No relationship between the variables for change in financial literacy and change in financial well-being was found.

Historical studies have found mixed results for the relationship between financial literacy and financial well-being. These mixed results have raised questions as to the value of financial education programs. However, the results of this research indicated two important findings. First, participation affects changes in financial literacy differently than changes in well-being, and

second, that participation having a negative effect on certain types of well-being measures is expected and possibly an indication of greater financial awareness.

Essay Three: “Financial Literacy and Retirement Preparedness Best Practice Behaviors”

The third essay, “Financial Literacy and Retirement Preparedness Best Practice Behaviors,” utilized data from the 2012 FINRA National Financial Capability Study and explored the relationship between financial literacy and the three best practice behaviors of: (a) calculating retirement savings needs, (b) owning individual retirement savings products, and (c) stock or securities ownership. The following research questions were explored:

1. What is the association between financial knowledge and calculating retirement savings needs?
2. What is the association between financial knowledge and individual retirement product ownership behavior?
3. What is the association between financial knowledge and stock or securities ownership?

The results of this essay showed that objective financial knowledge was found to have a positive association with all three of the best practice behaviors, holding all else equal. Additionally, subjective financial knowledge also indicated a positive association with all three best practices. The measures for financial skills included daily financial skills and math skills. Each of the two skills measures had associations with two of the three best practice behaviors. These results support the links in the financial literacy model between financial knowledge, financial skills, and financial behavior, albeit the associations between financial knowledge and behaviors were more consistently shown.

Summary of Results

The purpose of this research was to test the three primary aspects of the framework for financial literacy: (a) the link between financial education and financial literacy, (b) the link between financial education and financial well-being, and (c) the link between financial literacy and financial behavior. The results found associations between all three links in the model, utilizing both primary research employing quasi-experimental methods and secondary research from a larger national data sample. Despite mixed results among historical literature, these essays collectively helped to establish the effectiveness of a worksite comprehensive education program on increasing financial literacy, provided mixed support for positive change in well-being, and indicated strong support for financial knowledge and retirement preparedness best practice behaviors.

Implications

Retirement savings and income projection calculations for retirement are among the most financially complex calculations individual Americans will encounter (Bayer, Bernheim, & Scholz, 2008). The movement towards self-directed employer retirement plans (e.g. 401(k)) has shifted the responsibility of identifying the proper savings levels and projecting future retirement benefits increasingly to the employee, who may lack the basic financial understanding needed for proper calculations and decisions (Lusardi, 2008). While many pension plan providers and investment service providers have tools to help project and simplify some of these calculations, basic understanding of financial concepts is still needed for proper decision making. This added responsibility and complexity of the financial knowledge and skills needed by employees is a clear call for more effective financial education programs.

The development of effective worksite financial education programs should be based in educational theory and embody the framework for financial literacy. The results of these essays help to establish the links in the financial literacy framework and specifically the important foundational link between financial education and financial literacy. Historical literature falls short, in many cases, of supporting causation related to the education program because of inconsistent use of terms, measures, and methodology, and a predominance of one-time or remedial education programs. (Huston, 2010; Martin, 2007). More rigorous testing methods utilized in this research were intended to help clarify historical results and establish much needed baselines from which to build future research for comprehensive forms of financial education programs.

When taking into account the medium effect size associated with the results of the financial education program on changes in financial literacy and financial well-being, some may question whether the time and cost associated with providing a worksite comprehensive financial education program is worthwhile. The results of essays one and two indicated evidence of increased financial literacy leading to specific action and resulting in changes to financial behavior. The decision to first address credit card debt after the recognition of adequate and comfortable retirement savings levels, and to manage household finances through monthly cash flow budgeting, represents potentially meaningful changes to those participants' financial well-being. If an employer's goal was to provide a financial education program to improve the well-being of their employees, evidence suggests these efforts are worthwhile despite the presence of a medium statistical effect size of the program. However, expectations need to be understood that not all employees may experience the same individual outcomes, and that some levels of financial well-being may initially be negative due to a greater overall financial awareness.

Conclusions for Financial Education Program Development

The adoption of comprehensive financial education programs in the workplace has been slow due to the cost, time commitment, and lack of empirical support for the value of these programs (Garman, 1998). The preference for financial education in the workplace among employees suggests both the need and desire for more comprehensive financial education offered by employers. The implications of this research can provide needed empirical support for the value of these programs, thus helping to pave the way for the development and acceptance of these programs in the workplace.

From the employee perspective, armed with greater financial knowledge and skills, they will be better able to meet increasingly complex financial demands throughout their lifetimes. Responders to a follow up survey indicated that since starting the education program, 95.2% said they “*have greater overall financial well-being*” and “*greater overall understanding of financial matters,*” while 100% indicated they “*have improved financial decision making*” and now have “*greater confidence to address future financial challenges.*” If increased financial literacy could positively impact the number of Americans who arrive at retirement better prepared to support themselves for a majority of their income needs, there would be an opportunity to reduce the costs of social retirement programs, or restructure them to provide supplemental benefits for future generations.

The effects of low levels of financial literacy can also manifest in financial stress and lower productivity at work as a result of poor financial behaviors in employees’ personal lives (Joo & Garman, 1998; Garman, Leech, & Grable, 1996). These negative personal financial effects are seen throughout the workplace and have negative financial consequences for employers as well. Employees use work time to contact creditors, seek out additional credit sources, and talk with co-workers and their supervisors about financial problems (Garman,

1997). The associated costs incurred by employers from these negative work-time behaviors include lower productivity, increased absenteeism, frequent tardiness, accidents from increased risk taking, increased health care costs for financial stress-related illnesses, employee theft, time lost on the job dealing with personal finance matters, and increased employee turnover (Garman, 1997).

Financial education programs can be better positioned to help improve the levels of financial literacy among Americans and address the negative associated behavioral effects of a lack thereof, such as lack of planning and under saving for retirement. For financial educators who are interested in developing and facilitating comprehensive financial education programs for employee or other groups, this research should help provide support and guidance for those efforts. Additionally, due to the broader nature of comprehensive financial education program development, finding the proper balance of both breadth and depth of program modules is required.

From the breadth standpoint, there are many financial topics that can be used for module development. The literature review provides a resource for key topic groups and areas of interest, as well as historical measures used for testing and analysis. The breadth of material for the financial program used in this research was developed specifically as an employee benefit offered by a financial services provider. A meeting with the employer to better understand the nature and primary concerns of the employees is recommended for program module development. For example, a module on Medicare and Social Security may have better use for an older employee base, and a budgeting or savings calculation module for a younger base. If high levels of consumer debt is a present concern for a lower or middle income base of employees, modules on budgeting, cash flow management, and debt management should be

included. The length of time for each module class period and the number of weeks available for program delivery should help guide the breadth of topics for program development.

When developing the depth of the comprehensive financial education program, it is also important to consider the target employees or group. Some groups will need remedial help with financial concepts as a first exposure to financial education. In this case, the focus is on understanding basic financial concepts, such as compound interest, inflation, present and future value, budgeting, cash flow management, debt management, and personal insurance risk management. Each class module should allow ample time for learning the new concepts, discussing these ideas, assimilating the new information, and building new skills and abilities for application.

For groups that are more educated and have a higher initial level of financial literacy, each module can cover more material and thus go deeper into financial topics. This would be similar to the depth of focus used with this research, where the sample and control groups, as employees of a financial service company, had a higher initial level of financial literacy. If at all possible, assessing the employer's potential group of participants prior to program development can provide meaningful insight as to the modules to include and the depth of material to cover.

Lastly, approximately 20 different organizations were approached over a one-year period about participation in the comprehensive financial education program for this research. The feedback received from most every organization was that they had tried a financial education program in the past, and it was not received favorably among employees. An overwhelming majority of the education programs were conducted in conjunction with pension plan meetings and primarily geared towards retirement planning. As a result, finding participant organizations to aid in the primary research was more challenging than expected.

A trust and credibility issue seems to be present with having financial education and advice delivered by those with a potential financial benefit from participants (Willis, 2008). More specifically, financial planning firms, investment advisors, wealth advisors, pension plan administrators, fund managers or representatives, and insurance agents, who are licensed to sell products or services for a given company, are perceived as lacking credibility when providing education or giving advice. The employers who participated in this study, as well as others who expressed interest for future programs, indicated that they agreed to participate only if a university professor delivered the program. It is therefore expected that the initial inroads for the expansion of worksite comprehensive financial education programs will come from the academic industry, possibly among professors with financial planning degrees or prior work experience.

While the three essays provide support for the links in the conceptual model of financial literacy and indicate effectiveness of the worksite comprehensive financial education program, additional questions remain. Further research is needed to better understand if the negative associations found between participation in the comprehensive financial education program and financial well-being are short-term in nature only. More specifically, if learned financial knowledge can be applied to improve one's financial position, does it result in those well being measures later turning into positive associations?

Additional follow up research is also needed to better understand if the changed financial literacy levels, changed financial behaviors, and financial beliefs among participants persist over time. In other words, do the changed behaviors and beliefs resulting from participation in the financial education program stick, or do the participants revert back to their prior behaviors? Testing is also needed to see if follow up educational classes, newsletters, or related financial articles also influence the persistency of changed financial behaviors. The results and insights

from these two specific areas of needed research will also help to provide ways in which to improve worksite comprehensive financial programs in the future, through a greater understanding of the most effective ways to create persistent change among program participants towards reaching the goal of financial well-being.

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Appendix A - Surveys

Survey of PRE-Comprehensive Personal Finance Education Program

Research Leads:

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Instructions:

- You can use either pencil or pen to complete this survey questionnaire, writing your answers directly on this form.
- Please **circle your answer** with the most accurate information best representing your opinions, experiences, or beliefs at this time.
- Please feel free to reference your most recent financial statements to gain the most up to date information if needed.
- If you need to change your answer, please make sure to completely erase or cross out the old answer.
- Some questions will ask for your anticipated or expectations of future events. Please answer based on what you believe or anticipate at the time of this survey.
- This survey should take approximately 20-30 minutes to complete.

Four-digit Matching Number:

In order for us to match your Post survey with your Pre survey for our research, we need you to fill in a four-digit number you create for completion of this Pre survey. We suggest that you use the day of the month you were born for the first two digits (for example May 18th would be 18 and May 5th would be 05), and for the last two digits we asked you to use the first two numbers of your street address (for example 2110 West Ave would be 21) making 1821 the sample 4 digit matching number. We will remind you of this suggested code at the time of the post survey, but please write it down just in case you forget.

Your matching number is: _____ .

I am completing this survey as: (check the one answer that best applies)

- _____ A participant employee who is **beginning** the financial education program
- _____ A participant employee on a **wait list** for the financial education program
- _____ A participant employee who **may/may not take** the financial education program
- _____ A participant **representative** of the employer who is auditing part or all of the financial education program
- _____ A **college student** who is taking a financial education (Finance/Insurance) class

SECTION 1: Demographic Information (circle your answer clearly)

1. What is your gender? Male Female
2. What is your age? Age 24 and under 25 to 34 years old 35 to 44 years old
 45 to 54 years old 55 to 61 years old Age 62 and older
3. What is your ethnicity? Hispanic Non-Hispanic
4. What is your race? White African American Asian
 Native American Other
5. What is your marital status? Single and not previously married
 Single and previously married Married.
6. How many other people (not including yourself) do you have living in your household? (For example: you and a spouse would equal 1). _____
7. What is the highest level of education you have completed?
 Less than high school. High school degree Some college education
 Associates degree Bachelor's degree Post graduate studies
 Post baccalaureate/graduate degree

8. What is your total annualized household income from all sources? (Circle your income group).

\$0 to \$10,131	\$10,132 to \$20,262	\$20,263 to \$29,392
\$29,393 to \$38,520	\$38,521 to \$50,477	\$50,478 to \$62,434
\$62,435 to \$82,008	\$82,008 to \$101,582	Over \$101,582

9. What is your estimated current household net worth (market value of your assets minus total debt)? (Circle your net worth group). Negative (below \$0), Slightly positive (\$1 to \$49,999), Moderately positive (\$50,000 to \$149,999), Strongly positive (\$150,000 and over).

10. Are you currently a homeowner? YES NO

SECTION 2 - Financial Assessment Questions:

11. Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

A) More than \$102; B) Exactly \$102; C) Less than \$102; D) Don't Know

12. Suppose you had \$100 in a savings account and the interest rate is 20% per year and you never withdraw money or interest payments. After 5 years, how much would you have in this account in total?

A) More than \$200; B) Exactly \$200; C) Less than \$200; D) Don't know

13. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?

A) More than today; B) Exactly the same; C) Less than today; D) Don't know

14. Assume a friend inherits \$10,000 today and his sibling inherits \$10,000 3 years from now. Who is richer because of the inheritance?

A) Your friend; B) His sibling; C) They are equally rich; D) Don't know

15. Suppose that in the year 2015, your income has doubled and prices of all goods have doubled too. In 2015, how much will you be able to buy with your income?

A) More than today; B) The same as today; C) Less than today; D) Don't know

16. Do you think that the following statement is true or false? "Buying a single company stock usually provides a safer return than a stock mutual fund."

A) True B) False

17. Which of the following statements describes the main function of the stock Market?
- A) The stock market helps to predict stock earnings;
 - B) The stock market results in an increase in the prices of stocks;
 - C) The stock market brings people who want to buy stocks together with those who want to sell stocks;
 - D) None of the above;
 - E) Don't Know
18. If the interest rates fall, what should happen to bond prices?
- A) Rise B) Fall C) Stay the same D) None of the above E) Don't know
19. Normally, which asset displays the highest fluctuations over time?
- A) Savings accounts B) Bonds C) Stocks D) None of the above E) Don't know
20. When an investor spreads his money among different assets, does the risk of losing money:
- A) Increase B) Decrease C) Stay the same D) None of the above E) Don't know

SECTION 3 – Money Relationships:

Please indicate the degree to which you agree/disagree to the following questions:

21. I am satisfied with the amount of money that I am able to save.

Strongly	Tend To	Tend To	Strongly
Agree	Agree	Disagree	Disagree
1	2	3	4

22. I have difficulty living on my income.

Strongly	Tend To	Tend To	Strongly
Agree	Agree	Disagree	Disagree
1	2	3	4

23. I worry about being able to pay monthly living expenses.

Strongly	Tend To	Tend To	Strongly
Agree	Agree	Disagree	Disagree
1	2	3	4

24. I worry about how much money I owe.

Strongly Agree	Tend To Agree	Tend To Disagree	Strongly Disagree
1	2	3	4

25. I feel confident about saving for a comfortable retirement.

Strongly Agree	Tend To Agree	Tend To Disagree	Strongly Disagree
1	2	3	4

26. I think I will have enough income to live comfortably throughout retirement.

Strongly Agree	Tend To Agree	Tend To Disagree	Strongly Disagree
1	2	3	4

Please indicate the degree to which you agree/disagree to the following questions:

27. I avoid thinking about money.

Strongly Disagree	Disagree	Disagree A Little	Agree A Little	Agree	Strongly Agree
1	2	3	4	5	6

28. I try to forget about my financial situation.

Strongly Disagree	Disagree	Disagree A Little	Agree A Little	Agree	Strongly Agree
1	2	3	4	5	6

29. I avoid opening/looking at my financial (Bank, Credit, Investment) statements.

Strongly Disagree	Disagree	Disagree A Little	Agree A Little	Agree	Strongly Agree
1	2	3	4	5	6

30. Things would get better if I had more money.

Strongly Disagree	Disagree	Disagree A Little	Agree A Little	Agree	Strongly Agree
1	2	3	4	5	6

31. More money will make you happier.

Strongly Disagree	Disagree	Disagree A Little	Agree A Little	Agree	Strongly Agree
1	2	3	4	5	6

32. There will never be enough money.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

33. It is hard to be poor and happy.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

34. You can never have enough money.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

35. Money is power.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

36. I will never be able to afford the things I really want in life.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

37. Money would solve all my problems.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

38. Money buys freedom.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

39. If you have money, someone will try to take it away from you.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

40. You can't trust people around money.

Strongly Disagree		Disagree A Little	Agree A Little		Strongly Agree
1	2	3	4	5	6

SECTION 4: Relationships and Financial Outcomes

Please indicate your level of satisfaction/dissatisfaction with the following financial items:

41. How satisfied are you with your marriage/relationship?

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

42. How satisfied are you with your spouse/partner?

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

43. How satisfied are you with your relationship with your spouse/partner?

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

44. Your current level of Emergency (liquid) Savings.

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

45. Your current Will's and Estate Documents.

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

46. Understanding your monthly household budget.

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

47. Current level of Credit Card debt.

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

48. Current personal insurance coverage's including policy limits and deductibles.

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

49. Understanding Social Security and Medicare programs including your expected future benefits.

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

50. Your current investment decisions.

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

51. Your current investment diversification.

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

52. Your current personal savings levels.

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

53. Your current employer retirement plan contribution levels.

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

Thank you for your time and effort in completing our survey.

When you are finished and have recorded your 4-digit number, seal the survey in the envelope provided. **Make sure the envelope is blank** and **DO NOT** write your name or initials, or make any other identifying marks please.

Survey of POST-Comprehensive Personal Finance Education Program

Research Leads:

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Instructor of Finance and Insurance

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Creighton University College of Business

Doctoral Student in Personal Financial Planning

Kansas State University.

Instructions:

- Please answer with the most accurate information which best represents your opinions, experiences, or beliefs.

- Please feel free to reference your most recent financial statements to gain the most up to date information if needed.

- If you need to change your answer, please make sure to completely erase or cross out the old answer.

- Some questions will ask for your anticipated or expectations of future events. Please answer based on what you believe or anticipate at the time of this survey.

Four-digit Matching Number:

In order for us to match your Post survey with your Pre survey for our research, we need you to fill in your four-digit number you created during your completion of the Pre survey. In case you forgot, we asked you to use the day of the month you were born for the first two digits (for example May 18th would be 18 and May 5th would be 05), and for the last two digits we asked you to use the first two numbers of your street address (for example 2110 West Ave would be 21).

Your matching number is: _____ .

I am completing this survey as: (check the one answer that best applies)

_____ A participant employee who has **completed** the financial education program

_____ A participant employee on a **wait list** for the financial education program

_____ A participant employee who **may/may not take** the financial education program

_____ A participant **representative** of the employer who is auditing part or all of the financial education program

_____ A **college student** who is taking a financial education (Finance/Insurance) class

Thank you again for taking the time to complete this questionnaire.

SECTION 1 - Financial Assessment Questions:

1. Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

A) More than \$102; B) Exactly \$102; C) Less than \$102; D) Don't Know

2. Suppose you had \$100 in a savings account and the interest rate is 20% per year and you never withdraw money or interest payments. After 5 years, how much would you have in this account in total?

A) More than \$200; B) Exactly \$200; C) Less than \$200; D) Don't know

3. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?

A) More than today; B) Exactly the same; C) Less than today; D) Don't know

4. Assume a friend inherits \$10,000 today and his sibling inherits \$10,000 3 years from now.

Who is richer because of the inheritance?

A) Your friend; B) His sibling; C) They are equally rich; D) Don't know

5. Suppose that in the year 2015, your income has doubled and prices of all goods have doubled too. In 2015, how much will you be able to buy with your income?

- A) More than today; B) The same as today; C) Less than today; D) Don't know

6. Do you think that the following statement is true or false? "Buying a single company stock usually provides a safer return than a stock mutual fund."

- A) True B) False

7. Which of the following statements describes the main function of the stock Market?

- A) The stock market helps to predict stock earnings; B) The stock market results in an increase in the prices of stocks; C) The stock market brings people who want to buy stocks together with those who want to sell stocks; D) None of the above; E) Don't Know

8. If the interest rates fall, what should happen to bond prices?

- A) Rise; B) Fall; C) Stay the same; D) None of the above; E) Don't know

9. Normally, which asset displays the highest fluctuations over time?

- A) Savings accounts; B) Bonds; C) Stocks; D) None of the above; E) Don't know

10. When an investor spreads his money among different assets, does the risk of losing money:

- A) Increase; B) Decrease; C) Stay the same; D) None of the above; E) Don't know

SECTION 2 - Money Relationships:

Please indicate the degree to which you agree/disagree to the following questions:

11. I am satisfied with the amount of money that I am able to save.

Strongly Agree	Tend To Agree	Tend To Disagree	Strongly Disagree
1	2	3	4

12. I have difficulty living on my income.

Strongly Agree	Tend To Agree	Tend To Disagree	Strongly Disagree
1	2	3	4

13. I worry about being able to pay monthly living expenses.

Strongly Agree	Tend To Agree	Tend To Disagree	Strongly Disagree
1	2	3	4

14. I worry about how much money I owe.

Strongly Agree	Tend To Agree	Tend To Disagree	Strongly Disagree
1	2	3	4

15. I feel confident about saving for a comfortable retirement.

Strongly Agree	Tend To Agree	Tend To Disagree	Strongly Disagree
1	2	3	4

16. I think I will have enough income to live comfortably throughout retirement.

Strongly Agree	Tend To Agree	Tend To Disagree	Strongly Disagree
1	2	3	4

Please indicate your degree of satisfaction/dissatisfaction to the following questions:

17. How satisfied are you with your marriage/relationship?

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

18. How satisfied are you with your spouse/partner?

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

19. How satisfied are you with your relationship with your spouse/partner?

Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5	6	7

Please indicate the degree to which you agree/disagree to the following questions:

20. I avoid thinking about money.

Strongly Disagree	Disagree	Disagree A Little	Agree A Little	Agree	Strongly Agree
1	2	3	4	5	6

21. I try to forget about my financial situation.

Strongly Disagree	Disagree	Disagree A Little	Agree A Little	Agree	Strongly Agree
1	2	3	4	5	6

22. I avoid opening/looking at my financial (Bank, Credit, Investment) statements.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

23. Things would get better if I had more money.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

24. More money will make you happier.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

25. There will never be enough money.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

26. It is hard to be poor and happy.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

27. You can never have enough money.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

28. Money is power.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

29. I will never be able to afford the things I really want in life.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

30. Money would solve all my problems.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

31. Money buys freedom.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

32. If you have money, someone will try to take it away from you.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

33. You can't trust people around money.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

SECTION 3: Financial Outcomes

Please indicate your level of agreement/disagreement with the following:

34. Since participating in this financial education program, I have made better financial decisions.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

35. Because of the financial education program, I am more confident when making investment decisions.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

36. I have/plan to change my investment strategy by diversifying and/or taking more risk.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

37. Due to the financial education program, I have/plan to increase the amount of my personal retirement saving contributions.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

38. Due to the financial education program, I have/plan to increase or start contributing to my employer-sponsored retirement plan.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

39. Since participating in this financial education program, I have/plan to establish or increase the level of my Emergency (liquid) Savings.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

40. I have/plan to establish or update my personal Will, directives and/or Estate Documents.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

41. I have a better understanding and feel I am a better manager of my household budget.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

42. Due to participating in this financial education program, I have/plan to better manage and reduce my level of Credit Card debt.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

43. I have/plan to make changes to my personal insurance coverage's including policy limits and deductibles.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

44. I have a better understanding of the Social Security and Medicare programs including my expected future benefits.

Strongly		Disagree	Agree		Strongly
Disagree	Disagree	A Little	A Little	Agree	Agree
1	2	3	4	5	6

Please indicate your attendance for the number of class session during the 10-week educational program period:

45. Circle the number of classes you attended: 1 2 3 4 5 6 7 8 9 10

Thank you for your time and effort in completing our survey.

**90-Day Post Comprehensive Financial Education Program –
Online Follow Up Survey.**

1. Please describe your behaviors and actions taken since beginning participation in the financial education program:

I have increased my 401(k) contribution amount.

1 = Agree 2 = Disagree

I have implemented a plan to reduce my credit card debt.

1 = Agree 2 = Disagree

I have implemented a monthly budget and use it to manage my monthly cash flow.

1 = Agree 2 = Disagree

I have established or increased my personal (non-401(k)) retirement savings.

1 = Agree 2 = Disagree

I have established or updated my estate plans, will, and/or trusts.

1 = Agree 2 = Disagree

I have updated or made changes to my insurance coverages.

1 = Agree 2 = Disagree

I have discussed financial topics/issues from the program with my spouse/partner.

1 = Agree 2 = Disagree

I have made changes or diversified my investment portfolio.

1 = Agree 2 = Disagree

2. Please indicate your feelings or perceptions since participating in the financial education program.

I am satisfied with the amount of money I am able to save.

1 = Strongly Agree 2 = Agree 3 = Disagree 4 = Strongly Disagree

I have difficulty living on my income.

1 = Strongly Agree 2 = Agree 3 = Disagree 4 = Strongly Disagree

I worry about being able to pay my monthly expenses.

1 = Strongly Agree 2 = Agree 3 = Disagree 4 = Strongly Disagree

I worry about how much money I owe.

1 = Strongly Agree 2 = Agree 3 = Disagree 4 = Strongly Disagree

I feel confident about saving for a comfortable retirement.

1 = Strongly Agree 2 = Agree 3 = Disagree 4 = Strongly Disagree

I feel I will have enough income to live comfortably in retirement.

1 = Strongly Agree 2 = Agree 3 = Disagree 4 = Strongly Disagree

3. In summary, please indicate your agreement/disagreement with the following questions pertaining to your participation in the financial education program.

I have improved my financial decision making.

1 = Strongly Agree 2 = Agree 3 = Disagree 4 = Strongly Disagree

I have improved confidence with my investment decision making.

1 = Strongly Agree 2 = Agree 3 = Disagree 4 = Strongly Disagree

I have greater overall understanding of financial matters.

1 = Strongly Agree 2 = Agree 3 = Disagree 4 = Strongly Disagree

I have greater overall financial well-being.

1 = Strongly Agree 2 = Agree 3 = Disagree 4 = Strongly Disagree

I have greater confidence to be able to address future financial challenges.

1 = Strongly Agree 2 = Agree 3 = Disagree 4 = Strongly Disagree

I have a greater overall financial outlook for my future.

1 = Strongly Agree 2 = Agree 3 = Disagree 4 = Strongly Disagree

Appendix B - Table of Measurements

Table B.1 Essay 1 Table of Measurements for Dependent Variables

Dependent Variable	Coding	Measurement or Question
Change in Financial Literacy	Range: 0-10	Change of Financial Literacy assessment scores from pre-program to post program.
Financial Literacy		
1. Numeracy: Basic	1=correct 0=other	Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?
2. Compound Interest: Basic	1=correct 0=other	Suppose you had \$100 in a savings account and the interest rate is 20% per year and you never withdraw money or interest payments. After 5 years, how much would you have in this account in total?
3. Inflation: Basic	1=correct 0=other	Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?
4. Time Value of Money: Basic	1=correct 0=other	Assume a friend inherits \$10,000 today and his sibling inherits \$10,000 3 years from now. Who is richer because of the inheritance?
5. Inflation/Money Illusion: Basic	1=correct 0=other	Suppose that in the year 2015, your income has doubled and prices of all goods have doubled too. In 2015, how much will you be able to buy with your income?
6. Stock Diversification: Sophisticated	1=correct 0=other	Do you think that the following statement is true or false? "Buying a single company stock usually provides a safer return than a stock mutual fund."

7. Stock Market: Sophisticated	1=correct 0=other	Which of the following statements describes the main function of the stock Market?
8. Bonds: Sophisticated	1=correct 0=other	If the interest rates fall, what should happen to bond prices?
9. Volatility: Sophisticated	1=correct 0=other	Normally, which asset displays the highest fluctuations over time?
10. Risk Diversification: Sophisticated	1=correct 0=other	When an investor spreads his money among different assets, does the risk of losing money:

Table B.2 Essay 1 Table of Measurements for Independent Variables

Independent Variable	Coding	Measure or Question
Financial Education Participant: Objective	Participant=1; other=0	Determines if the survey came from a participant or control group member
Classes Attended	Range: 1-10	How many classes were you able to attend?
Demographic and Socio-economic Variables		
Age		What is your age?
24 and Under	1 if participant was age 24 or under; 0 otherwise	
25 – 34	1 if participant was age 25 – 34; 0 otherwise	
35 – 44	1 if participant was age 35 – 44; 0 otherwise	
45 – 54	1 if participant was age 45 – 54; 0 otherwise	
45 – 54	1 if participant was age 45 – 54; 0 otherwise	
55 – 70	1 if participant was age 55 – 70; 0 otherwise	
Over 70	1 if participant was over age 70; 0 otherwise	
Ethnicity	Hispanic=1; Other=0	What is your ethnicity?
Race	White=1; Non-White=0	What is your race?

Net Worth	Negative (below \$0)=0; Slightly Positive (\$1 to \$50,000)=1; Moderately Positive(\$50,000 to \$150,000)=2; Strongly Positive(Over \$150,000)=3	What is your estimated current household net worth (market value of your assets minus total debt)?
Negative	Less than \$0=1; Other=0	
Slightly to Moderately Positive	\$1 to \$150,000=1; Other=0	
Strongly Positive	Over \$150,000=1; Other=0	
Income	\$0 to \$10,131=0; \$10,132 to \$20,262=1; \$20,263 to \$29,392=2;\$29,393 to \$38,520=3;\$38,521 to \$50,477=4; \$50,478 to \$62,434=5; \$62,435 to \$82,008=6;\$82,008 to \$101,582=7; Over \$101,582=8	What is your total annualized household income from all sources?
\$0 to \$38,520	\$0 to \$38,520=1;Other=0	
\$38,521 to \$82,007	\$38,521 to \$82,007=1; Other=0	
Over \$82,007	\$82,008 and over=1; Other=0	
Gender	Male=0; Female=1	What is your gender?
Marital Status	Married=1; Single=0	What is your marital status?
Education	Less than high school=0; High school degree=1; Some college education or Associates degree=2; Bachelor's degree=3; Post graduate studies=4; Post baccalaureate/graduate degree=5	What is the highest level of education you have completed?
Less than Undergrad	Less than HS; High School; Some coll;=1; Other=0	
Undergrad degree, Post-grad education, Grad degree	Bachelor's degree; post grad studies; post grad degree=1; other=0	

Table B.3 Essay 2 Table of Measurements for Dependent Variables

Dependent Variable	Coding	Measure or Question
Financial Well-Being	1=strongly agree; 2=agree a little; 3=disagree a little; 4=strongly disagree	
Savings Satisfaction	Range: 1 to 4	I am satisfied with the amount of money that I am able to save.
Income Worry	Range: 1 to 4	I have difficulty living on my income.
Expense Worry	Range: 1 to 4	I worry about being able to pay monthly living expenses.
Debt Worry	Range: 1 to 4	I worry about how much money I owe.
Retirement Savings Satisfaction	Range: 1 to 4	I feel confident about saving for a comfortable retirement.
Comfortable Retirement Confidence	Range: 1 to 4	I think I will have enough income to live comfortably throughout retirement.

Table B.4 Essay 2 Tables of Measurements for Independent Variables

Independent Variable	Coding	Measure or Question
Financial Education Participant: Objective	Participant=1; other=0	Determines if the survey came from a participant or control group member
Demographic and Socio-economic Variables	Coding	
Age	Coding	What is your age?
24 and Under	1 if participant was age 24 or under; 0 otherwise	
25 – 34	1 if participant was age 25 – 34; 0 otherwise	
35 – 44	1 if participant was age 35 – 44; 0 otherwise	
45 – 54	1 if participant was age 45 – 54; 0 otherwise	
55 – 70	1 if participant was age 55 – 70; 0 otherwise	
Over 70	1 if participant was over age 70; 0 otherwise	
Ethnicity	Hispanic=1; Other=0	What is your ethnicity?
Race	White=1; Non-White=0	What is your race?
Net Worth	Negative (below \$0)=0; Slightly Positive (\$1 to \$50,000)=1; Moderately Positive(\$50,000 to \$150,000)=2; Strongly Positive(Over \$150,000)=3	What is your estimated current household net worth (market value of your assets minus total debt)?
Negative	Less than \$0=1; Other=0	
Slightly to Moderately Positive	\$1 to \$150,000=1; Other=0	
Strongly Positive	Over \$150,000=1; Other=0	
Income	\$0 to \$10,131=0; \$10,132 to \$20,262=1; \$20,263 to \$29,392=2; \$29,393 to \$38,520=3; \$38,521 to \$50,477=4; \$50,478 to \$62,434=5; \$62,435 to \$82,008=6; \$82,008 to \$101,582=7; Over \$101,582=8	What is your total annualized household income from all sources?
\$0 to \$38,520	\$0 to \$38,520=1; Other=0	

\$38,521 to \$82,007 Over \$82,007	\$38,521 to \$82,007=1; Other=0 \$82,008 and over=1; Other=0	
Gender	Male=0; Female=1	What is your gender?
Marital Status	Married=1; Single=0	What is your marital status?
Education	Less than high school=0; High school degree=1; Some college education or Associates degree=2; Bachelor's degree=3; Post graduate studies=4; Post baccalaureate/graduate degree=5	What is the highest level of education you have completed?
Less than Undergrad	Less than HS; High School; Some coll;=1; Other=0	
Undergrad degree, Post-grad education, Grad degree	Bachelor's degree; post grad studies; post grad degree=1; other=0	

Table B.5 Essay 3 Table of Measurements for Dependent Variables

Dependent Variables	Coding	Measurement or Question
Retirement Preparedness Best Practice Behaviors		
Calculating Retirement Savings Needs	1=Yes 0=other	Have you ever tried to figure out how much you need to save for retirement?"
Individual Retirement Plan Ownership	1=Yes 0=other	Do you (or your spouse/partner) have any other retirement accounts NOT through an employer, like an IRA, Keogh, SEP, or any other type of retirement that you have set up yourself?
Stock or Securities Ownership	1=Yes 0=other	Do you (or your spouse/partner) have any other retirement accounts NOT through an employer, like an IRA, Keogh, SEP, or any other type of retirement that you have set up yourself?

Table B.6 Essay 3 Table of Measurements for Independent Variables

Independent Variables:	Coding	Measure or Question
Objective Financial Knowledge	Range: 0 – 5	
1. Compound Interest	1=correct 0=other	Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?
2. Inflation	1=correct 0=other	Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?
3. Bond Pricing	1=correct 0=other	If interest rates rise, what will typically happen to bond prices?
4. Mortgages	1=correct 0=other	A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.
5. Stock Diversification	1=correct 0=other	Buying a single company stock usually provides a safer return than a stock mutual fund.
Subjective Financial Knowledge	Range: 0 – 7 0=don't know 1=very low 7=very high	On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?
Self-assessed Financial Skills	Range: 0 – 7	
1. Daily Financial Skills	1=strong disagree 4=neither agree nor disagree 7 = strongly agree	I am good at dealing with day-to-day financial matters, such as checking accounts, credit and debit card, and tracking expenses.
2.Math Skills	1=strong disagree 4=neither agree nor disagree 7 = strongly agree	I am pretty good at math.
Financial Condition		

1. Spending Compared to Income		Over the past year, would you say your household's spending was less than, more than, or about equal to your household's income? Please do not include the purchase of a new house or car, or other big investments you may have made.
2. Difficulty Paying Bills	Very difficult, somewhat difficult, or not at all difficult.	In a typical month, how difficult is it for you to cover your expenses and pay all of your bills?
3. Emergency Fund	1=Yes 0=No	Have you set aside emergency or rainy day funds that would cover your expenses for 3 months, in case of sickness, job loss, economic downturn, or other emergencies?
4. Income Shock	1=Yes 0=No	In the past 12 months, have you (or your household) experienced a large drop in income which you did not expect?
5. Checking Account	1=Yes 0=No	Does your household have a checking account?
Financial Beliefs		
1. Risk Tolerance	Scale: 1 – 10 1=Not at all willing 10=very willing	When thinking of your financial investments, how willing are you to take risks?
2. Perceived Level of Debt	Scale: 1 – 7 1=Strongly Disagree 7 = Strongly Agree	How strongly do you agree or disagree with the following statement? I have too much debt right now.

Table B.7 Essay 3 Demographic and Socioeconomic Variables

Demographic and Socio-economic Variables	Coding	Measure or Question
Age		What is your age?
25 – 34	1 if participant was age 25 – 34; 0 otherwise	
35 – 44	1 if participant was age 35 – 44; 0 otherwise	
45 – 54	1 if participant was age 45 – 54; 0 otherwise	
55 – 64	1 if participant was age 55 – 64; 0 otherwise	
65+	1 if participant was age 65 or older; 0 otherwise	
Race/Ethnicity	White/Caucasian=1; Black/Afr. Amer=2; ; Hisp/Latino=3; Asian/PacIsl=4; NatAmer/Alask=5; other=0	What is your race?
Income	Less than \$15,000=1; \$15,000 to \$25,000=2; \$25,000 to \$35,000=3; \$35,000 to \$50,000=4; \$50,000 to \$75,000=5; \$75,000 to \$100,000=6; \$100,000 to \$150,000=7; \$150,000 and over=8; other=0	What is your household approximate annual income, including wages, tips, investment income, public assistance, income from retirement plans, etc.?
Financial Condition		
Work Status	Self-employed Full-time employed Part-time employed	
Home Ownership	Yes=1, No=0	Do you (or your spouse/partner) currently own your home?
Gender	Male=1; Female=2	What is your gender?
Marital Status	Married=1; Single=2; Separated=3; Divorced=4; Widow/er=5	What is your marital status?
Education	Less than high school=1; High school degree=2; GED=3; Some college education=4; College grad=5; Post graduate edu=6;	What is the highest level of education you have completed?
Number of Dependents	One=1; Two=2; Three or More=3; None =0	How many children do you have who are financially dependent on you (or your spouse)? Including children not living at home, and step children