MORE IS BETTER: EXAMINING THE RELATIONSHIP BETWEEN STATES' REQUIREMENTS FOR PERSONAL FINANCE INSTRUCTION AND FINANCIAL LITERACY

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Dana Lisa Grossi

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Department of Public Policy and Administration

Abstract

of

MORE IS BETTER: EXAMINING THE RELATIONSHIP BETWEEN STATES' REQUIREMENTS FOR PERSONAL FINANCE INSTRUCTION AND FINANCIAL LITERACY

by

Dana Lisa Grossi

Low levels of financial literacy are prevalent in the United States, with high school students consistently performing poorly on tests that assess knowledge of financial concepts. Upon entering adulthood, many individuals are ill prepared to make important financial decisions that affect their future well-being. I explore government's role in addressing this problem by analyzing the relationship between state-level requirements for personal finance instruction in high school and financial literacy levels of young adults after high school graduation.

Using results from a nationally representative survey administered by the FINRA Investor Education Foundation in 2009, I focused on respondents ages 18-24 who had exposure to personal finance requirements implemented as late as 2002. I conducted a correlation analysis and regression analyses to explore how well requirements predicted financial knowledge and behavior scores among respondents.

Respondents in states with two or more personal finance requirements had higher financial knowledge scores than respondents in states with no requirements. Contrarily, respondents in states that had developed personal finance content standards had lower financial knowledge scores than respondents in states with no requirements at all. No other requirement type successfully predicted higher financial knowledge scores on its own. These results suggest that the number of requirements matters more than type of requirement in predicting financial knowledge. Gender, ethnicity, education, income, employment status, and living situation were also successful predictors of financial knowledge.

No significant relationships emerged for the outcome variable financial behavior, suggesting that personal finance instruction is more likely to make an individual knowledgeable but less likely to influence an individual's behavior. Policy implications of this research include the need to focus on targeting and educating demographic groups that are less likely to be financially literate, as well as encouraging all states to adopt more stringent personal finance content standards and requirements. To aid in the development of future standards and requirements, a further examination of the impact of different requirement types on financial literacy is first necessary.

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Chapter 1

INTRODUCTION

In today's trying economic times, many financially distressed Americans are unprepared to get themselves out of debt and onto a more sustainable financial path. According to the fifth annual Financial Literacy Survey by the National Foundation for Credit Counseling (NFCC), 50 percent of adults failed to maintain a budget or keep track of their spending in 2011. Furthermore, 33 percent had no rainy-day savings, a number that rises for African Americans (54 percent) and Hispanics (47 percent) (NFCC, 2011). While many adults exhibit maladaptive financial behavior, teenagers' financial literacy levels are especially low. Results from the Jump$tart Survey of Financial Literacy Among High School Students show that participants could only answer 48.3 percent of financial literacy questions correctly; these scores are lower than in past years (Mandell, 2008). Of particular concern, 34 percent of parents graded themselves with a C or lower when asked how they would rate themselves as financial role models for their children (T. Rowe Price, 2011).

Research Question

Many teens lack the resources they need to improve their financial literacy. Thus, I seek to explore government's role in addressing the problem. To measure the success of state governments' efforts to raise financial literacy levels among high school students, my thesis answers the following question: Are state-mandated requirements for personal finance instruction in high school effective in improving financial literacy? I calculate financial literacy levels of young adults ages 18-24 in each state. I then compare individuals' financial literacy scores to each corresponding state's requirements for personal finance instruction. I hypothesize that states with more requirements will have a higher percentage of respondents who are financially literate than states with less (or zero) requirements.

Importance

In today's increasingly complex financial world, it is crucial that people know how to make important decisions like buying a house or a car, taking on loans, investing in savings and stocks, and planning for retirement (Lusardi & Mitchell, 2007). The marketplace exposes adults to a wider range of financial products than in the past and the possession of financial knowledge could make navigating those choices easier. More importantly, people with sufficient financial knowledge will be better equipped to improve and secure their future well-being.

Lack of Financial Knowledge is Widespread

The reality is that many American consumers lack financial knowledge (Perry, 2008; Braunstein & Welch, 2002). According to the Organisation for Economic Co-Operation and Development (OECD), financial illiteracy is prevalent across age groups and geographical areas (2005). However, certain demographic groups are more likely to be financially illiterate, including women, the elderly, those with low educational attainment, and African Americans and Hispanics (Lusardi, 2008). The resulting poor financial behavior not only damages the individual consumer's well-being, but it has the potential to affect the larger economy, including "exacerbated business cycles, further inequality in the distribution of income and wealth, inadequate savings for retirement, low savings rates and capital formation, a weakening in the value of the dollar, and inflation" (Mandell & Klein, 2009, p. 16).

Implications for Young Adults

Young adults, newcomers to the financial marketplace, could benefit from improvements in financial literacy. As early as high school graduation, people start making critical financial choices, some of which affect their long-term financial security and stability. For example, 61.6 percent of students who pursue a bachelor's degree at a public school choose to take out student loans. Yet the extent to which college students know what it means to take out loans depends on

their degree of financial literacy. According to Deanne Loonin, a representative from the National Consumer Law Center, many borrowers are confused and do not understand what they have taken on (FinAid, 2012). Furthermore, research reveals that college students who are minorities from lower-income households may suffer from financial-related stress (Phinney & Haas, 2003). These students may end up dropping out of college because they can no longer afford it, or because they need to work more hours to pay their bills and can no longer keep up with classes (Roberts & Jones, 2001; U.S. General Accountability Office, 2001). Dropping out of college adversely affects students' ability to pursue careers, not to mention lowering college retention rates (Goetz, Cude, Nielsen, Chatterjee, & Mimura, 2011). Could personal finance instruction in high school reduce the financial-related problems that some college students experience? More importantly, could personal finance education have long-term benefits for college students and non-students alike, pointing individuals down the right path towards a healthy and sustainable financial future?

Organization of Thesis

Chapter 1 includes background information on the topics of financial literacy and personal finance education, with relevance to public policy. Chapter 2 provides a literature review summarizing the efficacy of financial education programs aimed at youth and young adults, as well as best practices and recommendations for effective financial education. Chapter 3 describes the methods I used to answer my research question. Chapter 4 presents the results of the analysis, and Chapter 5 offers recommendations to government decision-makers and future researchers on addressing and mitigating the problem of low financial literacy in the United States.

Background

Link between Financial Knowledge and Financial Behavior

Research has established a positive link between financial knowledge and financial behavior (Kimball & Shumway, 2006; Hilgert, Hogarth, & Beverly, 2003; Lusardi & Mitchell,

2007; Calvet, Campbell, & Sodini, 2006). Lusardi and Mitchell (2007) found that those with higher levels of financial knowledge were more likely to plan for retirement, even after controlling for other variables (education, marital status, number of children, retirement status, race, and sex). Hilgert, Hogarth, & Beverly (2003) reported that households with lower financial knowledge scores were more likely to classify as low on a cash flow management index that represented various financial practices (e.g. possession of a checking account, paying bills on time, and reconciling a checkbook on a monthly basis).

However, Huston (2010) cautions that a financially literate person may not always exhibit desirable financial behaviors. Other influences on human behavior may explain why a financially knowledgeable person does not act accordingly on that knowledge. Such influences include behavioral/cognitive biases, self-control problems, family and peer influences, economic factors, and/or community and institutional influences (Huston, 2010). Hathaway and Khatiwada (2008) are sensitive to the reality that financial behavior is not necessarily a product of any one variable on its own; rather, it is more likely the result of a combination of variables. For this reason, researchers and policymakers should remain cautious about incorrectly concluding that correlations are causal in studies that evaluate the impact of financial education on financial behaviors.

Government's Role

I. State Level

Requirements for financial education at the high school level aimed at improving financial literacy levels have increased dramatically over the last decade. According to the Council for Economic Education's (CEE) 2011 Survey of the States, fourteen states required high schools to offer a personal finance course to students (compared to zero states in 1998), while thirteen states required the course for graduation (compared to one state in 1998). In addition,

most states have developed personal finance content standards: In 2011, forty-six states had personal finance content standards, with thirty-six of those states requiring implementation of those content standards. Despite the increase over the years in the number of states that require some form of financial literacy instruction, many students still attend high school without having had any exposure to personal finance topics. In 2011, four states still did not have any content standards or requirements in place. The result is an inequity in student access to financial education among the states (CEE, 2011).

II. Federal Level

Keeping state efforts in mind, the federal government has also addressed the nation's low financial literacy levels. According to Willis (2008), the U.S. government has shown widespread support for financial literacy education for decades by providing financial and logistical resources towards furthering it. The Government Accountability Office (GAO) counted twenty different federal agencies that engage in financial literacy efforts, with more than fifty programs and initiatives addressing the issue (2011).

In 2002, the U.S. Treasury established the Office of Financial Education (OFE), which offers its Financial Capability Strategy including five overarching strategies: First, the OFE uses an evidence-based approach that relies on study findings to inform best practices for financial literacy programs, with a focus on expanding research to address challenges. Second, the OFE strives to build on what is already working in an effort to maximize program effectiveness for financial education programs already in place. Third, the OFE focuses on where people need financial education the most, such as target communities and demographics that suffer from especially low levels of financial literacy. The OFE also targets the next generation, specifically focusing on high school students. The OFE's fourth strategy is to focus on increasing access to financial knowledge to populations largely excluded from the financial system, including people

who least can afford the help. The fifth OFE strategy is to partner with nonprofits, the private sector, and local and state governments, under recognition that the federal government cannot mitigate this problem alone (OFE, 2010).

In 2003 Congress established the Financial Literacy and Education Commission (FLEC) within the U.S. Treasury, a product of the Fair and Accurate Credit Transactions (FACT) Act. The FLEC developed its first National Strategy in 2006 and established goals for the government, nonprofit, and private sector to meet to increase financial literacy among Americans. The FLEC's *Promoting Financial Success in the United States: National Strategy 2011* includes five action areas, which include policy, education, practice, research, and coordination. The strategy outlines four main goals and accompanying objectives: First, the strategy aims to increase awareness of and access to effective financial education. Second, the strategy seeks to determine core financial competencies with integration into the strategy's five action areas. Third, the strategy focuses on improving financial education infrastructure. Fourth, the strategy aims to identify, enhance, and share effective practices (FLEC, 2011). As a measure of the FLEC's success, the U.S. Treasury Department requested feedback from nonprofits, private businesses, trade associations, private citizens, and the public sector. Comments revealed widespread support for the National Strategy 2011's vision, mission, goals, and objectives (FLEC, 2011). However, the GAO provided constructive criticism of the FLEC's efforts. In its review of the FLEC's first National Strategy in 2006, the GAO commented that the strategy was more descriptive than it was strategic. The GAO also stated that FLEC's 2011 National Strategy needs to "incorporate specific provisions for performance measures, resource needs, and roles and responsibilities" before the strategy can be effective (GAO, 2011).

While government at both the federal and state level has attended to the problem of low financial literacy among Americans, literacy levels remain low, suggesting the need for continued

improvements and new strategies. Next, I review a body of literature that assesses the efficacy of financial education programs in increasing financial literacy. I also review best practices and recommendations for successful financial education.

Chapter 2

LITERATURE REVIEW

This literature review consists of two parts. First, I summarize a body of research that investigated the effectiveness of financial education aimed at youth and young adults. Second, I summarize best practices and recommendations for successful financial education programs. To guide my literature review and methodology, I first provide definitions of financial literacy and financial education.

Definitions

I. Financial Literacy

There is no single agreed-upon or widespread definition of financial literacy. Jump$tart, a coalition of organizations that strives to improve financial literacy among America's youth, defines financial literacy as "the ability to use knowledge and skills to manage one's financial resources effectively for lifetime financial security" (Jump$tart, 2012, para. 4). Similar to this definition is one adopted by the 2008 President's Advisory Council on Financial Literacy: "the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial wellbeing" (Jump$tart, 2012, para. 4). Based on these definitions, financial literacy is not just the possession of financial knowledge; it also requires the effective use of that knowledge to ensure future well-being and security. As such, I included studies that assess financial knowledge as well as financial behavior, including financial outcomes.

II. Financial Education

According to the Organisation for Economic Co-Operation and Development (2005), financial education is:

> The process by which financial consumers/investors improve their understanding of financial products and concepts and, through information, instruction, and/or objective

> advice, develop the skills and confidence to become more aware of financial risks and opportunities to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being (p. 4).

Based on this definition, financial education gives consumers the knowledge they need to function in today's financial arena. Just as financial literacy includes both the possession and effective use of financial knowledge, effective financial education gives people the skills they need to make use of the knowledge gained from the education. Improved future well-being is a stated outcome of both financial literacy and financial education. Because both terms echo the same goals, it follows that the purpose of financial education is to increase one's financial literacy.

Impact of Financial Education

The following studies evaluated the impact of financial education on financial literacy levels. I narrowed my literature review to include studies on financial education aimed at youth and young adults. While some studies support a positive relationship between financial education and financial literacy, research is not conclusive, as so few studies have addressed this topic.

Studies that Examine the Relationship between Government Mandates for Financial Education and Financial Literacy

Few studies have evaluated the impact of government mandates for financial education on financial literacy, the topic of my research. Gutter, Copur, and Garrison (2009) examined the relationship between students' exposure to varying state mandates for financial education in high school and subsequent financial literacy in college. Students from fifteen college campuses participated in a web-based survey designed to gauge three financial outcome categories: financial knowledge, financial dispositions, and financial behavior. State policy categories included: 1) no standards or testing; 2) standards in place but implementation not required; 3) standards in place and implementation required; 4) course required but assessment not

mandatory; 5) course required and assessment mandatory; and 6) course not required but assessment mandatory. Results revealed that financial behaviors of college students varied depending on state policies for financial education after controlling for relevant variables. The researchers recommended that at a minimum, states should develop personal finance content standards, as this was a significant predictor of higher scores on a financial quiz (Gutter, Copur, & Garrison, 2009).

Although dated, Bernheim, Garrett, and Maki (1997) conducted a similar study analyzing the impact of state requirements for consumer education in high school on financial outcomes. Consumer education covered a wide range of topic areas including consumer decision-making, economics, personal finance, and consumer rights and responsibilities. The researchers evaluated whether consumer education curricula had an effect on adults' financial decision-making regarding saving. Using a cross-sectional household survey and making comparisons across states and over time, Bernheim et al. found that the mandates significantly increased asset accumulation once students entered adulthood. The researchers also noted that the mandates' effects were gradual rather than immediate, which may reflect lags in the implementation of the mandates (Bernheim et al., 1997). While both of these studies reveal that mandates for financial education in high school do affect financial literacy outcomes, more research is necessary. The results of my study will add to the discussion on the efficacy of states' mandates for personal finance instruction.

Studies that Support Personal Finance Education

A study by Borden, Lee, Serido, and Collins (2007) examined the influence of a college-level financial education seminar on financial responsibility of college students. The Students in Free Enterprise led a one-and-a-half hour financial education seminar, Credit Wise Cats. Led by peer educators, the purpose of the seminar was to provide information regarding financial

behaviors, including credit card use, in an engaging format to appeal to college students. Immediately before and after the seminar, students completed a pre and post-test survey that assessed financial knowledge and attitudes. Results showed that participation in the seminar led to increased financial knowledge. Participation also resulted in increased responsible attitudes towards credit and a decrease in avoidant attitudes towards credit. However, because Borden et al.'s (2007) study did not analyze longer-term effects of seminar participation on college students' levels of financial responsibility, researchers and policymakers should exercise caution in generalizing this study's results to support the argument that personal finance education leads to improvements in financial literacy longer-term. As Lusardi and Mitchell (2007) warn, one-time single lectures on financial topics are not enough to "cure" financial illiteracy.

Dempere, Griffin, and Camp (2010) analyzed opinions of undergraduate students on the perceived benefits of systemized instruction on personal financial management at the college level. The researchers surveyed undergraduates at a public, urban, undergraduate-only college in the Western U.S. Results revealed that the students supported financial literacy education as valuable and desirable, especially in terms of managing credit card debt, budgeting, and paying for college (Dempere, Griffin, & Camp, 2010). However, as with the previous study by Borden et al. (2007), researchers and policymakers should interpret these results with caution. Student perceptions on the efficacy of financial literacy education are inherently subjective and therefore biased.

Studies with Mixed Results

Gutter and Renner (2007) investigated the impact of a semester-long financial education program funded by the Great Lakes Higher Education Guaranty Corporation at the University of Wisconsin-Madison. The researchers collected data at three different intervals (pre-class, post-class, and nine months post class) and found mixed results as to whether the course positively

influenced students' financial behavior and outcomes. Students showed sustained improvement in creating a budget, keeping a spending diary, and obtaining renters insurance. However, only 71 percent of students reported saving in the nine-month post-class survey compared to about 84 percent pre and post-class surveys. In addition, the percentage of students carrying a credit card balance over $1000 doubled from 15 percent to 30 percent across the three survey intervals (Gutter & Renner, 2007). Because the researchers did not include a control group (i.e., students who did not participate in the financial education program), it is difficult to analyze the extent of the class's impact on financial behavior and outcomes.

Peng, Bartholomae, Fox, and Cravener (2007) studied the impact of high school and college courses in personal finance on investment knowledge and household savings rates. After administering a web-based survey, results from a multiple hierarchical regression showed that students who participated in a college course in personal finance had higher levels of investment knowledge. However, the researchers did not observe this finding for those who participated in a high school personal finance course.

Hathaway and Khatiwada (2008) conducted a critical analysis of research that has investigated the impact of financial education programs on financial behavior, focusing in part on the impact of school-based financial literacy classes. The researchers found mixed results with some school-based programs having met with limited success. For example, several studies reported an improvement in savings rates and financial planning for those who participated in school-based courses. However, Hathaway and Khatiwada explained that the extent to which the relationship between the courses and financial behavior is causal is unclear in these studies. Fox, Bartholomae, and Lee (2005) also conducted a literature review on the effectiveness of financial education, similarly concluding that the evidence that financial education provides measurable benefits is mixed.

Studies that do not Support Personal Finance Education

Mandell and Klein (2009) examined the impact of a semester-long high school personal finance management course on high school graduates from three different schools. The researchers administered a survey that assessed levels of financial knowledge, financial behavior, and attitude toward risk. Respondents filled out the survey one to four years after graduation. Findings showed that financial literacy levels did not differ based on having taken the personal finance management course. Additionally, based on self-evaluations those who took the course were not more savings-oriented, nor did their financial behavior differ from those who had not taken the course.

Limitations and Needed Research

It is difficult to compare these studies to each other in an effort to explain why some researchers found personal finance education to be successful, while others did not. For one, no standardized instruments currently exist to measure financial literacy (Huston, 2010). As such, researchers measured financial literacy differently from study to study. While some studied financial knowledge attainment, others focused on financial behaviors and outcomes. Additionally, financial education programs and curricula differed from study to study. Without like comparisons readily available, it is difficult to draw conclusions.

These studies also suffer from methodological limitations. The primary tools researchers used to evaluate financial education programs were pre and post-tests. Oftentimes, researchers conducted post-tests shortly after the conclusion of a seminar or program, a practice that may bias results in favor of programs because the financial information is still fresh in the respondents' minds. Studies that evaluate the long-term or latent impact of financial education programs are lacking. Yet another limitation is that the majority of studies evaluated adult financial education programs, as opposed to high school courses (the focus of my research).

Willis (2008) critically analyzed studies that support financial literacy education, adding to the discussion on methodological issues. One such issue is an over-reliance on self-assessments of the impacts of financial literacy courses. Willis explained that people are likely to overstate how much their financial behavior has changed based on what the course taught them. A further limitation on studies with results that support financial literacy education is the problem of recall bias, where respondents who have favorable financial outcomes incorrectly assume that those outcomes are a result of having learned from a financial literacy class they took. Willis further explained that financial education often appears to increase consumer confidence without improving ability, which could lead to poor financial decision-making that inevitably damages the consumer's well-being.

Based on limitations in the literature, future research on this topic should focus on: 1) longer-term or latent effects of personal finance education; 2) measuring financial literacy more objectively; and 3) gearing more studies to focus on the efficacy of personal finance courses taught in public high schools, with an eye on comparing curricula of more effective courses to curricula of less effective courses.

Recommendations for Effective Personal Finance Instruction

Currently no widely accepted standards exist for effective personal finance instruction in high school. However, various government and nonprofit organizations have produced guidelines and recommendations for successful programs. I summarize these and recommendations from researchers who have conducted studies on this topic.

Recommendations for Successful Financial Education: Public Sector and Nonprofits

The U.S. Treasury Department's Office of Financial Education (OFE), a lead agency on financial education, outlined Eight Elements of a Successful Financial Education Program in

2004. Each element falls under one of four classifications: content, delivery, impact, and sustainability, as illustrated below:

Table 1

OFE's Elements of a Successful Financial Education Program

A successful program:

Content	1. focuses on basic savings, credit management, home ownership and/or retirement planning. 2. is tailored to its target audience, taking into account its language, culture, age and experience
Delivery	3. is offered through a local distribution channel that makes effective use of community resources and contacts. 4. follows up with participants to reinforce the message and ensure that participants are able to apply the skills taught.
Impact	5. establishes specific program goals and uses performance measures to track progress toward meeting those goals 6. demonstrates a positive impact on participants' attitudes, knowledge or behavior through testing, surveys or other objective evaluation.
Sustainability	7. can be easily replicated on a local, regional or national basis so as to have broad impact and sustainability. 8. is built to last as evidenced by factors such as continuing financial support, legislative backing or integration into an established course of instruction.

(Office of Public Affairs, 2004)

Although these elements do not specifically apply to high school-level personal finance courses, the U.S. Treasury Department appears to be the only government organization that has outlined recommendations for successful financial education (Office of Public Affairs, 2004).

The Organisation for Economic Co-Operation and Development (OECD), an international economic organization whose membership includes 34 countries (includes the U.S.), produced its *Recommendation on Principles and Good Practices for Financial Education and Awareness* in 2005. Just like the OFE outlined in its second element of a successful financial education program, the OECD recommends that financial education programs should account for diverse backgrounds with the creation of different programs for specific subgroups (e.g. youth, less educated, disadvantaged groups). The OECD also asserts that financial education should

begin in school as early as possible and should include teacher training to promote competency in teaching the subject matter (OECD, 2005). Similar to the OFE's fifth element that successful financial education programs should track progress, the OECD recommends that financial education programs should undergo assessment with the development of proper methodologies for doing so. Finally, the OECD recommends that financial education programs should help consumers make decisions by including instruction on understanding the pros, cons, and risks involved with different financial products (OECD, 2005).

The National Association of State Boards of Education (NASBE), a nonprofit that represents state and territorial boards of education, speaks more directly to financial education programs at the K-12 level. In 2006, NASBE outlined eight recommendations for states to consider:

1. States boards of education must be fully informed about the status of financial literacy in their states.

2. States should consider financial literacy and investor education as a basic feature of K-12 education.

3. Ensure that teachers and/or staff members teaching financial literacy concepts are adequately trained.

4. States should fully utilize public/private partnerships.

5. States should improve their capacity to evaluate financial literacy programs.

6. States should include financial and investor education in their academic standards to ensure that assessments are aligned with the standards.

7. State boards of education should cooperate with other states to develop a common assessment tool for financial and investor education.

8. States should encourage the development of a National Assessment of Educational Progress (NAEP) framework for financial literacy (NASBE, 2006).

The NASBE's fifth recommendation, which speaks to the importance of evaluating financial education programs, is an element shared by both the OFE and the OECD. In addition,

the NASBE's third recommendation on teacher/staff training is consistent with the OECD's best practices. Clearly, some overlap exists among these organizations in their promotion of solutions for improving financial education programs. However, with the NASBE as the only organization that speaks directly to financial education programs in K-12, best practices and recommendations for improving classroom-based financial education are lacking.

Recommendations from Researchers

Next, I review recommendations from researchers for successful financial literacy education. Many of the themes summarized here are also themes promoted in the public and nonprofit sector that I previously outlined.

I. Incorporate Teacher Training

Teacher training is a prominent theme that researchers address. For example, Baron-Donovan, Wiener, Gross, and Block-Lieb (2005) found that teacher training was a successful component in the delivery of a train-the-trainer program they evaluated. The goal of the two-day train-the-trainer program was to provide instructors who come from diverse backgrounds with information and tools to teach financial literacy in debtor education courses. Pre-test and post-test questionnaires revealed a nine percent increase in teachers' financial knowledge, which led to desired teaching behavior in class. McCormick (2009) also outlined his support for teacher training and professional development as promising practices for successful financial education program implementation in the K-12 setting.

II. Tailor Information to Target Audience

In their review of the causes and consequences of financial illiteracy, Lusardi and Mitchell (2007) argued against a one-size-fits-all financial education program. Largely because people vary widely in their degree of financial literacy, coupled with the observation that savings patterns are very diverse, one-size-fits-all financial education courses are impractical. Such

generalized financial education courses will not stimulate saving and may even be disincentives for participation. As Moore (2003) observed, most people prefer receiving personalized information on money management instead of attending general information sessions. Huston (2010) and Hathaway and Khatiwada (2008) support Lusardi and Mitchell's (2007) argument against a one-size-fits-all financial education program.

III. Other Recommendations

McCormick (2009) recommended that financial education should begin early on in K-12, rather than waiting for middle school or high school for introduction. In addition, material should be relevant to students to increase motivation for learning. McCormick also specified the subject matter that instructors should include in their curriculum: In addition to teaching students how to handle cash, the curriculum should "be designed to forge understandings of the relationships among money, work, investments, credit, bill payment, retirement planning, taxes, and so forth" (McCormick, 2009, p. 2). Finally, Lusardi and Mitchell (2007) caution that educating people on financial topics may not be sufficient to increase financial literacy. Education may provide people with knowledge, but knowledge does not necessarily lead people to change their behavior.

Implications for My Study

My research aims to further the discussion on best practices and recommendations for successful personal finance instruction. For purposes of this study, personal finance instruction requirements are successful if they predict higher financial literacy levels. Also, in recognition that my analysis suffers from a few of the limitations that other researchers ran across, it also has strengths, one of which is a more objective measure of financial literacy than most researchers have used in the past.

My study evaluates the efficacy of states' requirements for personal finance instruction in high school. Efficacy is determined by calculating financial literacy levels of young adults after

high school graduation. While I recognize the relationship does not always prove true, I assert that people with more exposure to financial topics are more likely to improve their financial literacy than people having less (or no) exposure. Given this premise, I expect that states with more personal finance requirements will have higher financial literacy levels among high school graduates than states with less stringent (or no) personal finance requirements. However, I remain wary that the direction of causality could go the other way; that is, states with lower financial literacy levels among high school graduates may have more stringent personal finance requirements in place to address those low levels. The next chapter discusses my specific methodological approach.

Chapter 3

METHODOLOGY

The purpose of my study is to understand whether a state's requirements for personal finance instruction in high school can predict financial literacy levels of young adults after graduation. In my analysis, I compare financial literacy levels of young adults ages 18-24 in each of the fifty states against each state's requirements. Results will give policymakers insight into how best to address the problem of low financial literacy in America.

Assessing States' Requirements for Personal Finance Instruction

I ascertained each state's personal finance requirements through the Council for Economic Education's (CEE) Survey of the States reports; the CEE surveyed states in 1998, 2000, 2002, 2004, 2007, 2009, and 2011, producing Report Cards for each year. For purposes of my study, requirement categories include:

1. States that have developed content standards for personal finance instruction but no not require implementation of those standards
2. States that have developed content standards for personal finance instruction and require implementation of those standards
3. States that require a personal finance course for graduation
4. States that require testing on personal finance topics
5. States with no personal finance requirements

Each state's requirements fall into one or more of these five categories (CEE, 2002).

In my analysis, I first focus on the separate effects of each requirement type on financial literacy levels. However, I am also interested analyzing whether states with more stringent requirements, as measured by the number of requirements in a state, have higher financial literacy levels than states with less stringent requirements. For example, do states with multiple

requirements (e.g., states that require implementation of personal finance content standards *and* testing on personal finance topics) have higher financial literacy scores than states that only employ one or zero requirements? To assess whether requirement stringency affects financial literacy, I assign a stringency score to each state's personal finance requirements. Scores range from zero to four based on the number of personal finance requirements in each state. For example, states with no personal finance requirements receive a score of zero; state that have two personal finance requirements receive a scores of two. Thus, a state that has developed content standards for personal finance instruction, requires a high school course in personal finance, and requires student testing on personal finance topics will receive a stringency score of three.

Description of Dataset

To capture financial literacy levels of young adults across the fifty states, I used data from the 2009 Financial Capability Study, a nationwide study that assessed financial capabilities (i.e. knowledge, behaviors, and outcomes) of adults. The FINRA Investor Education Foundation undertook the study in consultation with the U.S. Department of the Treasury and the President's Advisory Council on Financial Literacy. The Financial Capability Study included three surveys; I use data from the State-by-State survey, whereby researchers collected data using an online survey of 28,146 respondents between June and October of 2009. To ensure representativeness of the national population, researchers weighted the State-by-State dataset to match 2008 American Community Survey (ACS) distributions within each state and age category by gender, ethnicity, and education (FINRA Investor Education Foundation, 2011).

Measuring Financial Literacy

The 2009 Financial Capability Study State-by-State survey contained multiple measures of financial literacy. The survey included questions about personal financial conditions, use of financial professionals for various financial activities (e.g. tax planning, debt counseling),

banking and financial matters, retirement accounts and pensions, home ownership, credit cards, consumer loans, and insurance coverage. The survey also included questions designed to measure respondents' level of financial knowledge, including one question that ascertained self-reported financial knowledge and five knowledge questions that tested respondents' understanding of various financial concepts (FINRA Investor Education Foundation, 2009). In my analysis, I focus on the latter set of five questions, which tested respondents' knowledge of: 1) compound interest; 2) inflation effects on money; 3) the relationship between bond prices and the interest rate; 4) interest payment differences on shorter and longer mortgages; and 5) stock diversification and risk. I focus on these five questions because they provide the most direct and objective means of measuring financial literacy in the survey. Refer to Appendix A to view the wording of the questions, answer options presented to respondents, and the correct answers.

However, acknowledging that financial literacy is not just the possession of financial knowledge but also the effective use of that knowledge to ensure future well-being and security, I also included a measure of respondents' financial behavior. I focused on a question that addressed spending levels; the question asked respondents whether their spending levels were less than, equal to, or greater than their income over the past year. The question prompted respondents to exclude spending in certain categories (e.g. big purchases such as a house, car, or other big investments). Refer to Appendix B to view the wording of this question and answer choices. I use this question as a measure of respondents' future well-being and security, under the supposition that those who spend more money than they have are less likely to be working towards a secure financial future than respondents who spend less.

Addressing Limitations of the Dataset

Because the focus of my study is to measure financial literacy levels of young adults after high school graduation, I narrowed the dataset to include high school graduates in the 18-24 age

group (n=3,285). The dataset's reporting of age by category is one of two significant limitations in my study that I discuss next.

I. Determining Time of Exposure to State Requirements

The dataset provides an age range for respondents but does not provide respondents' actual ages, which would have allowed for more accuracy in determining what years they attended high school, and consequently what a state's personal finance requirements were at the time that the respondents had exposure to. For example, a respondent who was 20 years old when surveyed in 2009 would have presumably entered high school in 2003 and graduated in 2007. Using this four-year window, I could have determined what state requirements the respondent had exposure to with relative ease. In contrast, respondents in the 18-24 age bracket presumably attended high school anytime between 1999 and 2009, a much broader window of time that - for many states - included substantial changes in personal finance requirements. Between 1999 and 2009, a majority of states' personal finance requirements increased, while others states' requirements stayed the same; a few states actually reduced their personal finance requirements over this time period. In recognition of these changes, it is highly probable that respondents within each state's 18-24 age bracket had exposure to different requirement types. Thus, it is impossible to match each respondent to a state's specific requirement(s) with complete accuracy.

To address this limitation, I transformed the age variable from a categorical to a continuous variable: I calculated the midpoint of the ages in the 18-24 age group, 21.5, for purposes of narrowing down the timeframe during which respondents likely attended high school. Thus, the respondents who I estimated to be 21.5 years old at the time of the survey in 2009 presumably attended high school between 2002 and 2006, with exposure to personal finance requirements implemented as late as 2002. Under these assumptions, I focused on CEE's 2002 Survey of the States to ascertain states' personal finance requirements at this time. Again,

focusing on states' requirements in 2002 functions as a midpoint in time during which the Financial Capability Study's 18-24 year-old respondents attended high school. To view each state's requirements in 2002, along with the stringency score I calculated for each state, refer to Appendix C.

Although this transformation does not give complete accuracy in matching respondents to the specific state requirements they had exposure to in high school, focusing on requirements in 2002 is a conservative approach to my research question. Between 1999 and 2009, the number of states implementing each of the personal finance requirement types outlined at the beginning of this chapter has increased, as shown in Appendix D. Nonetheless, accuracy remains an issue and I address this limitation further when discussing the results of my analysis in Chapter 5.

II. Determining State of Residence

A second limitation in my analysis involves determining respondents' state of residence during high school to ascertain which state's personal finance requirements respondents had exposure to. Respondents reported their state of residence at the time of the survey, which does not necessarily translate to the state in which they attended high school. It is possible that respondents moved to a different state after high school graduation or even during high school.

The U.S. Census Bureau provides net migration rates for each state between 2000 and 2004; I examine rates in earlier years for purposes of my analysis that focuses on states' personal finance requirements in 2002. The net migration rate is the difference between inmigration and outmigration during a specific time period, where a positive net migration rate indicates net inmigration while a negative net migration indicates net outmigration. For example, Nevada had a net migration rate of 23.3 between 2000 and 2004, whereas New York had a net migration rate of -9.6 between 2000 and 2004 (Perry, 2006). Acknowledging that each state's migration trends are unique, researchers and policymakers should consider each state's migration trends when

interpreting state-level results. However, as it is impossible to know what proportion of the sample moved to another state during or after high school graduation, I will interpret my results with caution. I address this limitation again in Chapter 5.

Computing Financial Literacy Scores

Because I measure financial literacy in two ways (knowledge and behavior), my analysis consists of two parts. I computed two separate financial literacy scores for respondents. I based the first score on respondents' answers to the five survey questions measuring financial knowledge, while the second score represents respondents' answers to the survey question assessing financial behavior in terms of spending levels. By including two measures of financial literacy - financial knowledge and financial behavior - I remain sensitive to the definition of financial literacy outlined in Chapter 2 that includes the possession of financial knowledge and the effective use of that knowledge (i.e., financial behavior) to improve financial outcomes.

Financial Knowledge Score

Each respondent received a financial knowledge score based on his/her answers to five questions that measured knowledge of five different financial concepts (see Appendix A). To calculate each respondent's score, I generated a dummy variable for each question (five dummy variables total). For each dummy, correct responses received a score of one while incorrect responses received a score of zero. I then added each of the five response scores together obtain an overall financial knowledge score for each respondent. Thus, if a respondent answered three of the five questions correctly, she received a financial knowledge score of three. After assigning individual scores, I computed an average financial knowledge score for each state, which allowed for a ranking of states on financial knowledge. To calculate the state's score, I first computed the total percentage of correct responses from residents to each of the five financial knowledge questions. I then added the five percentages together and divided by five to obtain an overall

average percentage-based score. A comparison of states' scores showed that Florida ranked number one with a financial knowledge score of 80.16 percent, followed closely by Idaho (80.08 percent) and Virginia (79.38 percent). Refer to Appendix F to view each state's ranking on this variable.

Financial Behavior Score

Once again, I assessed financial behavior using respondents' answers to a survey question ascertaining their spending habits (see Appendix B). To calculate individual scores, I generated a dummy variable; respondents who reported spending equal to or less than their income over the last year received a score of one, while respondents who reported spending more than their income over the last year received a score of zero. To calculate each state's financial behavior score, I computed statewide percentages representing the proportion of respondents in a state who reported spending equal to or less than their income over the past year. Results show that Connecticut ranked number one on the financial behavior measure with a score of 89.7 percent. To view other states' rankings on this variable, refer to Appendix G.

I use correlation analysis and regression analyses to analyze the impact of personal finance instruction requirements on financial knowledge and behavior. Chapter 4 describes the analysis in more detail and presents results.

Chapter 4

ANALYSIS OF DATA

This analysis compares states' requirements for personal finance instruction against financial knowledge and financial behavior scores of survey respondents to determine what requirements (if any) have been effective. As of 2002, thirty-one states had personal finance standards or guidelines in their curricular standards for public schools, while only seventeen of those states required implementation of those standards. Four states required students to take a personal finance course for graduation and eight states required student testing on personal finance topics (CEE, 2002). For a summary of each state's requirements, refer to Appendix C.

Part one of the analysis focuses on the relationship between states' requirements and financial knowledge, while part two focuses on the relationship between states' requirements and financial behavior.

Part One: Analyzing States' Requirements against Financial Knowledge

To determine which personal finance requirements (if any) were associated with higher financial knowledge scores, I first conducted a correlation analysis using individual-level data, accounting for each respondent's financial knowledge score and the specific regulations each respondent had exposure to. There was a significant positive correlation between respondents in states that required implementation of personal finance content standards and financial knowledge scores (Pearson Correlation= 0.057, p-value= 0.001, n=3,189). That is, respondents in states that required implementation of personal finance content standards were significantly more likely to have higher financial knowledge scores than respondents in states that did not implement content standards. Conversely, there were no significant correlations observed between other personal finance requirement types and financial knowledge scores. Refer to Appendix G to view the correlation matrix for this portion of the analysis.

In addition to the correlation analysis, I conducted a multiple regression analysis to observe the relationship between states' personal finance requirements and financial knowledge, controlling for gender, ethnicity, education, geographical location, income, employment status, and living situation. With financial knowledge scores as my dependent variable, the functional form of the linear regression is:

Financial knowledge score= f (personal finance requirement type, stringency score, gender, ethnicity, education, geographical region, income, employment status, living situation)

Results of the regression reveal an adjusted R squared of 0.151, indicating a weak positive relationship between the predictor variables and financial knowledge scores. However, results are significant at the 99 percent confidence interval (p-value= 0.000). Variables found to be significant predictors of financial knowledge include personal finance requirement type, stringency score, gender, ethnicity, education, income, employment status, and living situation. Focusing on requirement type as my primary variables of interest, results show that compared to respondents in states with no personal finance requirements, respondents in states that had developed content standards were significantly more likely to have *lower* financial knowledge scores, holding all else constant. Next focusing on stringency of states' requirements, states that had a stringency score of two or greater were significantly more likely to have higher financial knowledge scores than states with a stringency score of zero. As described in Chapter 3, stringency scores reflect the number of personal finance requirements a state has. These results suggest that the number of requirements in a state (i.e. stringency of requirements) is a better predictor of higher financial knowledge than are requirement types. I discuss implications of these findings in Chapter 5. Table 2 below provides a detailed summary of regression results.

Table 2

Variables Predicting Financial Knowledge

Variables Included	*Coefficients (Unstandardized)*	*Standard Error*	*Significance*
Constant	.595	.042	.000
Content standards[i]	-.076	.032	.017**
Required implementation of content standards[i]	-.036	.030	.236
Course requirement[i]	-.030	.032	.342
Testing requirement[i]	-.045	.028	.109
Stringency score- 1[ii]	.040	.030	.180
Stringency score- 2[ii]	.109	.046	.018**
Stringency score- 3[ii]	.138	.063	.028**
Stringency score- 4[ii]	.183	.075	.015**
Gender- Female[iii]	-.099	.010	.000***
Ethnicity- Nonwhite[iv]	-.070	.010	.000***
Education- Some college[v]	.095	.011	.000***
Education- College graduate[v]	.195	.015	.000***
Education- Post-grad[v]	.187	.029	.000***
Geographical region- Northeast[vi]	-.015	.015	.322
Geographical region- Midwest[vi]	.017	.014	.224
Geographical region- West[vi]	.016	.014	.249
Income- Less than $15,000/year[vii]	-.093	.038	.014**
Income- More than $15,000/year but less than $35,000/year[vii]	-.086	.038	.023**
Income- More than $35,000/year but less than $50,000/year[vii]	-.073	.039	.065*
Income- More than $50,000/year but less than $75,000/year[vii]	-.054	.040	.170
Income- More than $75,000/year but less than $150,000/year[vii]	-.100	.040	.013**

Employment status- Self-employed[viii]	-.078	.026	.003***
Employment status- Full-time[viii]	-.022	.014	.122
Employment status- Part-time[viii]	-.038	.015	.009***
Employment status- Homemaker[viii]	-.101	.023	.000***
Employment status- Permanently unemployed, sick/disability[viii]	-.086	.067	.202
Employment status- Temporarily laid off[viii]	-.076	.016	.000***
Living situation- Living with spouse/significant other[ix]	.027	.016	.102
Living situation- Living with parents[ix]	.015	.015	.336
Living situation- Living with other family/friends[ix]	.039	.017	.021**

n= 3,285; Adjusted R^2= 0.051
*Results significant at 90 percent confidence level ($p \leq 0.10$)
**Results significant at 95 percent confidence level ($p \leq 0.05$)
***Results significant at 99 percent confidence level ($p \leq 0.01$)
[i]Reference category: No personal finance content standards or requirements
[ii]Reference category: Stringency score- 0
[iii]Reference category: Gender- Male
[iv]Reference category: Ethnicity- White
[v]Reference category: Education- High school graduate
[vi]Reference category: Geographical region- South
[vii]Reference category: Income- More than $150,000 per year
[iii]Reference category: Employment status: Student
[ix]Reference category: Living situation- Living alone.

Part Two: Analyzing States' Requirements against Financial Behavior

Results of a correlation analysis showed no significant relationships between exposure to personal finance requirement types and financial behavior (refer to Appendix E for results). To explore this relationship further, I conducted a regression analysis similar to the regression conducted for the dependent variable financial knowledge. For this regression, financial behavior was the dependent dummy variable. As described in Chapter 3, respondents received a score of one for this variable if they reported spending equal to or less than their income over the last year and a score of zero if they reported spending more than their income over the last year. Because

financial behavior is a dummy variable, I conducted a binary logistic regression under the functional form:

Financial behavior score= f (personal finance requirement type, stringency score, gender, ethnicity, education, geographical region, income, employment status, living situation, financial knowledge score)

I used the same predictor variables as in the first regression equation, except for one additional variable -financial knowledge score- to determine whether financial knowledge is a significant predictor of financial behavior.

First focusing on personal finance requirement types, respondents in states with personal finance requirements were no more likely than respondents in states with no requirements to spend more than their income. Put differently, personal finance requirement types did not predict financial behavior. Furthermore, no significant correlation emerged between financial behavior and financial knowledge. There was also no significant relationship observed between stringency score and financial behavior; respondents in states with multiple personal finance requirements were no more likely than respondents in states with zero requirements to spend more than their income. In contrast, variables found to be significant predictors of financial behavior were gender, income, and employment status. Table 3 provides a detailed summary of results for this regression.

Table 3

Variables Predicting Financial Behavior

Variables Included	*Coefficients (Unstandardized)*	*Standard Error*	*Significance*
Constant	1.904	.470	.000
Content standards[i]	-.458	.305	.133
Required implementation of content standards[i]	-.121	.284	.672

Course requirement[i]	-.121	.294	.681
Testing requirement[i]	-.094	.268	.725
Stringency score- 1[ii]	.163	.292	.576
Stringency score- 2[ii]	.556	.436	.202
Stringency score- 3[ii]	.772	.596	.195
Stringency score- 4[ii]	.303	.710	.669
Gender- Female[iii]	-.224	.096	.019**
Ethnicity- Nonwhite[iv]	-.020	.093	.828
Education- Some college[v]	-.176	.107	.101
Education- College graduate[v]	.037	.144	.797
Education- Post-grad[v]	-.412	.254	.104
Geographical region- Northeast[vi]	-.055	.141	.698
Geographical region- Midwest[vi]	-.123	.127	.333
Geographical region- West[vi]	-.026	.127	.837
Income- Less than $15,000/year[vii]	-.893	.420	.033**
Income- More than $15,000/year but less than $35,000/year[vii]	-.722	.423	.088*
Income- More than $35,000/year but less than $50,000/year[vii]	-.578	.436	.185
Income- More than $50,000/year but less than $75,000/year[vii]	-.558	.438	.202
Income- More than $75,000/year but less than $150,000/year[vii]	-.555	.444	.211
Employment status- Self-employed[viii]	.174	.246	.479
Employment status- Full-time[viii]	.282	.133	.034**
Employment status- Part-time[viii]	.296	.136	.030**
Employment status- Homemaker[viii]	-.032	.202	.873
Employment status- Permanently unemployed, sick/disability[viii]	.387	.669	.564
Employment status- Temporarily laid off[viii]	-.038	.143	.788

Living situation- Living with spouse/significant other[ix]	.061	.149	.684
Living situation- Living with parents[ix]	.194	.139	.164
Living situation- Living with other family/friends[ix]	.007	.153	.965
Financial knowledge score	-.037	.171	.829

n= 2,837; Cox and Snell R^2= 0.021
*Results significant at 90 percent confidence level ($p \leq 0.10$)
**Results significant at 95 percent confidence level ($p \leq 0.05$)
[i]Reference category: No personal finance content standards or requirements
[ii]Reference category: Stringency score- 0
[iii]Reference category: Gender- Male
[iv]Reference category: Ethnicity- White
[v]Reference category: Education- High school graduate
[vi]Reference category: Geographical region- South
[vii]Reference category: Income- More than $150,000 per year
[viii]Reference category: Employment status: Student
[ix]Reference category: Living situation- Living alone

Whereas I observed significant relationships between personal finance requirements and financial knowledge, no significant relationships emerged between personal finance requirements and financial behavior. In Chapter 5, I summarize and discuss the implications of these results with sensitivity to the methodological limitations I described in Chapter 3.

Chapter 5

CONCLUSION

As described in previous chapters, the purpose of this research is to determine how effective states' requirements for personal finance instruction are in improving financial literacy among young adults. The study relied on a nationwide survey to gauge financial literacy levels of young adults, as measured by financial knowledge and financial behavior scores that I calculated. This chapter discusses the results presented in Chapter 4, addresses study limitations, provides implications for public policy, and concludes with directions for future research.

Discussion of Results

My primary explanatory variables of interest in predicting financial literacy were the following four personal finance requirement types: 1) content standards developed; 2) required implementation of content standards; 3) personal finance course required for graduation; and 4) required testing on personal finance subject matter. The analysis compared financial literacy levels of respondents who had exposure to one or more of these personal finance requirement types to financial literacy levels of respondents without exposure to any requirements. A few statistically significant results emerged from the analyses performed.

States with Content Standards have Lower Financial Knowledge Scores

Surprisingly, respondents in states that had developed personal finance content standards were significantly more likely to have lower financial knowledge scores than respondents in states with no requirements at all. In addition, no significant relationships existed between any other requirement type and financial knowledge. These results suggest that the presence of requirements/standards in high school does not necessarily lead to increased financial knowledge among students once they reach adulthood. Various explanations could justify the finding that the presence of content standards in a state actually predicted lower financial knowledge scores. For

example, it is possible that states with lower levels of financial knowledge have developed content standards as a policy response to address the problem. Contrarily, states with higher financial knowledge lack content standards because they do not see a need for them, thus explaining the finding that states that did not develop content standards were more likely to have higher financial knowledge scores.

States with More Standards/Requirements have Higher Financial Knowledge Scores

A second finding revealed that the number of personal finance requirements in a state was a significant predictor of financial knowledge. Respondents in states with two or more personal finance requirements were significantly more likely to have higher financial knowledge scores than respondents in states with no requirements at all. This part of my analysis addressed the stringency of states' requirements, where I defined stringency in terms of the number of requirements in a state. Thus, states with more stringent requirements were more likely to exhibit higher financial knowledge scores among respondents than states with less stringent requirements. Contrary to the relationships observed between requirement types and financial knowledge, stringency of states' requirements better predicted higher financial knowledge scores. The stringency finding supports the notion that students with more exposure to personal finance content in high school are more likely to have greater financial knowledge than students with less (or zero) exposure to such content.

No Significant Relationship Observed between Personal Finance Requirements and Financial Behavior

Unlike the results observed for financial knowledge, personal finance requirements did not predict financial behavior, as measured by spending levels of respondents. As described in Chapter 3, individuals reported whether their spending levels were greater than, equal to, or less than their income over the past year. For purposes of the analysis, I compared respondents who reported spending more than their income over the course of a year to respondents who reported

spending equal to or less than their income during that same time. Type of personal finance requirement did not make a difference in predicting spending levels. Neither did the stringency (i.e. number) of requirements make a difference; respondents with exposure to more personal finance requirements were no more likely than respondents with exposure to fewer (or zero) requirements to spend more (or less) than their income.

These findings suggest that exposure to personal finance topics in high school does not lead to better spending habits after high school graduation. These results are consistent with Lusardi and Mitchell's (2007) argument that educating people on financial topics may not be enough to change their financial behavior. However, this is not to say that personal finance education does not have the potential to influence behavior. As discussed in Chapter 1, some research has established a positive link between financial literacy and financial behavior.

Knowledge versus Behavior

There are many potential explanations for why personal finance requirements were better predictors of financial knowledge than of financial behavior. Perhaps the most obvious explanation is that an individual's spending habits are dependent upon a greater number of variables, or external influences, than is financial knowledge. As Hathaway and Khatiwada (2008) discussed, financial behavior is usually a product of a combination of variables. As an example, a person may gain financial knowledge from exposure to personal finance content in high school, but may fail to behave accordingly by making responsible spending decisions. This failure to make responsible spending decisions may be intentional (i.e. the individual knows she is making a poor financial decision) or because of variables outside an individuals' control (e.g. the individual lacks access to resources because she is impoverished). In other words, some people meet with barriers that prevent them from making better financial choices. Thus, it is one thing to instill knowledge into an individual through education, but the probability that educating

an individual will actually cause a change in behavior is much less certain. The regression results in part two of my analysis for the dependent variable financial behavior support this notion; in this regression, financial knowledge did not prove to be a significant predictor of financial behavior.

Gender, Ethnicity, Education, Income, Employment Status, and Living Situation Predicted Financial Knowledge and/or Financial Behavior

In addition to stringency of states' personal finance requirements, other variables included in the regression analyses successfully predicted higher financial knowledge and/or behavior scores. Table 4 summarizes the relationships between those variables and financial knowledge/financial behavior.

Table 4

Other Significant Variables

Variable	*Statement of Relationship to Financial Knowledge*
Gender	Male respondents were more likely to have higher financial knowledge scores than female respondents.
Ethnicity	White respondents were more likely to have higher financial knowledge scores than non-white respondents.
Education	Respondents with some college education or higher (college graduate, post-grad) were more likely to have higher financial knowledge scores than respondents with just a high school degree.
Income	Respondents who made more than $150,000/year were more likely to have higher financial knowledge scores than respondents in the following income categories: $50,000/year or less; more than $75,000/year but less than $150,000/year.
Employment status	Respondents who were students were more likely to have higher financial knowledge scores than respondents who were self-employed, employed part-time, homemakers, or temporarily laid off.

Living situation	Respondents living with other family/friends were more likely to have higher financial knowledge scores than respondents living alone. Other family refers to family members not including spouses or significant others.
Variable	*Statement of Relationship to Financial Behavior*
Gender	Males were more likely to have better spending habits than females.
Income	Respondents who made more than $150,000/year were more likely to have better spending habits than respondents who made less than $35,000/year.
Employment status	Respondents employed either part-time or full-time were more likely to have better spending habits than respondents who were students.

The finding that female respondents, respondents with lower educational attainment, and non-white respondents were more likely to have lower financial knowledge and/or behavior scores is consistent with Lusardi's (2008) findings, as discussed in Chapter 1.

Correlation Analysis Revealed a Significant Relationship between States that Required Implementation of Personal Finance Content Standards and Financial Knowledge

A correlation analysis showed that respondents in states that required implementation of personal finance content standards were more likely to have higher financial knowledge scores than respondents in states that did have this requirement. However, this relationship lost its significance in both of the regression analyses. For this reason, I interpret these results with caution; however, the presence of a significant relationship between a requirement type and financial knowledge suggests that the requirements may have some effect on financial knowledge.

Limitations

Before discussing policy implications of these results, it is necessary to discuss this study's limitations. As described in Chapter 3, the biggest hurdle to overcome was matching

survey respondents to the specific personal finance requirements they had exposure to for purposes of determining the effect of those requirements on financial literacy levels. Because data providing respondents' actual ages were unavailable, I estimated ages and presumed that respondents had exposure to personal finance requirements implemented as late as 2002. Recognizing that the survey respondents would have attended high school anytime between 1999 and 2009, focusing on 2002 requirements is a conservative approach, as most states have increased their personal finance requirements since then. As such, significant relationships observed between personal finance requirements (type and stringency) and financial literacy scores are likely to be understated relationships. However, lack of accuracy in matching respondents to requirements is still a significant limitation and as such, I take caution in generalizing my findings to the larger population.

A second limitation of this study is its focus on assessing the efficacy of personal finance instruction requirements in earlier years. It is probable that personal finance instruction has changed since 2002; instruction may be more (or less) effective than it was ten years ago. In some ways, an analysis of past requirements is not as informative as an analysis of current requirements might be. On the other hand, focusing on earlier years makes it possible for researchers today to examine the longer-term or latent effects of personal finance requirements, a topic area that has scant research.

A third limitation in my analysis is my presumption that the state respondents resided in when they participated in the 2009 Financial Capability Study was the state where they attended high school. However, the reality is that some students move during or after their high school years. Migration trends for each state vary, so it is difficult to determine the extent to which migration skewed this study's results. Similar to the limitation in determining respondents' actual ages, level of accuracy is a concern in determining respondents' state of residence during high

school. Because I lacked more definitive data in these areas, the extent to which I can generalize results of this study to a larger population is significantly limited.

A fourth limitation in my analysis concerns the quantitative methodological approach I used to determine the relationship between personal finance requirements and financial literacy. As is the case in any quantitative analysis, the observed relationships between the explanatory variables and outcome (dependent) variables in my regression analyses are not causal; rather, they are predictive relationships. As such, it is not possible to determine the true nature of the relationships that I observed among my variables of interest. For example, while states with more stringent requirements were more likely to have higher financial knowledge scores, I cannot assume that the former caused the latter. However, the presence of significant relationships between these variables suggests that the observed relationships are unlikely due to chance and that further research is worthwhile.

One final limitation of my study is the likelihood that my regression analyses suffer from omitted variable bias. Omitted variable bias occurs when relevant variables do not appear in a regression equation. For example, one potentially relevant explanatory variable that I did not include in my regression analysis for the outcome variable financial knowledge is parents' education. Parents with higher levels of education might be more financially knowledgeable and thus more likely to pass that knowledge down to their children. Because data on parents' education level was not available, I could not control for this variable in my analysis. Thus, my regression results may have a skew, although the extent is unknown.

Implications for Public Policy

With sensitivity to my study's limitations, a few public policy implications emerge. Overall, my results support a need for more government involvement in addressing the widespread problem of low financial literacy levels. One way that government can raise financial

literacy levels among teens and young adults is to target financial education programs to demographic groups that have a lower likelihood of being financially literate. This recommendation is consistent with a recommendation made by the U.S. Treasury's Office of Financial Education (OFE) (2010). As my results show, groups that need attention include females, nonwhites, individuals with lower levels of education, and those with lower incomes. Even after controlling for other variables - including exposure to personal finance requirements - these groups were significantly more likely to have lower financial knowledge scores, suggesting that government is not doing enough.

Access to personal finance education also needs to be more equitable. Based on my findings, the federal government should encourage states that have one or zero personal finance instruction standards/requirements to do more. In other words, statewide policies for personal finance education need to be stringent enough to make a positive difference. The federal government should also focus on targeting states with especially low financial literacy levels by incentivizing a change in (or adoption of) standards and requirements in those states.

However, pushing more schools to increase students' exposure to personal finance topics has its challenges. In a study of more than 1,200 teachers, Way and Holden (2009) reported that most teachers see a need for financial education in high school. However, only 37 percent of K-12 teachers had taken a college course that included topics in financial education, while less than 20 percent of teachers and prospective teachers reported feeling very competent to teach personal finance topics (Way and Holden, 2009). In this way, requiring student instruction on personal finance topics is likely to be a burden in school districts that already suffer from limited resources.

In states that lack funding to train teachers on financial topics, the role of private financial institutions in educating customers may be a more practical alternative. States should consider

collaborating with banks, credit unions, or nonprofits that can provide personal finance seminars and workshops to students. As one alternative, states could encourage or require students to attend at least one seminar or workshop prior to high school graduation. One concern with private/nonprofit provision of financial education is the effectiveness of one-time seminars and workshops. Most research assessing one-time and short-lived financial education programs focuses on the knowledge gained immediately afterwards, but less is known about the longer-term impacts of these programs. However, private/nonprofit provision of personal finance education appears to be a lower-cost option, as it would ensure cost-savings that would have otherwise gone towards funding expenses that come with implementing a semester-long course (e.g. teacher compensation, textbooks, teacher training).

Future Research

As my regression results revealed, no one personal finance standard or requirement was enough to predict higher financial knowledge or behavior scores. However, research assessing requirements that are more recent may yield different results. In addition to assessing the separate effects of each requirement, future research should focus on assessing the impact of different combinations of personal finance instruction requirements on financial literacy in order to gauge what combination of requirements is most effective.

My research shows that more is better. Yet the problem remains that high school students continue to display poor financial literacy levels, despite current government efforts to mitigate the problem. Given that many teens have few other means of becoming educated on important financial topics, government's role in providing that education in public schools is both warranted and crucial. Many states have increased their personal finance instruction requirements, but other states are lagging behind. What remains clear is that research evaluating current state efforts at

providing personal finance instruction in schools is lacking. An assessment of the efficacy of current standards and requirements is a necessary first step towards change.

Appendix A

Questions Measuring Financial Knowledge

Question 1: Suppose you had $100 in a savings account and the interest rate was two percent 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; (e) Prefer not to say.

Question 2: Imagine that the interest rate on your savings account was one percent per year and inflation was 2 percent per year. After 1 year, how much would you be able to buy with the money in the account? (a) More than today; (b) Exactly the same; (c) Less than today;* (d) Don't know; (e) Prefer not to say.

Question 3: If interest rates rise, what will typically happen to bond prices? (a) They will rise; (b) They will fall;* (c) They will remain the same; (d) There is no relationship between bond prices and the interest rate; (e) Don't know; (f) Prefer not to say.

Question 4: 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: (a) True;* (b) False; (c) Don't know; (d) Prefer not to say.

Question 5: Buying a single company's stock usually provides a safer return than a stock mutual fund: (a) True; (b) False;* (c) Don't know; (d) Prefer not to say.

(FINRA Investor Education Foundation, 2009)

*Answer choices marked with an asterisk are the correct answers (Allgood & Walstad, 2011)

Appendix B

Question Measuring Financial Behavior- Spending Levels

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. (a) Spending less than income; (b) Spending more than income; (c) Spending about equal to income; (d) Don't know; (e) Prefer not to say.

(FINRA Investor Education Foundation, 2009)

Appendix C

2002 State Requirements for Personal Finance Instruction

State	No requirements	Content Standards Developed	Require Implementation of Content Standards	Require Course to be Taken	Require Student Testing	Stringency Score*
Alabama		■	■		■	3
Alaska	■					0
Arizona		■	■			2
Arkansas		■				1
California	■					0
Colorado	■					0
Connecticut		■				1
Delaware		■				1
Florida		■				1
Georgia		■				1
Hawaii		■	■			2
Idaho		■	■	■		3
Illinois		■		■	■	3
Indiana		■	■			2
Iowa	■					0
Kansas	■					0
Kentucky		■	■	■	■	4
Louisiana	■					0
Maine		■	■		■	3
Maryland		■	■			2
Massachusetts	■					0
Michigan		■			■	2
Minnesota		■				1
Mississippi		■	■			2

Missouri						1
Montana						0
Nebraska						2
Nevada						0
New Hampshire						2
New Jersey						0
New Mexico						3
New York						2
North Carolina						3
North Dakota						0
Ohio						1
Oklahoma						0
Oregon						2
Pennsylvania						2
Rhode Island						2
South Carolina						0
South Dakota						0
Tennessee						0
Texas						2
Utah						1
Vermont						2
Virginia						0
Washington						0
West Virginia						0
Wisconsin						1
Wyoming						0

*Each state's stringency score equals the number of personal finance requirements it has. (CEE, 2002)

Yes	No

Appendix D

Changes in States' Personal Finance Requirements over the Years

Personal Finance Requirement Type	*1998*	*2000*	*2002*	*2004*	*2007*	*2009*	*2011*
Content standards developed	21	40	31	36	40	44	46
Require implementation of content standards	14	16	17	21	28	34	36
Require course to be offered	N/A	7	1	7	9	15	14
Require course to be taken	1	1	1	6	7	13	13
Require student testing	1	6	8	8	9	9	5

(CEE, 2011)

Appendix E

Correlations: Requirement Types, Financial Knowledge, Financial Behavior

		Financial knowledge score	Financial behavior score
States with no personal finance requirements	Pearson Correlation	-.004	.017
	Sig. (2-tailed)	.818	.339
	N	3189	3021
States with personal finance content standards developed	Pearson Correlation	-.003	-.016
	Sig. (2-tailed)	.864	.394
	N	3189	3021
State with required implementation of personal finance content standards	Pearson Correlation	.057*	.014
	Sig. (2-tailed)	.001	.450
	N	3189	3021
State with personal finance course required for graduation	Pearson Correlation	-.016	.002
	Sig. (2-tailed)	.379	.914
	N	3189	3021
States with required testing on personal finance topics	Pearson Correlation	-.017	-.002
	Sig. (2-tailed)	.327	.896
	N	3189	3021
Stringency score	Pearson Correlation	.017	-.006
	Sig. (2-tailed)	.323	.729
	N	3285	3108

*Results significant at 99 percent confidence level ($p \leq 0.01$)

Appendix F

2009 State Rankings: Financial Knowledge

State	*Total Score*[a]	*Question 1*[b]	*Question 2*[c]	*Question 3*[d]	*Question 4*[e]	*Question 5*[f]
1. Florida	80.16%	97.40%	74.30%	53.30%	82.90%	92.90%
2. Idaho	80.08%	94.70%	84.80%	38.50%	92.90%	89.50%
3. Virginia	79.38%	89.40%	75.60%	51.40%	93.00%	87.50%
4. South Carolina	78.50%	88.10%	73.00%	38.50%	92.90%	100.00%
5. New Hampshire	77.98%	96.80%	74.10%	40.00%	93.30%	85.70%
6. West Virginia	77.90%	85.40%	80.60%	42.10%	90.90%	90.50%
7. Georgia	77.32%	90.00%	72.00%	35.30%	89.30%	100.00%
8. Vermont	77.06%	92.30%	71.40%	43.50%	88.70%	89.40%
9. Maryland	76.06%	93.50%	71.40%	45.30%	88.90%	81.20%
10. Louisiana	75.50%	84.20%	76.90%	40.00%	90.70%	85.70%
11. Pennsylvania	75.46%	92.90%	66.70%	42.90%	94.20%	80.60%
12. California	74.36%	84.10%	64.60%	46.70%	89.60%	86.80%
13. Maine	74.34%	82.40%	71.70%	41.90%	88.20%	87.50%
14. Indiana	73.52%	82.40%	76.80%	35.90%	89.50%	83.00%
15. Massachusetts	73.22%	89.70%	64.00%	38.90%	96.20%	77.30%
16. Montana	72.12%	85.10%	75.00%	41.70%	81.00%	77.80%
17. Washington	72.02%	87.00%	63.90%	29.20%	85.00%	95.00%
18. Iowa	71.84%	95.30%	69.70%	28.60%	81.40%	84.20%
19. South Dakota	71.78%	90.30%	62.50%	35.70%	88.00%	82.40%
20. Colorado	71.54%	92.80%	65.20%	34.90%	85.20%	79.60%
21. Mississippi	71.52%	92.20%	61.00%	41.50%	87.00%	75.90%
22. Kentucky	71.32%	93.60%	79.50%	37.10%	75.00%	71.40%
23. Nebraska	71.28%	84.30%	69.10%	46.30%	77.30%	79.40%
24. Arkansas	71.20%	79.60%	60.00%	36.60%	86.50%	93.30%
25. Missouri	71.02%	82.90%	73.50%	39.10%	85.70%	73.90%
26. Oklahoma	70.76%	83.90%	69.20%	35.70%	90.00%	75.00%
27. Arizona	70.62%	100.00%	69.80%	23.50%	87.80%	72.00%
28. Rhode Island	70.36%	89.10%	60.40%	27.90%	96.30%	78.10%
29. North Carolina	69.86%	81.60%	65.70%	36.40%	86.40%	79.20%
30. Texas	69.66%	89.10%	65.90%	20.60%	82.40%	90.30%
31. New Jersey	69.30%	87.20%	57.60%	56.30%	67.60%	77.80%
32. Illinois	69.16%	81.30%	64.70%	36.80%	84.20%	78.80%
33. Kansas	68.80%	93.30%	52.40%	16.70%	87.50%	94.10%
34. Tennessee	68.38%	81.80%	61.40%	27.30%	85.70%	85.70%
35. Nevada	68.18%	84.40%	52.60%	43.50%	83.80%	76.60%
36. Wyoming	68.16%	87.80%	67.90%	24.30%	84.00%	76.80%
37. Delaware	67.24%	80.40%	54.50%	30.60%	86.70%	84.00%
38. Michigan	66.84%	90.00%	71.90%	13.60%	84.80%	73.90%
39. Minnesota	66.24%	83.10%	60.00%	34.00%	82.70%	71.40%
40. New Mexico	66.14%	83.70%	56.10%	30.60%	87.20%	73.10%
41. Connecticut	66.06%	73.10%	48.40%	38.50%	85.70%	84.60%
42. Oregon	65.96%	80.00%	55.40%	34.80%	85.50%	74.10%
43. Alabama	65.58%	82.40%	50.00%	44.40%	84.40%	66.70%
44. Wisconsin	65.56%	78.30%	56.30%	40.00%	87.50%	65.70%

45. Utah	65.34%	80.30%	52.40%	40.70%	78.30%	75.00%
46. Hawaii	64.88%	81.10%	57.10%	32.00%	74.20%	80.00%
47. Ohio	64.34%	78.10%	53.80%	37.50%	78.60%	73.70%
48. North Dakota	62.46%	92.00%	57.90%	9.10%	78.30%	75.00%
49. Alaska	62.06%	81.30%	50.00%	18.20%	94.10%	66.70%
50. New York	61.78%	76.80%	54.50%	22.70%	71.10%	83.80%

[a]The total score reflects each state's average percentage of correct responses to five financial knowledge questions included in FINRA's 2009 Financial Capability Study. Refer to Chapter 3 to review the method of calculation for this score.
[b]This question assessed respondents' knowledge of compound interest.
[c]This question assessed respondents' knowledge of inflation effects on money.
[d]This question assessed respondents' knowledge of the relationship between bond prices and the interest rate.
[e]This question assessed respondents' knowledge of payment differences on shorter and longer mortgages.
[f]This question assessed respondents' knowledge of stock diversification and risk.

(FINRA Investor Education Foundation, 2012)

Appendix G

2009 State Rankings: Financial Behavior

State	Percentage of Respondents who Reported Spending Equal to or Less than their Income	State	Percentage of Respondents who Reported Spending Equal to or Less than their Income
1. Connecticut	89.70%	26. Arkansas	74.60%
2. Alaska	84.20%	27. Maryland	73.90%
3. Oregon	84.00%	28. Maine	73.50%
4. West Virginia	83.70%	29. Massachusetts	73.30%
5. Nebraska	83.20%	30. Hawaii	73.00%
6. Oklahoma	81.50%	31. Virginia	72.90%
7. Michigan	81.40%	32. Louisiana	72.40%
8. Idaho	80.00%	33. Kentucky	72.20%
9. Georgia	80.00%	34. Indiana	71.60%
10. Wyoming	80.00%	35. Rhode Island	71.60%
11. North Dakota	79.30%	36. New Mexico	70.70%
12. Vermont	78.60%	37. Ohio	70.70%
13. Pennsylvania	78.10%	38. Washington	70.60%
14. New Jersey	78.00%	39. South Dakota	70.60%
15. Illinois	77.80%	40. New Hampshire	69.60%
16. Wisconsin	77.80%	41. North Carolina	69.60%
17. South Carolina	77.10%	42. Arizona	69.50%
18. Alabama	76.90%	43. California	67.90%
19. Nevada	76.10%	44. Utah	67.80%
20. Montana	75.40%	45. Mississippi	67.30%
21. Texas	75.40%	46. Minnesota	66.70%
22. Tennessee	75.40%	47. New York	65.50%
23. Florida	75.00%	48.Missouri	57.80%
24. Iowa	75.00%	49. Delaware	57.40%
25. Colorado	75.00%	50. Kansas	57.10%

(FINRA Investor Education Foundation, 2012)

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